Nova Solar 5 Farms Limited

# ESIA Addendum

Final

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FINAL REPORT

Nova Solar 5 Farms Limited

# ESIA Addendum

20 June 2017

For and on behalf of
Environmental Resources Management

Approved by: Philippa Spence

Signed: 

Position: Partner

Date: 20 June 2017



ENVIRONMENTAL RESOURCES MANAGEMENT LIMITED

INCORPORATED IN THE UNITED KINGDOM WITH REGISTRATION NUMBER 1014622

REGISTERED OFFICE: 2ND FLOOR, EXCHEQUER COURT, 33 ST MARY AXE, LONDON, EC3A 8AA

**CONTENTS**

**ACRONYMS**

| | |
|---|---|
| AfDB | African Development Bank |
| AoI | Area of Influence |
| CBO | Community Based Organisation |
| CDAC | Community Development Advisory Committee |
| CDP | Community Development Plan |
| CIA | Cumulative Impact Assessment |
| CLO | Community Liaison Officer |
| E&S | Environmental and Social |
| EHS | Environmental, Health and Safety |
| EPC | Engineering Procurement and Construction |
| ERM | Environmental Resources Management Ltd |
| ESG | Environmental, Social and Governance |
| ESIA | Environmental and Social Impact Assessment |
| ESMP | Environmental and Social Management Plan |
| ESMS | Environmental and Social Management System |
| FRSC | Federal Road Safety Commission |
| HIV | Human Immunodeficiency Virus |
| HV | High Voltage |
| ICP | Informed Consultation and Participation |
| IDA | International Development Agency |
| IFC | International Finance Corporation |
| JV | Joint Venture |
| KTSG | Katsina State Government |
| LGA | Local Government Area |
| LV | Low Voltage |
| M&E | Monitoring and Evaluation |
| MIGA | Multilateral Investment Guarantee Agency |
| MV | Medium Voltage |
| NGO | Non-Governmental Organisation |
| OPIC | Overseas Private Investment Corporation |
| OS | Operational Safeguard |
| PAP | Project Affected Person |
| PS | Performance Standard |
| SEP | Stakeholder Engagement Plan |
| STI | Sexually Transmitted Infections |

**GLOSSARY OF TERMS**

| Term | Definition |
|---|---|
| Affected Community | Stakeholder(s) who is (are) affected by the Project, both positively and negatively. Within this it is possible to distinguish between those that are directly affected (i.e. PAPs) and indirectly affected by the Project (e.g. Kankiya residents). |
| Baseline data | Data gathered during the ESIA and ESIA Addendum used to describe the relevant existing conditions of the project, such as physical, biological, socio-economic, and labour conditions, including any changes before the project commences. |
| Bonded Labour | Practice whereby forced labour is extracted by creating debt or other obligations not based on a valid and mutually beneficial economic purpose that must be worked off on terms that effectively prevent the worker's exit from the work. |
| Child Labour | Work by a child that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development. Obligations on child labour are extended to the supply chain. |
| Collective Bargaining | Discussions and negotiations between employers and representatives of workers' organisations for the purpose of determining working conditions and terms of employment by joint agreement. Collective bargaining also includes the implementation and administration of any agreements that may result from collective bargaining and the resolution of other issues that arise in the employment relationship with respect to workers represented by the workers' organisations. |
| Communicable Disease (also infectious diseases) | Illnesses attributable to specific infectious agents or their toxic products that arise through transmission of these agents or their products from an infected person, animal, or inanimate reservoir to a susceptible host. Examples include water-borne, water-related, food-borne, respiratory diseases, and sexually transmitted diseases. |
| Community Based Organisations (CBOs) | A local community organisation that is not for profit and can be formal or informal. They often function within a single community or over a small geographic range across several communities and tend to be smaller than NGOs (e.g. women's groups, small village cooperatives, farmer associations). |
| Community Development Plan | A Plan that outlines the means by which Nova Solar will ensure the enhancement of the livelihoods of Project-affected Persons (see definition) and of local communities (see definition) in the social area of influence (see definition), as well as ensuring Project benefits are shared. |
| Community Engagement | Community engagement is an on-going process involving disclosure of information, consultation with affected communities, and the establishment of a grievance mechanism. |
| Consultation | Consultation involves two-way communication between Nova Solar and the affected communities. The consultation process should be undertaken in a manner that is inclusive and culturally appropriate and that provides the affected communities with opportunities to express their views on |

| Term | Definition |
|---|---|
| | projects risks, impacts and mitigations measures, and allows the Nova Solar to consider and respond to them. |
| Corrective Action | Measures to mitigate areas of concern or to prevent an incident from occurring in the future (preventative action). |
| Cultural Heritage | A unique and non-renewable resource that possesses cultural, scientific, spiritual or religious value and includes moveable or immoveable objects, sites structures, groups of structures, natural features, or landscapes that have archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values, as well as unique natural environmental features that embody cultural values, such as sacred groves. |
| Disadvantaged or vulnerable groups | Individuals or groups within the project area of influence who could experience adverse impacts from the proposed Project more severely than others based on their vulnerable or disadvantaged status. This status may stem from an individual's or group's race, colour, sex, language, religion, political, or other opinion, national or social origin, property, birth or other status. In addition other factors should be considered such as gender, ethnicity, culture, sickness, physical or mental disability, poverty or economic disadvantage, and dependence on unique natural resources. |
| Discrimination in Employment | Any distinction, exclusion or preference with respect to recruitment, hiring, working conditions or terms of employment made on the basis of personal characteristics unrelated to inherent job requirements that nullifies or impairs equality of opportunity or treatment in employment or occupation. |
| Economic Trees | Economic trees are those from which the community can derive a product for household consumption or sale, including food, firewood and medicine. Examples of economic trees in the social area of influence include mango, neem, date palm, gum Arabic, African fan palm, Shea and African rosewood. |
| Ecosystem Services | The benefits that people obtain from ecosystems, including: provisioning services (such as food, fibre, fresh water, fuel wood, biochemicals, genetic resources); regulating services (such as climate regulation, disease regulation, water regulation, water purification, degradation of pollutants, carbon sequestration and storage, nutrient cycling); and cultural services (spiritual and religious aspects, recreation and ecotourism, aesthetics, inspiration, educational values, sense of place, cultural heritage). |
| Effluent | Wastewater - treated or untreated- that flows out of a treatment plant, sewer, or industrial outfall; generally refers to wastes discharged into surface waters. |
| Emergency Response Plans | Plan to address contingencies associated with process upset, accidental scenarios and emergencies. This should include clearly assigned responsibilities for assessment of the degree of risk to life and property with procedures on how to manage each scenario and whom to communicate these with. |
| Environmental and Social Impact Assessment | The ESIA report focuses on the significant issues of a project and predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Examines global, transboundary, and cumulative impacts as appropriate. Impact assessment includes baseline data, alternatives analysis and management program. |

| Term | Definition |
|---|---|
| Environmental and Social Management System | Nova Solar's overall management system for the Project, the Environmental and Social Management System includes the organisational structure, responsibilities, policies, procedures and practices, and resources, and is essential for successfully implementing the Project-specific management program developed through the environmental and social assessment of a project. A good management system enables continuous improvement of the project's environmental and social performance, and can lead to improved economic, financial, environmental and social project outcomes. |
| Equal Opportunity | The principle of basing all employment decisions, such as hiring and promotion, on the ability of a person to perform the job in question, without regard to personal characteristics that are unrelated to the inherent job requirements. |
| Forced Labour | Any work or service not voluntarily performed that is exacted or coerced from a person under threat of force or penalty. Forced labour includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour arrangements. Prison labour should also be considered forced labour unless the prison inmate volunteers for work assignments. |
| Freedom of Association | The right for workers and employers to join organisations without prior authorization. |
| Grievance | A concern, complaint or feedback raised by any stakeholder either affected or interested in the Project. Both concerns and complaints can result from either real or perceived impacts of the Project's operations. It involves the establishment of a grievance procedure that is accessible to all stakeholders regardless of location, culture, literacy or gender. |
| Grievance Mechanism | 1) Mechanism to receive and facilitate resolution of concerns and grievances about Nova Solar environmental and social performance.<br>2) Mechanism for workers (and their organisations, where they exist) to raise reasonable workplace concerns. |
| Hazardous Waste | Substances classified as hazardous wastes possess at least one of four characteristics- ignitability, corrosion, reactivity, or toxicity - or appear on special lists. |
| Incident | An incident is an unplanned, undesired event that adversely affects completion of a task (this could be related to Health and safety, environment, social, labour or security). |
| Local Community | Community within the Project's social area of influence. |
| Local Content | Maximisation of shared value through maximising opportunities and access for employment of local people and the engagement of local business for the provision of goods and services, where feasible. |
| Management Plan | Mitigation measures and actions necessary for Nova Solar to comply with applicable laws and regulations and performance improvement measures and actions that address the environmental and social risks and impacts identified in the ESIA and ESIA Addendum. A Management Plan may range from a brief description of routine mitigation measures to a detailed and specific plan. |
| Monitoring and | The purpose of monitoring and evaluation of the CDP is to |

| Term | Definition |
|---|---|
| Evaluation | improve current and future management of projects, outcomes and impact. It is used to assess the performance of projects by making a comparison of past, present and future actions or outcomes. |
| Monitoring Reports | Periodic reporting of the social and environmental performance pursuant to the project's management program, including the Action Plan and any other key social and environmental criteria. |
| Near Miss | Near misses describe incidents where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and/or injury easily could have occurred |
| Occupational Health and Safety | Refers to the range of endeavours aimed at protecting workers from injury or illness associated with exposure to hazards encountered in the workplace or while working. |
| Project-Affected Persons or Households | Within the Nova Solar Project are those whose land is required for the Project's development and who have participated in the Government-led compensation process to compensate for the economic displacement. |
| Pollution | Refers to both hazardous and non-hazardous pollutants in the solid, liquid, or gaseous forms, and is intended to include other forms such as nuisance odours, noise, vibration, radiation, electromagnetic energy, and the creation of potential visual impacts including light. |
| Priority Ecosystem Services | Priority ecosystem services are two-fold:<br>(i) those services on which project operations are most likely to have an impact and, therefore, which result in adverse impacts to Affected Communities; and/or<br>(ii) those services on which the project is directly dependent for its operations (e.g. water). |
| Project's Area of Influence | The project's area of influence includes the primary project site(s) and related facilities that Nova Solar (including its contractors) develops or controls; associated facilities that are not funded as part of the project (funding may be provided separately by Nova Solar or a third party including the government), and whose viability and existence depend exclusively on the project and whose goods or services are essential for the successful operation of the project; areas potentially impacted by cumulative impacts from further planned development of the project; and areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location.<br>The area of influence of a Project may vary according to the impact type, e.g. socio-economic or environmental.<br>The area of influence may also change with the Project lifecycle and activities. |
| Stakeholder | Persons or groups that are directly or indirectly affected by the Project as well as those that may have an interest in it and/or the ability to influence its outcome, either positively or negatively. This can refer to lenders, employees, local communities, industry and the Federal or State Government. |
| Stakeholder engagement | An umbrella term encompassing a range of activities and interactions between Nova Solar and stakeholders (two way communication) over the life of the Project that are |

| Term | Definition |
| --- | --- |
| | designated to promote transparent, accountable, positive, and mutually beneficial working relationships. |
| Terms of Employment | Terms of employment include wages and benefits, hours of work, overtime arrangements and overtime compensation, and leave for illness, vacation, maternity or holiday. |
| Worker | Refers to employees, as well as to certain types of non-employee workers. |
| Workers' Organisations | Any organisation of workers for the purpose of furthering and defending the interests of workers with regard to working conditions and terms of employment. |
| Working Conditions | Conditions in the workplace and treatment of workers. Conditions in the workplace include the physical environmental, health and safety precautions and access to sanitary facilities. Treatment of workers includes disciplinary practices, reasons and process for termination of workers and respect for the worker's personal dignity. |

# *1 INTRODUCTION*

## 1.1 *BACKGROUND*

Nova Solar 5 Farms Limited (hereinafter referred to as 'Nova Solar') intends to develop the Nova Solar Farm in Katsina State, Nigeria (hereinafter referred to as 'the Project') a brief description of which is found in Section 1.2. Nova Solar commissioned a consultancy to complete the Environmental and Social Impact Assessment (ESIA) as part of the application and permitting process for developing the Project. The ESIA was undertaken on behalf of Nova Solar in 2015 and submitted to the Federal Ministry of Environment in December 2015. The draft ESIA report underwent disclosure and public consultation in August of the same year, as specified under Nigeria's Environmental Impact Assessment Act, 1994.

Nova Solar and its sponsors, Azura, Nova Power and Total (together referred to as 'the Project Sponsors'), are seeking to secure finance for developing the Project. At this stage the prospective lenders are the Overseas Private Investment Corporation (OPIC) and other development and multilateral institutions (hereinafter referred to as 'prospective lenders and investors'). Other stakeholders include the World Bank through both the Multilateral Investment Guarantee Agency (MIGA) and International Development Agency (IDA). At the request of Azura Katsina Ltd., a review and gap analysis of the ESIA report was prepared by Environmental Resources Management Limited (ERM), the full results of which can be found in the document entitled *Katsina Solar Development ESIA and Resettlement Review* dated October 2016.

The review and gap analysis was carried out against the International Finance Corporation (IFC) Performance Standards (PS) and Environmental, Health and Safety (EHS) Guidelines. At the time, these standards and guidelines were selected for their widespread application in similar Projects and as benchmark for best practice adopted by the Project sponsors. The review identified a number of areas where additional information would be valuable in helping to better understand the local context, and to in turn assess and design mitigations for a number of impacts not considered in the ESIA with sufficient detail.

ERM was subsequently contracted to assist Nova Solar and the Project sponsors in supplementing the ESIA with complementary baseline information, impacts assessment and mitigation content. This document (the 'ESIA Addendum') is the culmination of that work.

The supplementary information for prospective lenders comprises:

- additional information about livelihoods in the Project Area of Influence (AoI) and the land acquisition and compensation process;

- assessment of selected socioeconomic impacts that consider livelihoods; community health, safety and security; labour and working conditions, and cultural heritage;

- assessment of traffic impacts to account for the increase in vehicle volume and movement, particularly during construction;

- a cumulative impact assessment (CIA) to account for other industrial projects being developed in the area;

- an outline Environmental and Social Management System (ESMS) and the development of key framework management plans currently absent from the original ESIA Environmental and Social Management Plan (ESMP); and

- A Community Development Plan (CDP) based on supporting and enhancing the existing livelihoods in the area, particularly for those directly impacted by economic displacement.

Table 1.1 maps out the structure of this Addendum document and shows how it fits together with the original ESIA. The Addendum has been designed to be used alongside the existing ESIA such that, through the application of measures and procedures defined in both documents, social and environmental risks, impacts and opportunities will be effectively managed by the Project.

***Table 1.1 Document Navigation: Original ESIA and Supplementary Information included in ESIA Addendum by Section***

| ESIA Components | ESIA | ERM ESIA Addendum (this document) |
|---|---|---|
| **Introduction** | **Chapter 1**<br>• Proponent; Project Area; ESIA Objectives; ESIA Scope of Work; ESIA Methodology; Administrative and Legal Framework and Structure of Report. | None. |
| **Project Justification** | **Chapter 2**<br>• Background Information; Need for the Project; Benefit of the Project; Envisaged Sustainability; and Project Options. | None. |
| **Project Description** | **Chapter 3**<br>• Project Overview; Site Selection; Proposed Project Layout; Facilities Design Bases; Description of Project Components; Design Considerations; and Project Phases. | None. |
| **Baseline** | **Chapter 4**<br>• Baseline Data Acquisition Methods<br>• Climate and Meteorology<br>• Ambient Air Quality and Noise Level<br>• Geology<br>• Hydrology<br>• Ground Water<br>• Soil<br>• Vegetation<br>• Wildlife<br>• Socio-Economic Health Studies and Consultation | **Section 3 Additional Baseline Information:**<br>• Mapping of settlement names and hierarchy<br>• Livelihoods and farming methods<br>• Land tenure and availability |
| **Potential and Associated Impacts Assessment & Impact Mitigation Measures** | **Chapters 5 & 6**<br>• Air Quality and Noise<br>• Water Quality<br>• Aquatic Ecology<br>• Terrestrial Ecology<br>• Sediment Quality<br>• Soil Quality<br>• Public Perceptions<br>• Socio-Economics / Human Health | **Section 4.2 Impacts**<br>• Economic displacement – agriculture & livestock<br>• Physical displacement - houses<br>• Conflict over land take and compensation<br>• Ecosystem services<br>• Community health, safety and security<br>• Labour and working conditions<br>• Cultural heritage<br><br>**Section 4.3 Traffic Impact Assessment**<br>• Construction: traffic flows, volumes |

| | | |
|---|---|---|
| | | • Traffic-induced noise and dust<br><br>**Section 4.4 Cumulative Impact Assessment**<br>• Construction and Operation: Cumulative impacts |
| **Environmental and Social Management Plan** | **Chapter 7**<br>• Training and Awareness Plan<br>• Public Participation / Involvement Plan<br>• Grievance Mechanism<br>• Regulatory Compliance Plan (HSE)<br>• Project Design Guidelines<br>• Project Execution Guidelines<br>• Inspection and Maintenance Plan<br>• Risk Assessment and Management Plan<br>• Worker Safety and Health Plan<br>• Pollution Control Guidelines<br>• Emergency Response Plan<br>• Communication Plan<br>• Environmental Monitoring Plan<br>• Waste Management Plan<br>• Security Plan<br>• Consultation<br>• Corporate Social Responsibility<br>• Environmental Audit and Review<br>• Decommissioning and Abandonment (after Construction, after Operation) | **Section 5 Environmental and Social Management System**<br>Development of framework:<br>• Outline ESMS<br>• Stakeholder Engagement Plan<br>• Community Development Plan<br>• Traffic Management Plan<br>• Water and Wastewater Management Plan<br>• Local Content Plan<br>• Local Employment Policy and Plan<br>• Worker Grievance Mechanism<br>• Camp Management Plan<br>• OHS Management Plan |

## 1.2 *PROJECT DESCRIPTION*

The proposed Nova Solar Farm (the 'Project') is a photovoltaic solar farm installation that is expected to generate 100 $MW_{AC}$ of electricity which would supply the national grid. The Project site is located approximately 3 km northwest of Kankiya, in Katsina State, Nigeria. The solar panels will be installed using aluminium or galvanized steel poles, part of which will be buried beneath the ground surface. The Project will require circa 200 ha of land.

The Project will be implemented in phases:

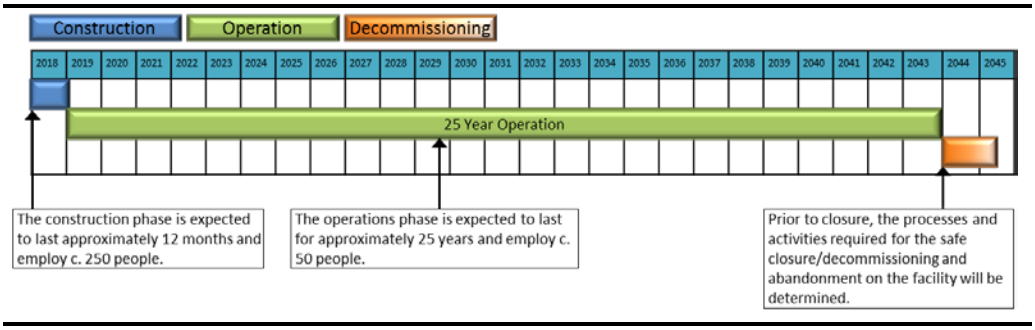
- pre-engineering (design and site preparation);
- construction and installation;
- operation; and
- decommissioning.

The Project will be located in Kankiya Local Government Area (LGA), which was chosen due to its terrain, accessibility (utilising the Kankiya-Katsina A9 highway), favourable climate and the high average annual Global Horizontal Irradiation index for the area, making it ideal for generation of solar power. It is also a strategic location in which to place a generation asset to power an area typically underserved by the Grid.

The Project will incorporate a switchyard, which will connect plant step up transformers to 132 kV transmission lines. Infrastructure on site will also include an office, a medium voltage/high voltage (MV/HV) station and communications infrastructure.

Figure 1.1 presents an overview of the planned Project timeframe for the phases of implementation. A map of the Project site, showing the presence of farm plots in a portion of the area is shown in Figure 1.2.

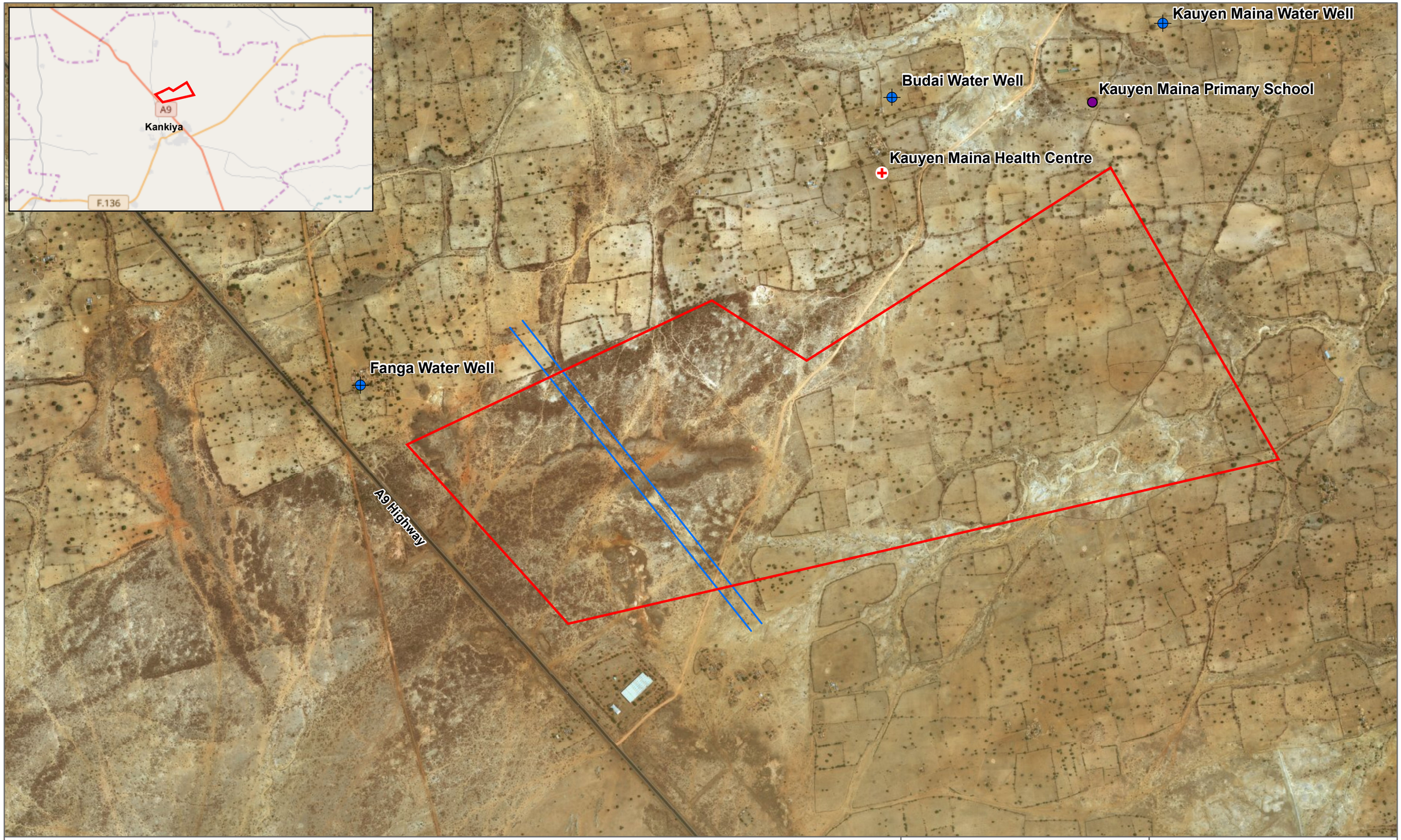
***Figure 1.1 Indicative Project Timeframe***




Although there is potential for variation, it is currently estimated that the peak workforce numbers will be 250 (mostly contractors) in the pre-engineering and construction phase, reducing to 50 (mostly permanent workers) when the Project enters production. The Nova Solar *Worker Management Plan* and *Local Content Management Plan* provide further details on how the

workforce will be managed and how local content in the workforce will be maximised, respectively.

Further details around the Project design can be found in *Chapter 3: Project Description*, of the full ESIA, *125 MWp Katsina Solar PV Power Plant – ESIA.*




Site Boundary
Right of Way
Kauyen-maina Health Centre
Kauyen-maina Primary School
Well

0 100 200 300 400
Meters

N

**Figure 1.2**
**Project Site**

| | |
|---|---|
| SCALE: 1:11,000 | VERSION: A01 |
| SIZE: A4 | DRAWN: RC |
| PROJECT: 0381947 | CHECKED: SF |
| DATE: 18/04/2017 | APPROVED: SF |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: © OpenStreetMap (and) contributors, CC-BY-SA

Path: \\uklonsv01\DATA\London\Confidential Projects\0381947 Azura Solar RAP & ESIA.SF\GIS\Maps\Figure1.2_0381947_NovaSolar_ProjectSite.mxd

# *2 IMPACT ASSESSMENT METHODOLOGY*

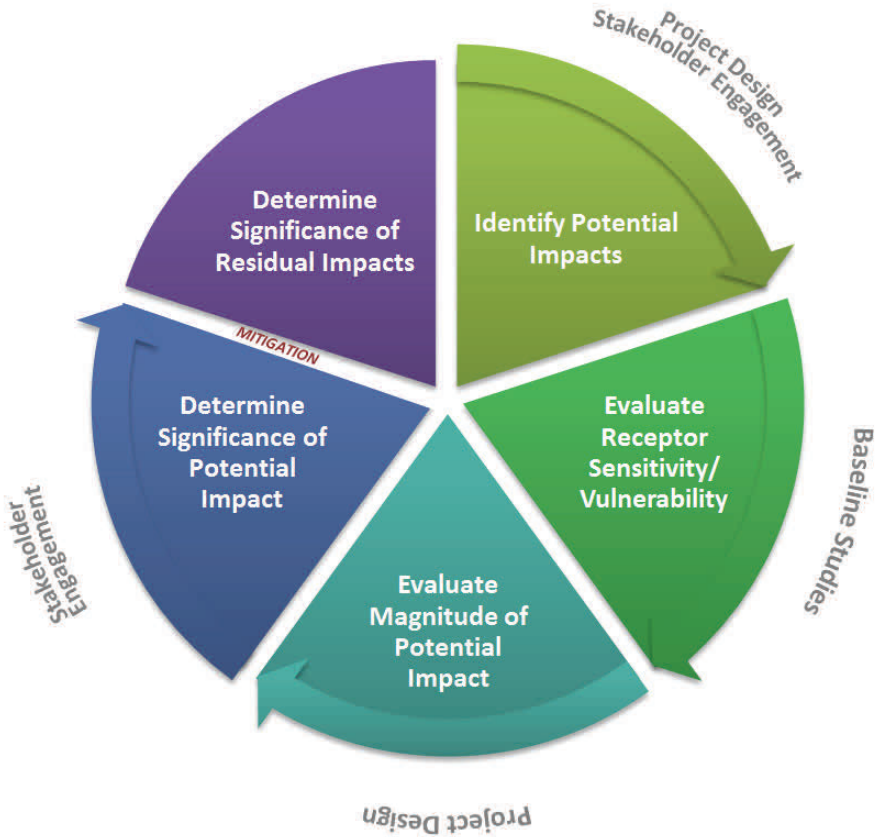
## 2.1 *INTRODUCTION*

The purpose of the impact assessment process is to identify any likely significant effects on receptors/resources as a result of impacts from the Project and develop appropriate mitigation measures to effectively manage these environmental and social effects. The overarching impact assessment methodology for the ESIA Addendum is presented in Figure 2.1. It is worthy of note that the impact assessment methodology used in this Addendum differs from the one applied in the main ESIA. Topic specific methodologies are presented for the assessment of social and health (Figure 2.2), traffic (Figure 2.3), and cumulative (Figure 2.4) impacts. They are then applied in the assessment of impacts in Section 4.

## Overview

The purpose of the impact assessment process is to identify any likely significant effects on receptors/resources as a result of impacts from a Project and develop appropriate mitigation measures to effectively manage these environmental and social effects. The process is iterative and can be summarised by the figure to the right.

The detailed impact assessment methodology that will be used complies with international best practice for impact assessment. The overarching principles of this methodology are illustrated here, but note that each ESIA topic area will have specific criteria for defining receptor sensitivity/vulnerability and impact magnitude.




## Evaluation of Significance

**The significance of the potential effect on receptors/resources is determined through the combined consideration of:**

- **the sensitivity/vulnerability of the affected environment, and**
- **the magnitude of the potential impact.**

Note that the term '**magnitude'** is used as shorthand to encompass various possible dimensions of the predicted impact, such as:

- the nature of the change (what is affected and how);
- its size, scale or intensity;
- its geographical extent and distribution;
- its duration, frequency, reversibility ; and
- where relevant, the probability of the impact occurring as a result of accidental or unplanned events.

| Magnitude of Impact | Sensitivity/Vulnerability/Importance of Receptor or Resource: Low | Medium | High |
|---|---|---|---|
| Negligible | Negligible | Negligible | Negligible |
| Small | Negligible | Minor | Moderate |
| Medium | Minor | Moderate | Major |
| Large | Moderate | Major | Major |

There is no statutory or agreed definition of significance however, for the purposes of this assessment, the following practical definition is proposed:

*An impact will be judged to be significant if, in isolation or in combination with other impacts, the effects will be a notable change from baseline conditions and may require mitigation to management environmental/social effects/risks.*

Magnitude and vulnerability/sensitivity will be looked at in combination to evaluate whether an impact is significant and if so its degree of significance. The principle is illustrated here.

The impact assessment process evaluates both beneficial and adverse impacts, however the magnitude rating is only assigned for adverse impacts.

## Residual Impacts/Effects

*Is it still significant?*

Once mitigation has been identified, a re-assessment of impacts to determine the magnitude and significance of any residual effects (after mitigation) will be undertaken.

The results will be represented in the final ESIA Report and with an explanation of how the impacts have been reduced to as low as reasonably practicable (ALARP) and why further mitigation of any remaining significant effects is not technically or financially feasible.

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

**Step 1**

**Evaluate the characteristics of the proposed development and the surrounding environment**

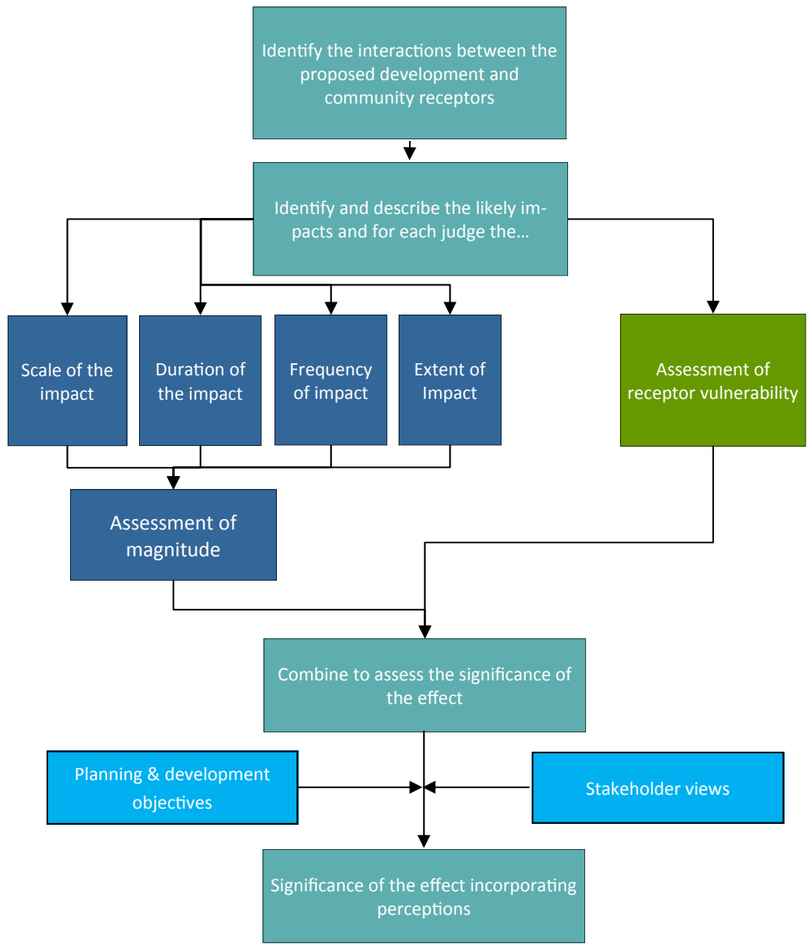
Define the preliminary scope of the social and health impact assessment and determine the study area

Identify receptors to social and health impacts.

Establish the existing baseline that does not rely on people's perceptions. Common techniques include desktop review, household survey, focus group discussions, participatory data collection and key informant interviews.

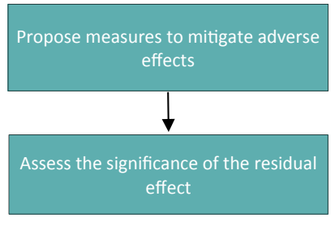
**Step 2**

**Assess the impacts**




**Step 3**

**Apply mitigation and assess residual effects**



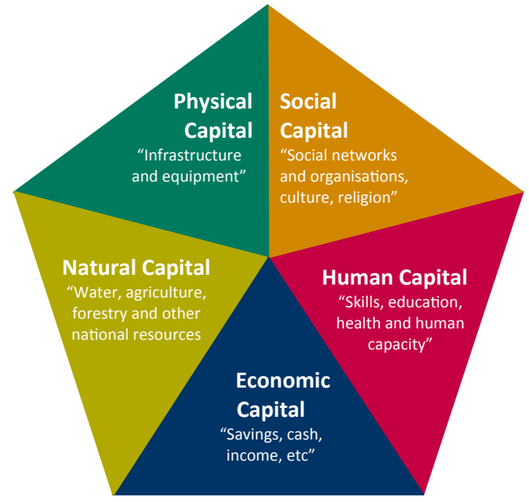

## Magnitude of Change

The approach for designating magnitude for social or community health impacts takes a "best fit" approach whereby the various characteristics contributing to magnitude (scale, duration, extent, frequency) are considered in together, and the appropriate description is selected based on the overall combination of characteristic values using the judgement of the practitioner.

| Magnitude | Community Receptors |
|---|---|
| Negligible | Change remains within the range commonly experienced within the household or community. |
| Small | Perceptible difference from baseline conditions. Tendency is that impact is local, rare and affects a small proportion of receptors and is of a short duration. |
| Medium | Clearly evident difference from baseline conditions. Tendency is that impact affects a substantial area or number of people and/or is of medium duration. Frequency may be occasional and impact may potentially be regional in scale. |
| Large | Change dominates over baseline conditions. Affects the majority of the area or population in the area of influence and/or persists over many years. The impact may beexperienced over a regional or national area. |
| Positive | In the case of positive impacts, it is generally recommended that no magnitude be assigned, unless there is ample data to support a more robust characterisation. It is usually sufficient to indicate that there will be a positive impact, without characterising the exact degree of positive change likely to occur. |

## Determining Vulnerability

Vulnerability describes the sensitivity of the receiving environment (i.e. societies, communities and households) that will experience impacts. A vulnerable individual or group is one that could experience adverse impacts more severely than others, based on his/her vulnerable or disadvantaged status. Vulnerability is a pre-existing status that is independent of the project under consideration. It is important to understand the vulnerability context as it will affect the ability of social receptors to adapt to socio-economic/cultural or bio-physical changes. A higher level of vulnerability can result in increased susceptibility to negative impacts or a limited ability to take advantage of positive impacts. More vulnerable receptors will tend to lack one or more livelihoods assets that could help them to respond to, or manage, change (see figure—right). The characteristics that underpin vulnerability will be specific to each social setting, however, the following general definitions can apply.




| Vulnerability | Community Receptors |
|---|---|
| Low | Minimal areas of vulnerabilities; consequently with a high ability to adapt to changes brought by the Project |
| Medium | Some but few areas of vulnerability; but still retaining an ability to at least in part adapt to change brought by the Project |
| High | Profound or multiple levels of vulnerability that undermine the ability to adapt to changes brought by the Project |

## Integrating Stakeholders, Policy and Planning Perceptions

Impacts should be considered within the context of the local setting as set out in policy or development objectives and / or the view and perceptions of the local people. These priorities and views should be integrated into the assessment when evaluating the effect significance, ideally after an initial significance has been rated.

It is possible that the community will have a different perception of an impact than that expected; this is commonly referred to as a perceived impact. The effects of a perceived impact can be just as 'real' as those from other impacts and should be captured, but should be clearly differentiated. Failure to adequately address perceived impacts and the effects they cause is just as likely to result in project delays as other impacts assessed.

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2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

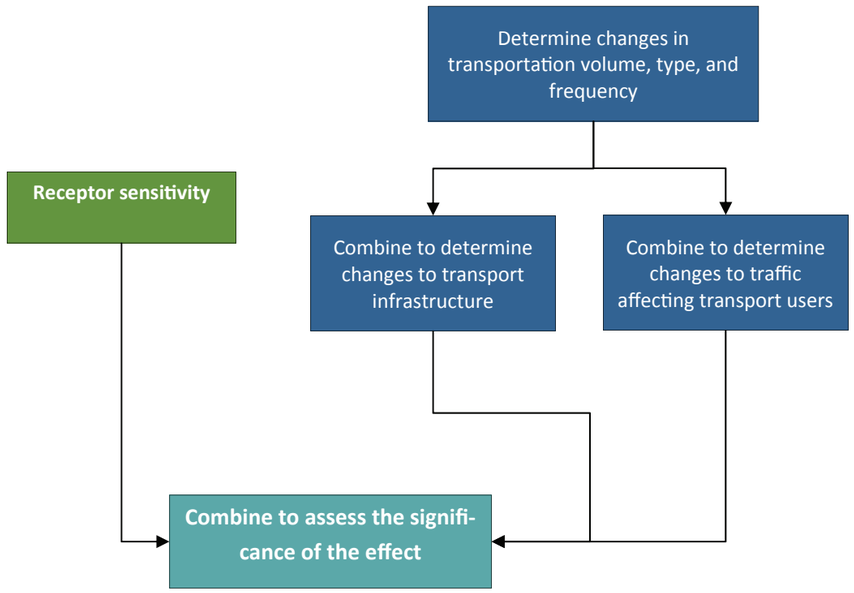
**Step 1**

**Evaluate the characteristics of the proposed development and the surrounding environment**

Identify sensitive receptors and users of the affected roads, railways and waterways.

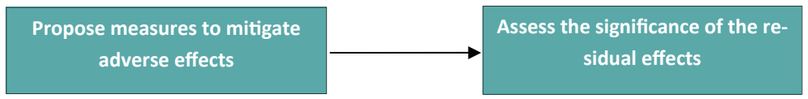
**Step 2**

**Assess the impacts**




**Step 3**

**Apply mitigation and assess residual effects**




## Receptor Sensitivity

Traffic impacts can occur with respect to both existing infrastructure and existing transport network users. The table below defines receptor sensitivity for both types of receptors.

| Sensitivity | Description |
|---|---|
| Low | • Occasional users of the affected roads.<br>• Residents of settlements traversed by affected transportation facilities.<br>• Businesses whose financial health is only indirectly affected by the availability of transportation facilities, equipment, and services. |
| Medium | • Somewhat frequent or regular users of the affected transportation facilities.<br>• Residents whose property could be indirectly affected by transportation impacts such as noise, but whose property is not adjacent to affected transportation facilities.<br>• Businesses whose financial health is tied, but not completely dependent on the availability of transportation facilities, equipment, and services. |
| High | • Frequent, regular users of the affected roads, railroads, and waterways.<br>• Residents whose property immediately abuts affected transportation facilities.<br>• Businesses whose financial health relies entirely on the availability of transportation facilities.) equipment, and services (e.g. fishermen, import-export businesses, etc. |
| **Note:** These criteria only assume negative impacts. It is conceivable that a project could have positive transportation impacts, especially later in the operations cycle e.g. if upgraded public haul roads make travel easier for the general public. For purposes of this document, all positive impacts are combined, with no gradation of significant/insignificant. | |

## Magnitude of Change

Exemplar descriptions of the different designations of magnitude for impacts to traffic and transport networks and users are provided below.

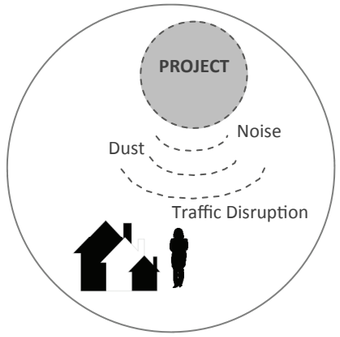
| Designating Magnitude | Transport Impact Magnitude Criteria | Traffic [(a)] Impact Magnitude Criteria |
|---|---|---|
| Negligible | Additional traffic volumes cause no notable change in condition of existing infrastructure. | Additional traffic volumes cause no notable change in road congestion. |
| Small | Additional traffic volumes cause degradation to existing infrastructure which does not affect other users e.g. cracks / minor damage to paved roads which does not affect use of road. | Additional traffic volumes cause degradation of road Level of Service (or equivalent evaluation metric), but not to the point where congestion or delay are considered unacceptable. |
| Medium | Additional traffic volumes cause degradation to existing infrastructure which impacts on other users or requires immediate repair e.g. development of potholes which must be avoided by road users to avoid damage to vehicles prior to repair of road surface. | Additional traffic volumes cause unacceptable levels of road congestion or delay (based on stakeholder feedback). |
| Large | Additional traffic volumes causes substantial degradation to existing infrastructure which impacts on other users or requires substantial or immediate repair e.g. creation of large potholes or significant damage to road surface resulting in need to resurface road. | Additional traffic volumes increase congestion or delay to the point where substantial mitigation (e.g. new investments such as bypass roads) are necessary to avoid such problems, where levels of congestion and delay are unacceptable (based on stakeholder feedback). |
| **Note:**<br>(a) Including volume and capacity | | |


ERM

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

## Cumulative Effects Assessment (CEA) Methodology

Cumulative Effects Assessment (CEA) seeks to determine the effect of the Project together with the other planned and proposed projects changes and, where appropriate, provide an assessment of the likely significance of any changes. Within the assessment of cumulative effects it is necessary to consider intra and inter-project effects as described in the illustration.

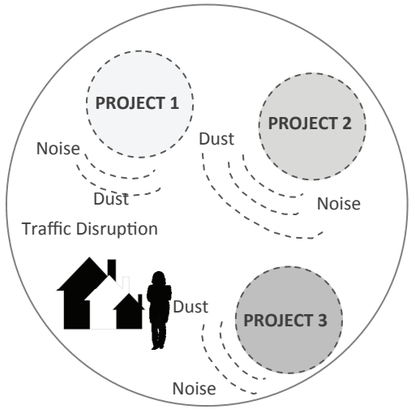



### Intra-project effects

Intra-project effects occur where a single receptor is affected by more than one source of impact arising from different aspects of a proposed development. An example of an intra-project effect would be where a local resident is affected by dust, noise and traffic disruption during the construction of a scheme, with the result being a greater nuisance than each individual effect alone.

### Inter-project effects

Inter-project effects occur as a result a number of developments. An effect of minor (or moderate) significance from the Project alone could become an effect of greater significance when considered with other planned or proposed projects.




**Step 1: Identifying Receptors and Resources**

The first stage of the assessment has been to systematically identify which receptors and resources could be cumulatively affected by the Project together with other planned and proposed projects. The objective of this stage of the process is to produce a list of resources and receptors for which cumulative effects will be assessed and managed.

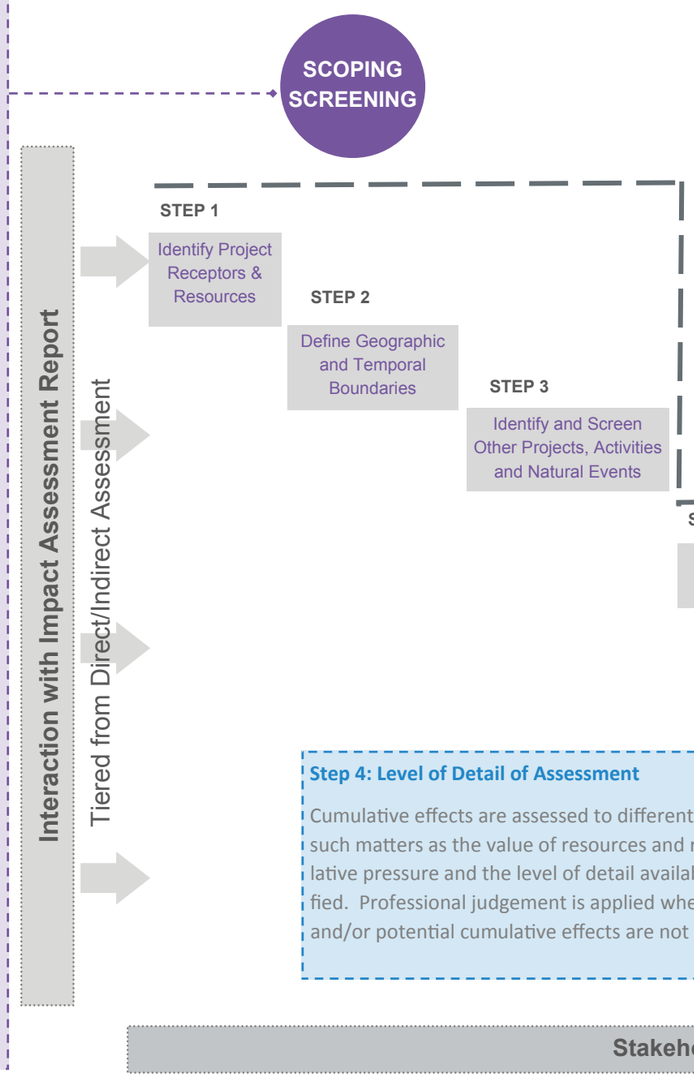
**Step 2: Defining Geographic/Temporal Boundaries**

To set the geographical boundaries for the assessment, the geographic areas occupied by Project resources and receptors have been considered. The geographical area of influence for a particular resource/receptor varies depending on the nature of the change that may arise from an activity and the type of effect being considered.

Temporal boundaries include the complete lifecycle of the Project. The temporal boundary is used to compare the timing of construction and operation of the other projects, activities, and identify whether these are likely to coincide in time with effects from the Project.

**Step 3: Screening**

This step involves identifying developments, activities and natural events that could have likely significant effects that might overlap in time or space with those of the Project on valued resources and receptors.




**Step 4: Level of Detail of Assessment**

Cumulative effects are assessed to different levels of detail depending on such matters as the value of resources and receptors that are under cumulative pressure and the level of detail available for the other projects identified. Professional judgement is applied where either data are unavailable and/or potential cumulative effects are not considered to be significant.

**Step 5: Identification of Potential Impact Pathways**

The individual technical impact assessments include detailed assessment, mitigation and summaries of any residual effects. If a receptor is not directly or indirectly affected by the Project, no cumulative effects are anticipated.

Where appropriate, the potential significance of a cumulative effect has been determined in line with the overarching methodology identified for the ESIA Addendum, taking into consideration the sensitivity of the receptor / resource to the impact concerned and the magnitude of the impacts from the Project and other planned and proposed projects (where sufficient information is available to do so). The cumulative magnitude is the sum of all planned and proposed projects (e.g. the total amount of traffic, noise, air pollution, water demand). The likely significance of cumulative effects is determined by combining the sensitivity and magnitude. However, it is not always possible to quantify the magnitudes of multiple other projects (e.g. due to lack of available data) and so such matters as possible thresholds and qualitative assessment play a role.

**Step 6: Determining Mitigation and Monitoring**

Mitigation for cumulative effects takes into account mitigation already identified in the EIA and where appropriate, additional measures have been identified to reduce the contribution of the Project to significant cumulative effects where practicable. Monitoring may be suggested to deal with uncertainty in conclusions and would be discussed and agreed with consultees and other stakeholders.

Environmental Resources Management Ltd
2nd Floor, Exchequer Court
33 St Mary Axe
London, EC3A 8AA

**Assessing Cumulative Impacts**

# 3 ADDITIONAL BASELINE INFORMATION

## 3.1 INTRODUCTION

Collection of additional baseline information to compliment the baseline data collected for the ESIA in 2015 was undertaken by ERM in December 2016 and January 2017. It focussed on:

- livelihoods, including community needs and opportunities for development (to feed into the Nova Solar Community Development Plan);
- land acquisition and compensation provided to economically displaced persons by the Katsina State Government; and
- other projects of economic importance under development in the area.

This section summarises the additional baseline information collected.

## 3.2 PROJECT AFFECTED COMMUNITIES

Field trips undertaken in December 2016 and January 2017 enhanced understanding of the settlement / community structure, with more villages identified as part of the 'parent' villages listed in the original ESIA. Current understanding of community structure is presented in Figure 3.1.

Kankiya Local Government Area (LGA) is divided into two traditional districts called Kankiya and Rimaye Districts. The Project and its affected communities are located in the Kankiya District. Kankiya District consists of thirteen 'parent' villages that are further sub-divided into smaller hamlets. Three 'parent' villages in Kankiya District are impacted by the Project (see Table 3.1).

***Table 3.1 Project Affected Communities***

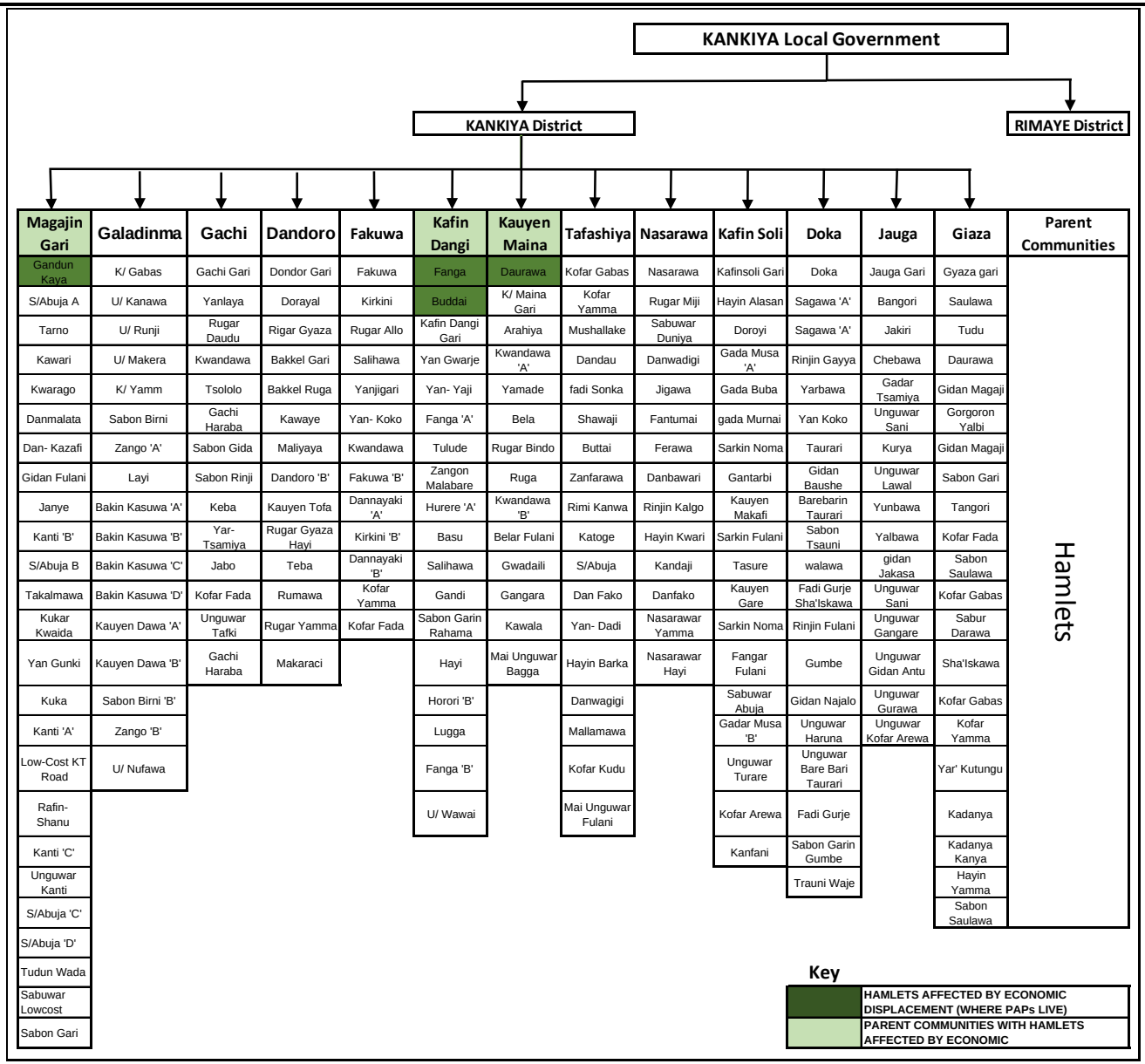
| 'Parent' Village | Hamlets Impacted |
|---|---|
| Magajin Gari | Gandun Kaya (Magajin Gari not directly impacted) |
| Kauyen Maina | Kauyen Maina and Daurawa |
| Kafin Dangi | Fanga and Buddai (Kafin Dangi not directly impacted and only part of Fanga) |

The hamlets in Table 3.1 are directly impacted by the Project-induced land take due to their inhabitants having farms, economic trees, and land on which animals graze and browse within the boundaries of the site demarcation.

Gachi and Dan Doro 'parent' villages, like other immediate communities surrounding the Project footprint, are not directly impacted (i.e. did not lose land, structures or economic trees), however are indirectly impacted through the loss of some of routes to water and, in the case of Gauchi, possibly grazing areas. The Project footprint intersects with these grazing areas which will be curtailed once construction and operations activities commence. The

two ‘parent’ villages confirmed that the Project footprint lies along one of the main routes to Kankiya Dam and nearby grazing areas, with significant grassland and water, notably the Kankiya Dam and seasonal watering holes, for their livestock. The Kankiya Dam is located outside of the Project footprint but can most easily be accessed by passing through it.

## *Figure 3.1 Community Organisation Structure*



## 3.3 *LIVELIHOODS*

The following supplementary information about livelihoods of communities within the Project AoI is intended to enhance understanding of the main livelihoods vulnerabilities and challenges and therefore to inform a Community Development Plan (CDP) that is grounded and based upon community needs, as well as aligning with Nova Solar's business objectives, principles and values.

The primary livelihood activities of directly affected households within the Project footprint are farming and livestock keeping. Other livelihoods that take place in the area include:

- trading, mainly based on household production;
- artisanal brick-making and laying;
- carpentry and other artisanal services; and
- food processing and petty trading.

This is similar to the remaining communities in the wider Project AoI. It was noted that the more urban the community, the greater the number and variety of livelihoods found there. For instance, the residents of Gachi village, where the Kankiya District headquarters are located, were found to engage more in commercial trading activities (buying and selling) not based upon household production.

One of the main challenges faced by those engaged in these other livelihood activities is lack of capital. There is a shortage of access to start-up capital for developing or growing small businesses such as trading, carpentry, tailoring, knitting, brick-laying, welding, or food processing. The majority of community members engaged in these artisanal activities were taught by their parents; very few were trained in technical schools in Kankiya.

There are no vocational centres in the Project-affected communities. The closest technical skills development centre to the project footprint is the Kankiya Technical School, where skills such as carpentry and woodwork, welding and fabrication, and plumbing are taught. The institute is run by the government. Fees are payable in order to undertake training and a basic education certificate is required in order to enrol. There is an adult education facility located on the A9 in Kankiya for those without education certificates to upgrade their skills to meet basic education requirements.

### 3.3.1 *Farming*

Directly affected communities farm on land acquired through family inheritance, purchase and sometimes rental. Inheritance is the most common, with children inheriting land from their parents. Some people, particularly the non-local, and families with a limited amount of land, also engage in land purchase. It is understood that 'outsiders' pay higher prices for land. Farmers may also rent land when they are targeting production that is beyond the household consumption, although this is less common. Sharecropping is not practised in the area.

Under the Land Use Act, the State, through the Governor or Local Government, (formerly the District Council) own all the land in the area, holding it in trust on behalf of the people. Technically therefore (though not necessarily typically), the transference of land from one person to another either within the family or through open market transaction needs the prior approval / notification of the traditional leaders.

Farming is carried out on a subsistence basis, using such practices as mixed cropping, slash-and-burn and manual weeding. Farming tools and techniques are manual and non-mechanised, such as cattle-drawn plough, hoes and feet (for planting). Farmland is mostly rain-fed; there is no irrigation system in any of the directly affected communities.

Farming activities such as land clearing, tilling, ridging and harvesting are largely carried out by men. All other activities such as threshing, winnowing, milling, storage management are typically carried out in the home by women.

The most common food crops cultivated across the directly affected communities include millet, guinea corn, maize, beans, groundnut, soya bean and sesame. In addition, communities like Kauyen Maina and Daurawa also reportedly produce rice, cassava and sweet potatoes. Surplus farm produce (either in its primary form or processed in some way) is sold in the local markets, usually by men, although women (mostly younger unmarried girls) also sell products, such as millet balls, in markets. Groundnuts, cassava, sweet potatoes and beans are mostly grown for sale, while guinea corn, maize, millet and soya bean are mainly for household consumption.

Women are not typically involved in activities on the farm, nor do they tend to trade in the local open markets, away from their home. They are more often involved in home-based value-chain food processing activities such as groundnut processing to produce groundnut oil, groundnut cake (*kuli-kuli*), bean processing to make bean cakes (*kosai*), millet processing to produce millet balls (*fura*) among others, which they sell through their men or through their daughters or female family members. There are however indications that some women do trade in the open market away from the home when accompanied by male family members and some also own farm land. That said the overwhelming majority of market transactions are usually carried out by men.

*Challenges identified*

The following factors were found to affect farming productivity and yields:

**Poor conditions and weak productivity for farming:**

- Reliance and dependence on the rain-fed system of agriculture and no irrigation. This means it is difficult to plant and harvest crops more than once in a year. As well as affecting productivity, it also causes seasonal unemployment and was reported to be a risk factor for food insecurity in years of lower rainfall.
- Lack of farm machinery or mechanised farming support. All farm work is done manually.

- The topography of some of the area means farmland is prone to flooding during the rainy season.

**Insufficient and/or unaffordable farming inputs:**

The cost of farming inputs and supplies is deemed high. For instance, although the Government rate for fertilizer was reported to be 1,900 Naira (said to be the subsidised rate), this was said to be unavailable to local farmers due to supply shortages. Farmers are therefore buying fertiliser at the rates and prices set on open markets, reported to be 10,000 Naira (1).

- The same was said to be the case with buying improved seed varieties, meaning farmers often replant their seeds. This reduces the yield rate of the crop.
- Herbicides and insecticides were also reported to be expensive, meaning farmers were unable to buy them. This makes crops vulnerable to pest and disease.

**Lack of dedicated support or resilience mechanisms for farming:**

- Poor financial / social networking supports. There is a lack of a support network or other mechanism at village or hamlet level that the farmers can go to, in order to provide and request support from one another. This can make households vulnerable during times of drought, lower than normal yields or other periods of food insecurity.
- Poor agricultural extension services support from the Ministry of Agriculture (2), making the farmer vulnerable in the event of crop pest or disease outbreak that requires a concerted Government response and support.

**Resource Scarcity:**

Land scarcity is attributed to population growth and pressure increasing the number of farmers in the area, coupled with factors such as land take or land allocation within Kankiya District for light industrial developments. This has reportedly further increased the purchase and rental prices of land most noticeably in the areas closest to the A9(3). To illustrate this point, the forest reserve (4) , a small part of which is awaiting de-gazettement for the Project, is used by the local community for livestock grazing and parts of it have been encroached upon by neighbouring communities for farming purposes.

- Farmers report they usually run out of money before the end of the farming season (harvest). This lack of capital limits their capacity to procure basic farm inputs to increase productivity.

(1) Please note that these figures have not been verified but are based on interviews undertaken in the field.

(2) In Q4 2016 the FADAMA3+ programme started with a request to Ward Level Fadama Community Associations (FCA) (Gachi and Kafin Dangi FCAs to present to the FADAMA office their priority needs for 2017. – Kafin Dangi FCA (including Daurawa and Kauyen Maina, listed their priorities as Livestock and Open Wells).

(3) Several PAPs have used their compensation to speculate by buying (building plots (less than 1000m$^2$) land near the A9, which they hope to sell for a profit or build to let.

(4) The Project footprint overlaps a small portion of a forest reserve that, although highly degraded and deforested, needs to go through a formal process of de-gazetting, requiring close collaboration / discussions with the State Government. Discussion with the Katsina State Ministry of Lands has indicated that the forest reserve land may be de-gazetted and allocated for light industrial developments (as applies to the Project) however not for agricultural uses. It is reported that the community currently use the forest reserve for livestock grazing. Parts of it have experienced encroachment from planting of crops, understood to be driven by population growth pressure on land available for agrictultural use.

### 3.3.2 *Livestock Rearing*

The keeping of livestock is one of the most common livelihood activities among Project-affected households. The livestock kept include cattle, sheep, goats, camels, rams and poultry. Livestock such as cattle, goat, sheep and rams are mainly kept to be sold at market. Poultry such as chickens, ducks and guinea fowl are kept for both household consumption and to be sold at market. Some households also keep cattle (usually bulls) for farming support, namely pulling of ploughs.

Livestock kept at home are fed with corn husks, as well as bean and groundnut leaves. Water for cattle and livestock is drawn from either hand-pumped boreholes or wells within the communities. Grazing routes and fields are located within and outside the communities.

In Kauyen Maina, one person was found to be piloting a fish farm, while another was working to establishing a rabbitry.

*Challenges identified*

The following factors were found to be challenges to rearing livestock in the area:

**Resource Scarcity:**

- Land allocation in the local area, towards light industrial activity coupled with population pressure, restricts the size and availability of alternative or additional land for grazing potentially affecting access routes to water and grazing, as it would entail a detour to reach the watering holes and destinations. The forest reserve is the primary area for grazing within the community in the AoI. Solar power developments by Nova Solar and Pan Africa Solar are understood to require de-gazettement of only a small portion of this land. Inadequate or insufficient supply of water sources means that in the dry season humans and livestock compete for water.
- Lack of capital to purchase good breeds of livestock to improve the herd.

**Lack of dedicated support or resilience mechanisms for livestock management:**

- Poor veterinary support and livestock extension services support from the Ministry of Agriculture. Extension workers do not visit livestock farmers to provide support during seasons when they need it. This makes them vulnerable to outbreaks of preventable livestock diseases.

## 3.4 *INFRASTRUCTURE*

### 3.4.1 *Roads*

Within Nigeria there are “Trunk A” roads, owned and maintained by the Federal Government which link to other states, “Trunk B” roads owned and maintained by the State Government, linking local government areas to the state capital, and “Trunk C” roads, owned and maintained by the Local

Government(1). In addition to these, there is also a network of smaller internal roads which facilitate vehicle movement within the communities. The majority of the route connecting Lagos to Katsina State comprises dual carriageways.

Kankiya can be accessed via one of three main access routes, the A9 Kano Katsina Highway, Kankiya-Dutsama Road and Kankiya-Ingama Road (see Figure 3.2). These main access roads are all paved, two-lane motor roads. The Project is located close to Kankiya along the Kankiya – Katsina stretch of the A9 Highway.

Local communities not connected by the main access roads in the area are connected by unimproved and unsealed tracks, which are typically deteriorated due to flooding. None of the local communities are connected by all-weather tarmac road. A community access road/track intersects the Project footprint, running north-south and providing access to the A9 Highway and Kankiya. Some community members near the Project area have expressed a desire for this access track to be retained.

Figure 3.2 Existing Road Network

Kankiya-Dutsama Road | Kankiya-Ingama Road | Unpaved local road

### 3.4.2 *Schools*

Two of the three directly-affected 'parent' villages have a primary school that is open to boys and girls. Staff at the two schools visited reported they are under-staffed and have inadequate physical infrastructure and shortage of learning materials.

The closest secondary school for directly affected communities is in Kankiya, where there is also a technical institute that specialises in provision of training in lifelong technical skills. The primary and secondary school reported to be the best resourced is in Kankiya town itself. Children from settlements around the project footprint where no primary school is present have the option of walking over 2 km to Kauyen Maina's primary school or 3 km each way to attend school in Kankiya town. The lack of water in schools is a factor limiting pupils' attendance as thirst can mean they need to leave to get a drink of water (2).

(1) Ileoje, N.P (2004), *A New Geography of Nigeria*, Fifth Education, Lagos: Longman Nigeria Plc

[2] Kankiya's Girls School has a water tanker to supply water to the school.

### 3.4.3 *Health*

There is a health centre in Kauyen Maina providing basic primary health care services, although it is reportedly underequipped to operate effectively. Its opening hours are 8am to 2pm Monday to Friday and it is staffed by two nurses (one on duty at a time) and four health technicians (two on duty at a time). Its catchment area includes sixteen hamlets in and around the project footprint.

Statistics maintained by health centre staff reveal that it receives up to 100 patients per week, with about 5% of the cases being cholera (1) . The health centre has no waste management system for medical waste. A significant percentage of the cases that present at Kauyen Main health centre are reportedly transferred to the General Hospital in Kankiya.

Government-sponsored annual vaccination campaigns for measles and polio are provided to the Project communities once a year. At the time of data collection there were no health outreach programmes (e.g. mobile clinics providing primary care) or health systems strengthening being carried out by non-governmental organisations (NGOs) operating in or around the Project-affected communities.

Patients in need of more advanced, or emergency-type, level of care such as deliveries and minor surgery are transferred to the General Hospital in Kankiya.

### 3.4.4 *Water*

Water for farming and cattle is commonly taken from dams built along streams to retain water in a reservoir in the rainy season (2). The dams in closest proximity to the Project are Zobe and Kankiya Dams. Seasonal fishing activities also take place on these dams. It is understood that these dams help to recharge shallow groundwater enabling people to hand dig shallow wells to obtain water for domestic purposes, especially during the dry season when water is scarce. Many of the hand dug wells in the AoI have been in place for decades, are several metres deep and service the community with water all year round. According to the main ESIA, domestic and potable water for about 75% of the population of Kankiya LGA also comes from these wells. As a consequence, local communities' livelihoods are dependent on the dams that in turn contribute to the sustained infiltration of water into the hand dug wells.

For domestic use, there are also a number of boreholes with hand pumps across the AoI (though not in every community), some of which are reported to dry up seasonally. Kankiya town has a piped water supply that is fed from municipal boreholes.

(1) Cholera is caused by poor hygiene and sanitation conditions and water contamination and can be exacerbated in times of drought and flood. Please note however that this figure has not been validated and in the Project context, where diagnostic capabilities are limited, it could therefore also be related to other water-borne diarrhoeal diseases caused by similar poor hygiene and sanitation conditions.

(2) Ladan, SI. 2015. Water Resource Management: Dam Collapse and its Implications on Agricultural Production in Kankiya, Norther Nigeria. International Journal of Sciences. **4**(06)

Further information on water resources and access in the AoI can be found in the Nova Solar *Water and Wastewater Management Plan*.

### 3.4.5 *Sanitation*

Domestic waste, namely from cleaning and sweeping, is disposed of by throwing it away on farmland and sometimes open burning. There is evidence of poor waste water (i.e. containing human waste) management in many, if not most, of the houses in all communities. According to the community nurse interviewed, this is responsible for causing regular cholera cases and other water-borne and diarrhoeal diseases.

Although almost all households indicated that they have their own toilet facilities, or access to a toilet facility in the form of pit latrines, there is evidence of open defecation.

When menstruating, women use pieces of cloth/fabric as sanitary pads.

### 3.4.6 *Electricity*

The communities in the Project area do not have access to electrical power, despite the fact that two 132KV and one propose 330KV transmission lines cross the project site and the Kankiya substation is 2 Km south of the project site.

## 3.5 *PROJECT LAND ACQUISITION AND MEASURES TO ACHIEVE COMPLIANCE WITH IFC PS5*

This section summarises the land acquisition and compensation process applied by the KTSG prior to Nova Solar taking ownership of the Project. This section also outlines actions Nova Solar will take to achieve compliance with IFC PS5.

*The Project Footprint*

The Project footprint covers an area of circa 200 hectares of land. Over half of this area is used privately for farming and livestock grazing. The remainder is part of a gazetted forest reserve understood to have a total area of 1,100ha.

The portion of the Project footprint (approximately 78 hectares including the area already covered by the Transmission Lines) overlapping with a small part of the forest reserve awaits de-gazettement and land use reallocation by the KTSG.

In the context of the AoI, the forest reserve is typically used by the local community for grazing of livestock and forms part of a transit route for taking livestock to water at the Kankiya Dam. Parts of the forest reserve have been encroached upon by the local community for crop farming, driven by population growth pressure on land. Stakeholders in the Katsina State Government have indicated that, despite the forest reserve in the AoI being almost entirely depleted of its forest cover (including the small portion that overlaps with the Project's footprint), its land cannot be de-gazetted for

agricultural use. It can however be de-gazetted for the development of light industrial activity. It is understood that the Katsina State Government (KTSG) is in the process of publishing an official Gazette to re-allocate land use in this part of the forest reserve to renewable power generation and other light industrial activities. The intention of this approach being to promote economic diversification/development in the area.

Approximately 122 hectares of the Project footprint (or 61% of the 200 hectare concession) is located outside of the forest reserve. This comprises land holdings used for farming, with areas that are not used for arable production being used for informal grazing.

In sum, approximately 39% of the 200ha of the Project footprint falls within the forest reserve. This is understood to require approximately 7% of the forest reserve to be re-allocated for the Project's development. The remainder (61%) of the Project footprint is privately held, for which the KTSG has conducted a compensation process (see Section below).

*Government-led Land Acquisition*

Prior to Nova Solar taking ownership of the site, a government-led land acquisition and compensation process was undertaken by the KTSG. In line with the Nigerian legal requirements for compulsory land acquisition, cash compensation was provided in lieu of replacement land.

The government-led land acquisition process resulted in 212 payments of compensation to PAPs for loss of land, crops, economic trees and physical structures[(1)] within the Project footprint.

The records of the land holders/owners (the PAPs), their assets list and the cash compensation they received can be found in the KTSG documents entitled *Schedule for Payment of Compensation for Land, Economic Trees, Cash Crops and Structures* as well as their individual compensation receipt records and the KTSG compensation calculations Excel spreadsheet.

Based on the information received, it is understood that compensation provided to PAPs used the State's compensation Gazetted rates list from 2002 as a basis however updated the compensation rate provided for land from N 25,000 per hectare in 2002 to N1,000,000 per hectare or N100 per $m^2$ in 2015[(2)].

*Exclusion of Residential Structures*

The compensation records provided by the KTSG indicated that compensation had also been provided for eight physical structures. At the time of a site visit carried out in December 2016, affected households identified in Buddai reported that they had not received compensation for the physical structures

[1] It is reported that in Kauyen Maina and Daurawa 156 payments out of 212 were made to 118 Project affected Persons (PAPs). Twenty-five (25) individuals therefore received multiple payments each.
(2) Katsina State of Nigeria Gazette No. 15, Vol. 13 Supplement: Notice of Revision of Rates Payable as: KT.S.L.N. No. 1 of 2002 Land Use Act CAP 202 Section 29, Sub-Section (1) Paragraph (c)-Compensation for farm Lands and Economic Trees.

from the State Government. The KTSG acknowledged this and committed to rectify this in February 2017.

In an effort to eliminate the need for physical displacement and resettlement, Nova Solar surveyed the Project footprint and identified six primary residential structures (or 'homesteads') within the Project footprint housing eleven households (three households in Fanga and eight in Buddai). Mindful that this was a key issue for the Project and in line with IFC PS5, Nova Solar worked with its potential EPC Contractors during the contract tender process to reconfigure the technical designs. This resulted in successful modification of the northern boundary to exclude these structures, thus eliminating the need to cause physical displacement and having to resettle these households.

As a result, the Project land-take will result in economic displacement only, comprising loss of land containing economic trees, crops and livestock grazing areas.

*Replacement Land*

At the recommendation of prospective lenders, follow-up field enquiries that included Focus-Group Discussions (FGDs) with a sample of PAPs led to the understanding that several PAPs have used their cash compensation to secure replacement plots of land by purchasing or renting it from others. Due to the qualitative nature of FGDs and the fact that the acquisition of land by PAPs is ongoing, it has not been possible to quantify in exact terms the proportion of PAPs who have secured replacement plots of land to enable restoration of their livelihoods, nor to verify the size or security of tenure of these replacement land acquisitions. Nova will address this gap by undertaking further baseline data collection as described in Section 11.6 (Livelihoods Restoration for PAPs).

As part of ongoing monitoring of PAPs post payment of compensation, the KTSG, through the Surveyor General's Office, has also been conducting surveys to identify and map out alternative plots of land held by PAPs. This includes both additional replacement land that has been purchased with compensation and any other land plots that were already held by the PAPs. Reportedly, of the nearly 60% of PAPs surveyed so far, GPS locations have been recorded for land plots for 73% of these, with 11 PAPs owning or farming on multiple alternative plots in the area.

It should be noted that this work was ongoing at the time of writing and it was not ascertained whether (and what proportion of) the alternative plots identified were already previously owned by PAPs, or whether they were new acquisitions made using the compensation that PAPs received from the KTSG. This information will be mapped and available in due course, once the Surveyor General's Office has been able to collate and map the data.

During the field visit conducted in December 2016, some PAPs stated that they had not acquired replacement land(1). Some PAPs in this group also

(1) Several PAPs compensated for land already own alternative plots and used their compensation for other purposes. Others, notably one elderly woman shared her compensation with her children as inheritance.

stated that they had allocated it to other expenditures, including taking another wife, taking part in the Hajj, or opting for another livelihood. A summary of the key points from FGDs with PAPs can be found in *Appendix B* of the Nova Solar *Stakeholder Engagement Plan (Annex B)*.

Some PAPs chose to acquire building plots near the A9 road as opposed to plots of farm land. This choice of investment was likely driven by the fact that in the Project context it is common practice to acquire land as an investment to be sold at a later date to meet expenses for major events such as marriage, college fees, hajj, medical expenses, and funerals.

Current understanding is that the availability of land suitable for farming or livestock grazing within the AoI has become scarce due to population growth/pressure. Although a portion of the forest reserve land is being re-allocated (pending de-gazettement) to light industrial development, it is understood that it cannot be de-gazetted and re-allocated for arable farming activities. This indicates that securing large amounts of land for providing a farming-related livelihood restoration option for PAPs is therefore unlikely to be feasible.

The Project understands from Local Government authorities however that portions of the forest reserve land can potentially be de-gazetted and re-allocated to primary agricultural processing as it may qualify as a light industry (as does solar power generation).

Under current circumstances, and given that the PAPs are still farming on the land (see following Section), it is likely that some PAPs have not secured replacement land yet despite having the cash compensation to do so, although they may do so at a later stage.

**Additional work to comply with IFC PS5:** Given the constraints on land availability in the AoI, and not wishing to cause indirect impact on land availability for others (i.e. knock-on effects to non-PAPs), Nova aims to support PAPs in restoring their livelihoods with options to enhance and maximise the productivity and use of the land they own already through improved agricultural practices, and hence productivity.

**Additional work to comply with IFC PS5:** In the absence of provision of replacement land through the land acquisition process, and mindful of dependence on land-based livelihoods in the AoI, Nova will gather additional baseline data on each affected household regarding (but not necessarily limited to) the following:

- What PAPs used their compensation for;
- Current status of the PAP (specifically what livelihood activities they are currently undertaking);
- On the basis of the above, identify the gaps against IFC PS5 for each individual PAP; and
- Finally, identify the livelihood restoration measures that will bring each individual compensation transaction into compliance with IFC PS2.

Nova Solar will undertake a baseline survey at the earliest opportunity (following the Ramadan period). Data will be collected from all PAPs before

any Project on-the-ground activities. In addition to gathering socio-economic and vulnerability data about PAPs, it will also include a number of questions formulated to answer the abovementioned points. It is anticipated that the questions will be qualitative in nature. This exercise requires individual-level assessment of each PAP on a case-by-case basis.

*Current Land Use*

Pending land clearance for Project start-up PAPs continue to retain possession of the land within the site boundary, and seek permission from the traditional leadership (the District Council)(1) to continue farming and grazing cattle on the land allocated for Project development. It is also understood that PAPs are paying a token rent(2) to the District Council for its continued use.

Under current Project timelines, it is unlikely that construction will commence much before the year end (2017). This coincides with the harvest season in the Project AoI. Following ongoing engagement and maintenance of open channels of communication between the Nova Solar team and PAPs, it has been agreed that the PAPs can take advantage of the annual farm preparation and planting window in April 2017, allowing them to grow their crops and then harvest them in September to November 2017.

## 3.6 *TRAFFIC*

### 3.6.1 *Roads*

As noted in Section 3.4.1, the Project is located close to Kankiya along the Kankiya – Katsina stretch of the A9 Highway. The A9 Highway is a paved road connecting Kano to Katsina. The majority of the routes connecting Lagos to Katsina State comprise dual carriageways. Access roads connecting communities comprise unimproved and unsealed tracks that have deteriorated due to the effects of flooding.

Detailed traffic surveys have not been undertaken to confirm existing traffic volumes in the immediate Project area. However, based on field observations, overall traffic volumes in the Project area, including traffic volumes on the A9 Highway, are assumed to be very low.

### 3.6.2 *Public Transportation*

Residents of Kankiya and nearby communities are typically willing to walk short distances within the community, typically less than 3 km. For longer journeys private and commercial motorcycles, tricycles and cars are used. Commuters typically pay 50 Naira per person per drop for these services. Donkeys and camels are often used to carry produce from the farms.

(1) The District Council at the start of each farming season asks Nova if they have any objections to the farmers planting on the land.

### 3.6.3 *Traffic Accidents*

The World Health Organisation (WHO) reports that the road traffic fatality rate in Africa is higher than in any other region of the world: compared to a global average of 17.4 fatalities per year, per 100,000 population, the rate in Africa is 26.6 per 100,000 population, and the rate in Nigeria is 20.5 deaths per 100 000 population [(1)]. Although Nigeria has adopted and enforces road safety regulations, the laws do not meet best practice legislation across key risk areas regarding speed, drink driving, helmets, seat belts and child restraints.

Table 3.2 provides a summary of the number of traffic collisions and associated fatalities recorded between 2011 and 2015 [(2)] based on Federal Road Safety Corps (FRSC) data. WHO estimated road traffic fatalities for 2013 were significantly higher than the national recorded data, with an estimated 35,641 fatalities (the 95% confidence estimate ranged from 27,949 to 43,332).

***Table 3.2 Road Traffic Fatalities in Nigeria 2011 to 2015***

| Year | Number of Collisions | Number of Fatalities |
|---|---|---|
| 2011 | 13,196 | 6,054 |
| 2012 | 13,262 | 6,092 |
| 2013 | 13,583 | 6,523 |
| 2014 | 10,380 | 5,996 |
| 2015 | 9,734 | 5,440 |

Source: FRSC, 2016

Based on FRSC data, the number of traffic collisions in Katsina State where the Project is located was below the state national average, however, the number of injuries and fatalities as a result of traffic collisions were above the state average (see Table 3.3).

***Table 3.3 2015 State Road Traffic Collision Data***

| | Number of Collisions | Number of Fatalities | Number of Persons Injured |
|---|---|---|---|
| Average of All Nigerian States | 263 | 147 | 823 |
| Katsina State | 225 | 190 | 983 |

Source: FRSC, 2016

## 3.7 *SECURITY CONTEXT*

This section discusses key security threats at national, regional and local level, focusing on conflicts between sedentary farming communities and livestock herders/grazers that revolve around access to land and may occasionally take on religious connotation.

(1) World Health Organization (2015), *Global Status Report on Road Safety 2015*, http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/, accessed 31/01/17.
(2) Federal Road Safety Corps (2016), *FRSC 2015 Annual Report*, http://frsc.gov.ng/frsc2015.pdf, accessed 31/01/17.

### 3.7.1 *National Level*

In the North East of Nigeria, the security context is highly volatile and fluid due to the activity of the armed Islamist group Boko Haram. This has triggered mass population displacement of millions of people and directly contributed to the death of an estimated 20,000 more(1).

In the eastern "middle-belt" (2) states (now the North Central region of Nigeria) and some states in the western and southern part of the north east region(3) of Nigeria there is a complex history of non-Boko Haram violent conflict between settlers and herdsmen. This has not infrequently taken on religious colouration. Though this violence predates Boko Haram(4), some perceive this as opportunistic action by Muslim groups due to the ongoing activity of Boko Haram in the North East. The violence includes attacks against Christians, their farms, shops and homes. This perennial conflict, for years confined mainly to "middle-belt" states, is reported to have spread to other parts of the country, with a number of mass killings increasingly reported in southern states in recent times(5)(6).

### 3.7.2 *Regional Level*

There is a small number of reports indicating an increase in tension between nomadic Fulani cattle herders and local farmers in other States that have in recent years resulted in violence, attacks on villages and killings(7). Despite this, outbreaks of violence and animosity in Katsina State are rare and usually localised; disputes over land use/access mixed with tribal and sectarian animosity(8).

There is the additional problem of cattle rustling which, although not common in Kankiya, has been experienced in other parts of Katsina state.

### 3.7.3 *Local Level*

According to the Control Risks Group(9), this type of communal violence "*poses an incidental threat to commercial operations and personnel. Herdsmen typically do not target commercial operators. Nonetheless, clashes may affect personnel or assets in the vicinity.*".

(1) International NGO Safety Organisation (2017), Nigeria Context Analysis, http://www.ngosafety.org/country/nigeria, accessed 14/02/2017.
(2) The "middle-belt" states include Benue, Nassarawa, Plateau.
(3) Western and Southern States in the North Eastern Region – Bauchi, Gombe and Taraba
(4) http://www.accord.org.za/ajcr-issues/%EF%BF%BCreligious-violence-in-nigeria/
(5)The Guardian, 03 January 2017, 'Drought worsens deadly battle between Fulani herdsmen and farmers in Nigeria', https://www.theguardian.com/global-development/2017/jan/03/drought-worsens-deadly-conflict-between-fulani-herdsmen-nigeria-farmers, accessed 14/02/2017.
(6) WorldWatch Monitor, 11 October 2016, 'Nigerian Fulani herdsmen's attacks continue amidst government inaction.', https://www.worldwatchmonitor.org/2016/10/4672538/, accessed 14/02/2017.
(7) BBC News, 13 March 2014, 'Nigeria attack: Scores killed in Katsina state' http://www.bbc.co.uk/news/world-africa-26562931, accessed 13/02/2017.
(8) International Business Times, 12 October 2016, '*Eight Shia Muslims 'killed' in Nigeria as security forces try to stop Ashura match in Katsina*' http://www.ibtimes.co.uk/eight-shia-muslims-killed-nigeria-security-forces-try-stop-ashura-march-katsina-1586015, accessed 13/02/2017.
(9) Control Risks Group, 06 February 2017, 'Clashes involving recent Fulani herdsmen in Taraba state signal escalating threat in rural areas', accessed 14/02/2017.

Despite localised conflict, the security situation in Katsina and Kankiya is considered stable when compared with other parts of the country. Further, despite the reports that indicate increasing tensions and violence between nomadic Fulani cattle herders and local farmers in the State in recent years, the local police and District Council have not identified this to be an issue in the AoI.

**Additional work to comply with IFC PS5:** Mindful that herders, even if they do not have customary rights over a piece of land, may depend on land within the Project footprint for grazing, Nova Solar will investigate the level of engagement that the KTSG had with livestock herders at the time of carrying out the asset valuation and compensation work for the Project in 2015.

## 3.8 *VULNERABLE GROUPS*

Vulnerable groups are defined as those less able or resilient in coping or adapting to changes brought about by the Project land take. Although the main ESIA did not characterise and define what constitutes vulnerability or vulnerable groups in relation to the Project, it is possible to identify a number of vulnerable groups that would potentially be less able to adapt and derive benefit from Nova Solar's presence in the area. These are described in Box 3.1.

### *Box 3.1 Vulnerable Groups*

- **Females and female-headed households:** Unable to access as wide a range of income-generating opportunities as men on account of social norms and their economic dependence on men. The main ESIA baseline states that young married women keep within the household and restrict their movement outside, making them unable to sell goods in the open markets, unlike men. Women are less able to access formal employment on account of their inferior educational and literacy achievement, itself a product of social norms. Having fewer economic means makes them less able to access replacement land of their own, especially if compensation provided is insufficient; or they are highly dependent on the income that they generate from the processing of produce grown on the land for which they were compensated.
- **Project-affected households without alternative/multiple plots:** It is common in the Project AoI for households to practice shifting cultivation, meaning they rotate cultivation across several plots every few years, allowing the soils to recover. This provides a degree of resilience to losing land within the Project footprint, especially if the CDP is able to support the intensification of production on the same land. The most vulnerable households will be those which do not have alternative land across which they can rotate cultivation. Although this is thought to be unlikely, the vulnerability exists where a) PAPs do not use their compensation to purchase replacement land, either because the compensation was insufficient or compensation was allocated towards other costs; and/or b) they are unable to secure access to a plot of land of equal size and quality, either due to land scarcity or insufficient compensation.
- **Disabled and elderly:** who are less able to support themselves through land-based livelihoods requiring physical ability and less able to adapt to the changes brought about by economic displacement.

Additional work will be done by Nova Solar to better understand vulnerability factors in the AoI and to identify individual PAPs that may be deemed vulnerable to changes brought about by the economic displacement. This

piece of work is outlined in Section 11.6 (Livelihood Restoration for PAPs) of the CDP.

# *4 IMPACT ASSESSMENT*

## 4.1 *INTRODUCTION*

The ESIA Addendum has been developed to address gaps identified in the main ESIA. The ESIA Addendum therefore focuses on the social, traffic and cumulative impacts.

## 4.2 *SOCIAL IMPACT ASSESSMENT*

The following Project impacts and benefits identified and adequately assessed in the main ESIA are listed below. For the full detail consult *Chapter* 5 of *125 MWp Katsina Solar PV Power Plant - ESIA.*

Impacts
1. Influx – impact on existing services;
2. Increase in anti-social behaviour;
3. Conflict over benefits from the Project;
4. Workforce health, safety and security;

Benefits
5. Employment opportunities; and
6. Additional electricity.

The following Project impacts identified and in need of further analysis and mitigation are listed below.

7. Economic displacement (Table 4.1);
8. Conflict over land take (Table 4.2)
9. Ecosystem services (Table 4.3);
10. Community health, safety and security (Table 4.4 and Table 4.5);
11. Labour and working conditions (Table 4.6);
12. Cultural heritage (Table 4.7);
13. Traffic-related accidents and injury (Table 4.8); and
14. Traffic-induced noise and dust (Table 4.9);

These additional impacts are assessed in the tables below and mitigations are proposed. Note that the social impact assessment presented below has been undertaken in line with the methodology presented in Section 2.

### *Table 4.1 Economic Displacement and Associated Livelihoods Impact*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Project land-take triggers economic displacement. | |
| **Phase** | Pre-engineering (site preparation) and construction. | |
| **Discussion** | A portion of the Project footprint falls within a small part of a forest reserve awaiting de-gazettement. The forest reserve typically functions as a communal grazing area. The Project land falling outside of the forest reserve comprises land holdings used for farming, with areas that are not arable used as informal grazing areas. Part of the land is used as an informal livestock transit route to the dam.<br><br>Prior to Nova Solar taking ownership of the site, a government-led land acquisition and compensation process was undertaken in line with the requirements of the Republic of Nigeria. In line with Nigerian requirements, compensation was provided in cash and did not include provision of replacement land or formal livelihoods restoration. The compensation was calculated on the basis of gazetted rates from 2002.<br><br>For further detail on the land acquisition process, see Section 3.5. If not mitigated, economic displacement without support for livelihood restoration and enhancement could have a long-term impact on PAPs and their families, potentially leading to livelihood loss or deterioration and reduction in food security and quality of life. | |
| **Receptor Sensitivity / Vulnerability** | The 212 PAPs whose livelihood is based on land, and dependent on, grazing livestock, farming crops and/or harvesting products derived from economic trees on land that falls within the Project boundaries. | High |
| **Impact Magnitude** | The impact is not only experienced by 212 PAPs, but by their households, thus having a multiplier effect. The change will affect the prevailing baseline conditions for these households and persist over many years. | Large |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Major*: | ***Major*** |

| | Description | Rating |
|---|---|---|
| **Mitigation Measures** | Nova Solar and the Project Sponsors will undertake to reduce the significance of this impact with the following mitigations:<br><br>1. Nova Solar shall develop and implement a life-of-Project *Community Development Plan (CDP)* that shall:<br>• Focus in the first instance on livelihoods restoration for PAPs to address the livelihood impact caused by economic displacement, and then once this is in process, look to implement other livelihoods enhancement and community development initiatives for the benefit of the wider community in the AoI.<br>• be implemented in partnership with NGOs selected on the basis of their experience and capacity to deliver the projects;<br>• be targeted at PAPs initially, and then involve the wider community in the AoI, to seek to share Project benefits with wider communities in the area; and<br>• be underpinned by an understanding of the Project context and community needs/challenges, through validation with stakeholders.<br><br>2. Nova Solar shall roll out a *Grievance Mechanism* in the AoI to ensure that any issues relating to economic displacement and the associated government-led compensation process are brought to the attention of management and resolved. The existence and process of the *Grievance Mechanism* shall be communicated to the Project-affected communities through community engagement meetings and other means of communication in line with the *Stakeholder Engagement Plan* (see Annex B). It will be stressed that grievance received will be handled confidentially, without risk of retribution to the aggrieved party and special efforts will be made to make it accessible to women.<br><br>3. To support the implementation of the *CDP* and *Grievance Mechanism,* Nova Solar shall conduct regular stakeholder engagement and consultation activities in line with the *Nova Solar Stakeholder Engagement Plan*. Stakeholder engagement will keep communication channels open between company and community to enable dialogue that is constructive and inclusive in terms of age, gender and social status.<br><br>4. It is acknowledged that the three aforementioned mitigations will need dedicated support. In preparation for the ramp-up in Project-related activities prior to construction, Nova Solar will expand its Environmental, Social and Governance team, responsible for implementation of the three aforementioned mitigations. | |
| **Residual Significance** | Taking into consideration the above mitigations, the residual significance *prior to the full implementation of the CDP livelihoods enhancement programmes and enrolment of PAPs*, is assessed to be *Moderate*: | ***Moderate*** (Medium vulnerability x Medium magnitude) |
| | Once the CDP livelihoods enhancement programmes are implemented in full and operates effectively to deliver the intended outcomes, this impact has the potential to become *Minor*:<br><br>The basis for this is that the CDP is the key mitigation measure for this impact and it will take time to be fully developed, with the implementation of livelihoods enhancement programmes. Until such time, there is a possibility that PAPs' livelihoods will not be fully restored. | ***Minor*** (Medium vulnerability x Low magnitude) |

### *Table 4.2 Potential for Dispute Over Land Take and Compensation*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Potential scenarios for dispute over land due to:<br>• Project land-take and the eventual clearance of PAPs from the Project footprint;<br>• PAPs purchase or secure access to replacement land from other people in the AoI, with potential to further reduce the plot sizes of the latter group;<br>• Inability of some PAPs to purchase alternative land as a result of spending compensation on other priorities;<br>• Vulnerable PAPs (especially those without other farm plots) unable to secure replacement land due to insufficient means;<br>• Competition for area of land leading to potential for conflict between livestock herdsmen and farmers. | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning. | |
| **Discussion** | The Project area has limited availability of agricultural land that is not already being used, or under ownership. It is understood that some large land plots have been allocated towards light industrial development in the area, including the neighbouring Pan Africa Solar development. Land scarcity, especially when people are highly dependent on it for their livelihood, can generate conflict.<br><br>Based on in-field investigations, it is understood some PAPs in receipt of compensation have not purchased or secured land to replace the land they will lose, although it has not been possible to quantify the exact proportion. It is also understood that some have secured replacement land that is smaller than the original.<br><br>Where they have done so, in many circumstances the land will have been purchased from individuals or households in the Project AoI, often relatives. This has some potential to indirectly impact the households in the wider Project AoI through causing fragmentation of farm plots.<br><br>Further, it is understood most households in the AoI have multiple plots of land across which they rotate farming and livestock activities. This provides a degree of land optionality and resilience. Those with greatest potential to be impacted are vulnerable PAPs with few or no other plots of land on which to graze livestock or cultivate crops. Should these vulnerable PAPs fail to secure replacement land and as a consequence spend their compensation cash to subsist, there is a risk in the medium term, of conflict due to: a) loss of land access, b) food insecurity due to loss of livelihood, c) lack of alternative livelihood options, and d) inability to support the household due to having spent the cash compensation.<br><br>This is most likely to disproportionately impact vulnerable households with no or few other plots. | |
| **Receptor Sensitivity / Vulnerability** | *In particular, vulnerable PAPs unable to secure replacement land, or replacement land of adequate size due to factors such as insufficient resources, or allocation of compensation to other priorities; and that do not already own or have access to plots of land elsewhere to be able to support their livelihood.*<br><br>The 212 PAPs whose livelihood is based on land, and dependent on, grazing livestock, farming crops and/or harvesting products derived from economic trees on land that falls within the Project boundaries. | High |

| | Description | Rating |
|---|---|---|
| **Impact Magnitude** | Although the risk of conflict over land and compensation would likely affect a small number of PAPs and households in the Project AoI, the degree of that impact on those individuals could be significant. | Large |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Major*: | ***Major*** |
| **Mitigation Measures** | In order to reduce the overall probability and impact significance of land-based conflict the following mitigation measures are proposed:<br><br>• The mitigation measures to address this impact are the same as those for the Economic Displacement impact (see *Table 4.1)* as the two impacts are directly related.<br>• Given a degree of uncertainty about the proportion of PAPs who have secured replacement land, own other plots of land or have invested in a different livelihood option, particular emphasis will be placed on having an effective *Stakeholder Engagement Plan* to encourage proactive engagement and open dialogue with the PAPs and implementing a *Community Grievance Mechanism* as soon as possible to frontload the addressing of any grievances. | |
| **Residual Significance** | Taking into consideration the above mitigations, the residual significance *prior to the full implementation of the CDP livelihoods enhancement programmes and enrolment of PAPs*, is assessed to be *Moderate*: | ***Moderate*** (Medium vulnerability x Medium magnitude*)* |
| | Once the CDP livelihoods enhancement programmes are implemented in full, this impact has the potential to become *Minor*:<br><br>The basis for this is that the CDP is the key mitigation measure for this impact and it will take time to be fully developed, with the implementation of livelihoods enhancement programmes. Until such time, there is a possibility that PAPs' livelihoods will not be fully restored. | ***Minor*** (Medium vulnerability x Low magnitude) |

## *Table 4.3 Ecosystem Services*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Loss of access to ecosystem services | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning. | |
| **Discussion** | The ecosystem services known to be present on the Project site are crops, grazing land, economic trees (including firewood) and a laterite mine(1). In addition, the main ESIA identified hunters as a stakeholder group and thus there is potential for the loss of hunting grounds. | |

(1) The main ESIA states that "*As at the time of field survey, laterite was being mined from the project site for block-making.*" No compensation record for the laterite quarry has been identified.

| | Description | Rating |
|---|---|---|
| **Receptor Sensitivity / Vulnerability** | These ecosystem services represent a source of livelihood and income for Project-affected persons whose livelihoods are predominantly land-based, meaning there is potential for a high degree of dependence on them, with limited alternatives due to land scarcity.<br><br>In the case of laterite mining, this is an ecosystem service with potential for replacement and securing of an alternative source of laterite elsewhere. It is anticipated that those involved in this livelihood activity may retain an ability to at least in part adapt to change brought by the Project | High |
| **Impact Magnitude** | The impact is not only experienced by 212 PAPs, but by their households, thus having a multiplier effect. The change will affect the prevailing baseline conditions for these households and persist over many years. | Large |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Major*: | *Major* |
| **Mitigation Measures** | The mitigations for the impact on ecosystem services within the Project footprint will mirror those for economic displacement listed in Table 4.1. | |
| **Residual Significance** | Taking into consideration the above mitigations, the residual significance *prior to the full implementation of the CDP livelihoods enhancement programmes and enrolment of PAPs*, is assessed to be *Moderate*: | ***Moderate*** (Medium vulnerability x Medium magnitude) |
| | Once the CDP livelihoods enhancement programmes are implemented in full, this impact has the potential to become *Minor*:<br><br>The basis for this is that the CDP is the key mitigation measure for this impact and it will take time to be fully developed, with the implementation of livelihoods enhancement programmes. Until such time, there is a possibility that PAPs' livelihoods will not be fully restored. | ***Minor*** (Medium vulnerability x Low magnitude) |

### *Table 4.4 External Workforce Impacts Community Health and Wellbeing*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Presence of external workforce during construction with potential for external impacts on community health and wellbeing | |
| **Phase** | Pre-engineering (site preparation), construction, and decommissioning. | |

| | Description | Rating |
|---|---|---|
| **Discussion** | The main ESIA estimates that during the construction phase there may be up to 250 workers (peak) on site, working for the Engineering, Procurement and Construction (EPC) Contractor selected by Nova Solar. Where possible, workers will be hired locally. Due to the technical nature of some of the work to be undertaken, there will be a requirement to hire skilled and semi-skilled workers. If those skills cannot be found locally, there will be a requirement to hire people from elsewhere in Nigeria and potentially from overseas.<br><br>In relative terms, given the high population density of Nigeria, the influx of contractors/workers numbering in their hundreds for the construction phase, forecast to last 12 months, is not likely to cause a significant long-term change. There is however potential for short-term impact due to cultural, epidemiological and behavioural differences between the workforce and the local population. These differences, if unmitigated, may be related to the external workforce engaging in:<br>• anti-social behaviour contrary to local norms, causing cultural offence and conflict;<br>• engaging commercial sex workers and in unprotected sex, with potential for increased incidence of sexually transmitted infections including Human Immunodeficiency Virus (HIV); and<br>• contribution to the transmission of communicable diseases to the community in the AoI or contributing to increased disease transmission within the AoI, such as malaria and cholera. This could also be caused by in-migrant workers living in more precarious and less hygienic conditions than the established population. | |
| **Receptor Sensitivity / Vulnerability** | Community members coming into contact with construction workforce. | Medium |
| **Impact Magnitude** | The impact has the potential to impact a substantial number of people, but the duration is medium-term and only occasional in frequency. | Medium |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Moderate*: | ***Moderate*** |

| | Description | Rating |
|---|---|---|
| **Mitigation Measures** | In order to reduce the overall impact significance the following mitigation measures are proposed:<br>• *EPC Contractor selection process:* In selecting its EPC Contractor, Nova Solar will apply selection criteria, and review policies and procedures, related to the EPC Contractor's past performance relating to matters of worker behaviour, its internal policies and procedures regarding worker selection, training, conduct and supervision. Nova Solar will ensure the EPC Contractor's performance and approach in this regard aligns with Nova Solar's own *Labour Policy* and *Labour Management Plan.*<br>• *EPC Contractor Management* System: The EPC Contractor shall have robust internal processes and procedures, aligned with the Nova Solar ESMS, which govern worker behaviour, including a *Labour Policy & Labour Management Plan* or similar, provide education and awareness about the prevention of HIV and other Sexually Transmitted Infections (STIs) and a Drug and Alcohol Policy. Alternatively, the EPC Contractor may adopt the applicable Nova Solar Policy and Management Plan in this regard and undertake to develop these further, once more information about the construction phase becomes available.<br>• *Labour Policy & Management Plan:* The *Labour Policy and Management Plan* shall outline the entire workforce management process from selection and training to expected behaviours, supervision and disciplinary action.<br>• *Supervision:* Nova Solar shall ensure it has sufficient visible presence on site to supervise the EPC Contractor and its workforce, enabling it to influence the behaviour of its personnel.<br>• The *Community Grievance Mechanism* will be put in place and communicated widely to enable community members to report any complaints or concerns regarding worker conduct in the local community. The CLO will be the primary liaison between the Project and the community and will therefore play a key role, reporting concerns raised by the community around contractors directly to Nova Solar.<br>• *Camp Management Plan:* The EPC Contractor shall purpose-build a camp that is self-contained to accommodate its external workforce. This will allow management of the health and hygiene standards in worker accommodation and catering, thus preventing communicable disease transmission. Given the predominantly Muslim population in the AoI and low prevalence of alcohol consumption, Nova Solar shall evaluate whether it is appropriate to require the EPC Contractor to implement a 'dry camp' during construction. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Minor*: | ***Minor*** (Medium vulnerability x Small Magnitude) |

## *Table 4.5 Community Security and Human Rights*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Security personnel involved in human rights violations while carrying out duties for or on behalf of Nova Solar or EPC Contractor. | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning. | |

| | Description | Rating |
|---|---|---|
| **Discussion** | The Project site will be guarded by security personnel throughout its lifecycle. Security personnel hold a position of power that, if not carefully governed through clear instruction and training, can pose a risk to the human rights of those they interact with, even if it is someone found to be breaching site security. Further, the disproportionate use of force relative to the threat constitutes a misconduct under international humanitarian law. A human rights abuse committed by security personnel working for or on behalf of Nova Solar or the EPC Contractor can entail loss of social licence to operate and judicial action. | |
| **Receptor Sensitivity / Vulnerability** | Community member that comes into contact with or is confronted by site security personnel, such as an intruder. | Medium |
| **Impact Magnitude** | Impact is local, rare and affects a small number of households and is of short duration. | Low |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Minor*: | ***Minor*** |
| **Mitigation Measures** | In order to reduce the overall impact significance the following mitigation measures are proposed:<br>• *Integrated security management process:* Nova Solar and its EPC Contractor shall manage its security providers and personnel in keeping with international guidelines[1] for security personnel and the IFC PS4. This will include:<br>o Conducting a risk assessment to define security needs;<br>o Taking reasonable steps to check the background of security personnel and ensure they have not previously been involved in human rights abuses;<br>o Ensuring that security personnel have been trained and are given instructions in keeping with the principle of proportionality, relating to their conduct, use of force and/or firearms, de-escalation, and seeking medical assistance for injured persons;<br>o Reporting and investigating incidents involving security personnel and potential human rights abuses.<br>• The *Community Grievance Mechanism* will be put in place and communicated to enable community members to report any complaints or concerns regarding the conduct of security personnel. The CLO will also play a key role, reporting concerns raised by the community around contractors directly to Nova Solar. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Minor*:<br><br>*The residual significance remains unchanged, as for the Impact Significance prior to the application of mitigation. This is because, given the prevailing security context in Nigeria, the possibility of a security-related incident during the Project lifetime cannot be ruled out.* | ***Minor*** (Medium vulnerability x Small magnitude) |

([1]) United Nation's (UN) Code of Conduct for Law Enforcement Officials, and UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials.

## *Table 4.6 Labour and Working Conditions*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Poor working conditions and terms of employment for direct and contracted workers, impact on their fundamental rights (1). | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning. | |
| **Discussion** | When workers are not hired directly, such as those hired by the EPC Contractor for construction, Nova Solar does not have direct control of the hiring process or the terms of their employment.<br><br>It is therefore important to ensure that the EPC Contractor understands its responsibility with regards non-discrimination of workers, membership of trade unions, provision of a safe and healthy accommodation and workplace and terms of employment that comply with the Nigeria Labour Act. | |
| **Receptor Sensitivity / Vulnerability** | The workforce (both local and in-migrant) retains an ability to counteract the impact of poor labour and working conditions, such as grievance reporting and also through collective action and union membership that is enshrined in the Nigerian Trade Union (Amendment) Act, 2005.<br><br>The reality of economic constraints and lack of alternative employment or income-earning opportunities in the area of influence however may deter workers, especially the local ones, from doing taking action to address the impact of poor labour/work conditions. | Medium |
| **Impact Magnitude** | The impact of poor labour and working conditions is limited in scale, affecting a small number of receptors and being short in duration (predominantly construction). Labour disputes have the potential to cause delays to the Project. Disputes between the local workforce and the contractor are a potential source of risk as are the occurrence of national strikes during the Project. | Medium |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Minor*: | ***Moderate*** |

(1) As listed in the International Labour Organisation and United Nations Conventions listed in footnote 2 of the IFC PS 2.

| | Description | Rating |
|---|---|---|
| **Mitigation Measures** | In order to reduce the overall impact significance the following mitigation measures are proposed:<br>• *EPC Contractor selection process:* When selecting its EPC Contractor, Nova Solar will apply criteria related to matters of worker rights and working conditions, as well as internal processes to promote non-discrimination and equal opportunity, as well as fair payment.<br>• *Camp Management Plan:* During construction, EPC workforce originating from outside of the AoI will be housed in a self-contained construction camp. The EPC Contractor shall provide worker accommodation of a suitable standard, in fulfilment of the IFC PS 2 basic services requirements and the IFC and EBRD Guidance Note on *Workers' Accommodation: Process and standards*. Standards for worker housing shall be outlined in the *Camp Management* Plan to include, but not be limited, to:<br>o Adequate site selection;<br>o adequate space/dimensions;<br>o adequate ventilation;<br>o adequate sanitary facilities and supply of safe drinking water;<br>o adequate sewage and waste disposal system;<br>o adequate lighting;<br>o fire-fighting equipment;<br>o adequate catering facilities serving wholesome food;<br>o lockable storage;<br>o rest and recreation rooms.<br>• *Supervision and Engagement of EPC Contractor:* Nova Solar shall ensure that from time to time it reviews EPC Contractor performance on site in relation to its workforce labour and housing conditions, as well as worker grievance process. Should any issues be encountered, these will be discussed with the EPC Contractor and a plan put in place to resolve them and ensure it is followed through to completion.<br>• *Grievance Mechanism:* The workforce will have access to a *Worker Grievance* Mechanism provided by Nova Solar/the EPC Contractor that is confidential and will not prejudice the individual's rights and employment status should he/she raise a grievance related to labour and working conditions. For workers from the local community the CLO is also likely to play an important role in this regard. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Minor*: | ***Minor*** (Medium vulnerability x Small magnitude) |

## *Table 4.7 Cultural Heritage*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Disturbance, damage or destruction of a tangible or intangible site of cultural importance. | |
| **Phase** | Pre-engineering (site preparation) and construction. | |

| | Description | Rating |
|---|---|---|
| **Discussion** | The ESIA baseline did not identify sites of tangible or intangible cultural significance (e.g. shrines, secret societies, ceremonial or burial sites) or artefacts (e.g. carvings, ornaments) in the Project footprint.<br><br>As the area that is now Katsina State has been inhabited for hundreds of years, the possibility of their existence and of chance finds of cultural heritage, particularly during ground clearance for early-works and construction, cannot fully be eliminated.<br><br>Although hypothetical at this stage, if this does arise, it has the potential to impact on the Project timeline while further investigations are carried out, or, trigger a community grievance. | |
| **Receptor Sensitivity / Vulnerability** | Depending on the type of cultural heritage, it has the potential to impact those who apportion a value to it based on religious, sacred, ritual, ceremonial or other significance. | Medium |
| **Impact Magnitude** | The potential impact is considered to be local, rare, affecting a small proportion of receptors. | Low |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Minor*: | *Minor* |
| **Mitigation Measures** | In order to reduce the overall impact significance the following mitigation measures are proposed:<br>• The EPC contractor shall develop and have in place a *Chance Finds Procedure* that aligns with the *IFC PS 8: Cultural Heritage* (1) and with the Nigerian National Commission for Museums and Monuments Act (1990) with regards to reporting the chance find of an artefact or cultural heritage.<br>• Nova Solar shall implement its *Community Grievance Mechanism* to ensure that any impact on cultural heritage, or related feedback, is communicated and addressed in a timely manner. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Negligible*: | ***Negligible*** (Medium vulnerability x Negligible magnitude) |

## *Table 4.8 Injury from an Increase in Project Traffic and the Potential for Accidents on a Public Road*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Road-traffic accident involving Project vehicle and community member(s) | |
| **Phase** | Pre-engineering (site preparation), construction, operation and decommissioning | |

(1) http://www.ifc.org/wps/wcm/connect/39e39000498007fda1fff3336b93d75f/Updated_GN8-2012.pdf?MOD=AJPERES

| | Description | Rating |
|---|---|---|
| **Discussion** | The Project will require the movement of both light and heavy duty (with equipment) vehicles to, from and around the Project site. The movement of heavy vehicles will mainly be limited to periods of construction when equipment is being delivered to site, or when there are peaks in construction activity. The manoeuvring of heavy vehicles, especially reversing them, can present a safety hazard to bystanders due to blind spots.<br><br>The construction phase will last for approximately 12 months. Peak heavy vehicle movements during the construction phase will be associated with the delivery of the solar panels. During the construction phase, approximately 400,000 solar panels will be transported to the Project site. The solar panels and other equipment will arrive in Lagos and/or Warri in approximately 650 shipping containers, each of which will be transported via road to the Project site near Kankiya, approximately 1,200 km away (by road). The majority of the route will be comprised of dual carriageway highways, which are characterised by higher traffic flows and larger vehicles.<br><br>At this stage, the EPC contractor and exact travel routes have yet to be confirmed. It is assumed that the site will be able to process between six and ten containers per day at peak operation, equating to 6-10 truck movements to the site per day (and an equivalent number of return trips by trucks). Assuming deliveries 5 days per week, this would result in deliveries over a 13 to 22 week period.<br><br>It is assumed that public roads used by project traffic would also be available for public use—including drivers, pedestrians, cyclists, and owners of livestock—during Project activities.<br><br>For construction projects, vehicles and driving is a high-risk activity. Frequently, those impacted by road traffic accidents are non-project road users, especially pedestrians. Involvement of a project driver (including drivers working for or on behalf of Nova Solar or its EPC contractor) in a road traffic accident that involves a member of the public can impact the Project negatively by endangering the driver's life due to local unrest over the accident, as well as through reputational damage and loss of social licence to operate. | |

| | Description | Rating |
|---|---|---|
| **Receptor Sensitivity / Vulnerability** | Road users, especially pedestrians.<br><br>Traffic collision data indicates that Nigeria has a relatively high accident rate, with a road traffic fatality rate of 20.5 deaths per 100,000 population annually (1).<br><br>The majority of the proposed route will utilise dual carriageways which are characterised by higher traffic volumes and larger vehicles. The site is located off the A9 Kankiya – Katsina highway, the main road connecting Katsina State to Kano State. The A9 highway passes through a number of communities, with several mosques, schools and hospitals, including Kankiya General Hospital located adjacent, or in close proximity, to the road.<br><br>It is assumed, given the area in proximity to the Project site is relatively underdeveloped, that there has been limited exposure to the type of heavy vehicles that will be used by the Project during construction. | Medium |
| **Impact Magnitude** | Existing traffic volumes and modes (i.e., private automobile, moped, etc.) in the immediate Project area are not known; however, overall traffic volumes are assumed to be low.<br><br>Project vehicle movements are likely to be approximately 12 to 20 heavy goods vehicle (HGV) movements per day (including deliveries and return trips) during peak construction. | Medium |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Moderate*: | ***Moderate*** |

(1) WHO (2015), Global Status Report on Road Safety 2015, http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/, accessed 31/01/17

| | Description | Rating |
|---|---|---|
| **Mitigation Measures** | In order to reduce the overall impact significance, the following mitigation measures are proposed:<br>• *Traffic Management Plan:* Nova Solar and EPC Contractor shall have in place a Traffic Management Plan that minimises the risk of road traffic accidents to as low as reasonably practicable. The Traffic Management Plan will include the following elements:<br>o Driver licencing and training (e.g. defensive driving) requirements;<br>o Maximum speed limits that correspond to the type of road being used, e.g. reduce speed to 30km/h when passing through populated areas;<br>o Use of a vehicle monitoring or tracking system (such as GPS monitoring) to influence driver behaviour;<br>o Vehicle maintenance and pre-use inspection to include brake checks;<br>o Fatigue management controls to include breaks every two hours, adequate sleeping arrangements, and limits on maximum driving times per day;<br>o Use of spotters when reversing heavy vehicles;<br>o No driving at night, except for when approved by the Project Director in exceptional circumstances only;<br>o Determine whether for security purposes convoys should be used for HGV movements (delivery and return) and<br>o Traffic management measures when required during periods of Project higher traffic volumes such as project personnel with the authority to stop project vehicles to ensure safe crossings by pedestrians and livestock.<br>• *Drug and Alcohol Policy:* The EPC Contractor shall enforce a Drug and Alcohol Policy that aligns with Nigerian law, to include alcohol breathalyser tests and disciplinary action for drivers found under the influence of alcohol or drugs during working hours.<br>• The *Community Grievance Mechanism* will be put in place and communicated to enable community members to report any complaints or concerns regarding the behaviour of Project drivers.<br>• *Stakeholder engagement* will be undertaken to ensure that local communities near the Project site are made aware of project construction activities, potential impacts associated with increased construction traffic movements and the identified mitigation measures that will be implemented. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Minor*: | *Minor (Medium vulnerability x Small magnitude)* |

### *Table 4.9 Traffic-Induced Noise and Dust*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Noise and dust generated by Project-related vehicles causes nuisance to community members | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning | |
| **Discussion** | Increased vehicle movements associated with Project activities have the potential to generate increased noise and dust emissions which may impact sensitive receptors near the road. | |

| | Description | Rating |
|---|---|---|
| **Receptor Sensitivity / Vulnerability** | The majority of the proposed route will utilise dual carriageways highways, which are already characterised by higher traffic volumes and larger vehicles. The site is located off the A9 Kankiya – Katsina highway, the main road connecting Katsina State to Kano State. The A9 highway passes through a number of communities, with several mosques and a hospital (Kankiya General Hospital) located adjacent, or in close proximity, to the road. | Low |
| **Impact Magnitude** | Existing traffic volumes and modes (i.e., private automobile, moped, etc.) in the immediate Project area are not known. Overall traffic volumes in the Project area are assumed to be low.<br><br>Project vehicle movements during construction are likely to be approximately 12 to 20 heavy goods vehicle (HGV) movements per day (including deliveries and return trips) during peak construction. | Small |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Negligible*: | ***Negligible*** |
| **Mitigation Measures** | Taking into consideration the impact significance no specific mitigation measures have been identified.<br><br>If an alternative route is selected which utilises unpaved roads then additional measures may be required with respect to dust minimisation. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Negligible*: | ***Negligible*** |

## 4.3 *TRAFFIC IMPACT ASSESSMENT*

The original ESIA identified the potential for accidents and injury caused by traffic impacts during the Project.

The following impacts have been identified with respect to traffic:

1. Potential for accidents and injury (see Table 4.8);
2. Potential impacts from traffic induced noise and dust generation (see Table 4.9).
3. Potential impacts to existing road infrastructure (Table 4.10); and
4. Potential impacts to existing road users (Table 4.11).

Note that the traffic impact assessment presented below has been undertaken in line with the methodology presented in Section 2.

### *Table 4.10 Damage to Existing Road Infrastructure*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Damage by Project-related vehicles causes nuisance to road infrastructure | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning | |
| **Discussion** | The Project will require the movement of both light (for personnel) and heavy duty (with equipment) vehicles to, from and around the Project site. The movement of heavy vehicles will mainly be limited to periods of construction when equipment is being delivered to site, or when there are peaks in construction activity. The use of a large number of heavy vehicles can increase wear and tear on existing road infrastructure.<br><br>During the construction phase vehicle movements will be associated with construction activities including deliveries of equipment, personnel transport, and transfer of waste. The construction phase will last for approximately 12 months. It is assumed at peak construction activity there will be 6 to 10 heavy truck movements to the site per day delivering solar panels (and an equivalent number of return trips by trucks). Assuming deliveries 5 days per week, this would result in deliveries over a 13 to 22 week period.<br><br>The majority of the route will be comprised of dual carriageway highways, which are characterised by higher traffic flows and larger vehicles. | |
| **Receptor Sensitivity / Vulnerability** | The route will utilise public paved roads, with the exception of the site access which will be constructed and maintained by the Project.<br><br>Existing traffic volumes and modes (i.e., private automobile, moped, etc.) in the immediate Project area are not known. Overall traffic volumes in the Project area are assumed to be low. | Low |
| **Impact Magnitude** | Project vehicle movements are likely to be in the region of 12 to 20 HGV movements per day during peak construction. | Low |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Negligible*: | *Negligible* |
| **Mitigation Measures** | No additional mitigation measures are required. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Negligible*: | *Negligible* |

### *Table 4.11 Increased Traffic and Congestions Affecting Existing Road Users*

| | Description | Rating |
|---|---|---|
| **Impact Scenario** | Traffic generated by Project-related vehicles causes nuisance to other road users | |
| **Phase** | Pre-engineering (site preparation), construction, operation, and decommissioning | |
| **Discussion** | The Project will require the movement of both light (for personnel) and heavy duty (with equipment) vehicles to, from and around the Project site. The movement of heavy vehicles will mainly be limited to periods of construction when equipment is being delivered to site, or when there are peaks in construction activity. Increased vehicle usage can result in increased traffic and congestion affecting road users.<br><br>During the construction phase vehicle movements will be associated with construction activities including deliveries of equipment, personnel transport, and transfer of waste. The construction phase will last for approximately 12 months. The majority of the route will be comprised of dual carriageway highways, which are characterised by higher traffic flows and larger vehicles. Vehicles will travel at slower speeds when accessing the site. If HGVs arrive in convoy, the potential exists for a short duration of increased congestion at the site access road.<br><br>Project vehicle movements will be limited during the operational phase, when vehicle activity are will be associated with maintenance activities and workforce movements. Maintenance activities will occur infrequently throughout the year.<br><br>It is assumed that public roads used by project traffic would be available for public use—including drivers, pedestrians, cyclists, and owners of livestock—during Project activities. | |
| **Receptor Sensitivity / Vulnerability** | Existing traffic volumes and modes (i.e., private automobile, moped, etc.) in the immediate Project area are not known. Overall traffic volumes in the Project area are assumed to be low.<br><br>Given that the area is relatively undeveloped, it is assumed that there has been limited exposure to the type of heavy vehicles that will be used by the Project during construction. It is therefore unlikely that communities will fully comprehend the disruptive nature of this traffic. | Medium |
| **Impact Magnitude** | Project vehicle movements are likely to be in the region of 12 to 20 HGV movements per day at peak. Along the majority of the proposed route where dual carriageways are utilised, 12 to 20 HGV movements are unlikely to cause a significant impact. If HGVs arrive at the site in convoy, there may be a short duration of increased traffic as the vehicles enter the site access road. | Small |
| **Impact Significance** | Taking into consideration the above receptor sensitivity and impact magnitude the overall impact significance is assessed to be *Minor*: | ***Minor*** |
| **Mitigation Measures** | In line with good practice measures it is recommended that a Traffic Management Plan is developed and implemented in line with the mitigation measures identified in Table 4.8. | |
| **Residual Significance** | Taking into consideration the above mitigation the residual significance is assessed to be *Negligible to Minor*: | ***Negligible - Minor*** |

## 4.4 *CUMULATIVE IMPACT ASSESSMENT*

### 4.4.1 *Introduction*

As outlined in Figure 2.4 a five stage process has been undertaken in order to assess cumulative impacts associated with the Project. Note that the cumulative impact assessment presented below has been undertaken in line with the methodology presented in Section 2.

### 4.4.2 *Identifying Receptors and Resources*

The first stage of the CIA process is to systematically identify which receptors and resources could be cumulatively affected by the Project together with other planned and proposed projects. Table 4.12 identifies the potential resources and receptors that may be impacted by the Project and whether the potential for cumulative impacts exists (whether they are scoped in or out of for further assessment).

***Table 4.12 Resources and Receptor***

| Assessment Topic | Resource / Receptor | Description | Scoped in / out |
|---|---|---|---|
| Air Quality | Local communities, fauna | The Project will generate dust, other projects in the vicinity may increase levels of dust generation on the same receptors. | Scoped in |
| Noise | Local communities and fauna | Noise generation during construction phase only. The nearest sensitive human receptors will be located close to the northern Project site boundary in Fanga and Buddai. Potential for cumulative noise impacts on fauna. | Scoped in (construction phase only) |
| Water Quality | Local communities, fauna and flora | No surface water bodies present. Local communities utilise shallow groundwater. Potential for multiple projects to utilise same groundwater sources. | Scoped in (impacts to water users from increased groundwater use) |
| Terrestrial Ecology | Terrestrial fauna and flora | Loss of habitat / displacement due to Project footprint. Potential for fauna to experience displacement from multiple projects. | Scoped in |
| Soil Quality | Local communities (agriculture / land use), fauna and flora | Impacts on soil quality will be localised to the project footprint | Scoped out |
| Socio-Economics / Human Health | Local communities | Same receptors may be impacted by activities including land acquisition by different projects | Scoped in |

Note:
Impacts to water availability from increased Project usage is considered with respect to other water users

### 4.4.3 *Define Geographic and Temporal Boundaries*

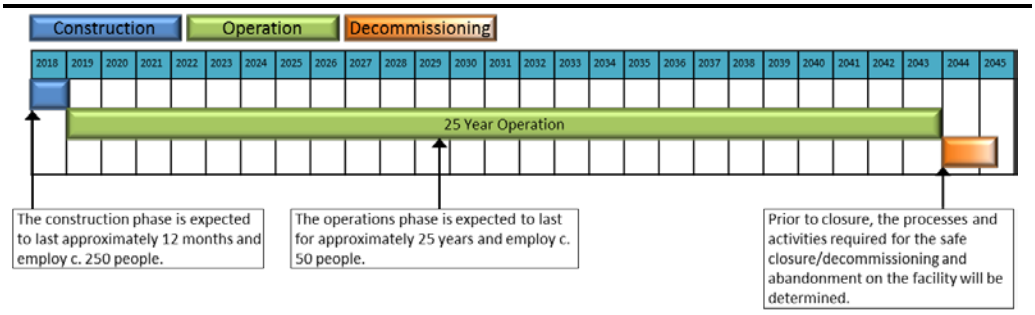
To set the geographical boundaries for the assessment, the geographic areas occupied by Project resources and receptors have been considered. The geographical area of influence for a particular resource/receptor varies depending on the nature of the change that may arise from an activity and the type of effect being considered.

***Table 4.13 Geographic Boundaries***

| Resource / Receptor | Topic | Geographic Boundary |
|---|---|---|
| Local communities | Air Quality | Potential for dust nuisance is unlikely at locations beyond 200m from the source. |
| | Water | Extent of deep groundwater aquifer |
| | Noise | Potential noise impacts localised to construction activities (500m) |
| | Socio-economics / human health | Kankiya District and Rimaye District |
| Fauna | Air quality | Potential for dust nuisance is unlikely at locations beyond 200m from the source. |
| | Terrestrial ecology / Noise | Potential noise impacts localised to construction activities (500m) |

Temporal boundaries include the complete lifecycle of the Project. The temporal boundary is used to compare the timing of construction and operation of the other projects, activities, and identify whether these are likely to coincide in time with effects from the Project. Figure 4.1 identifies the temporal boundaries of the Project.

***Figure 4.1 Temporal Boundary of the Project***




### 4.4.4 *Identify and Screen Other Projects, Activities and Natural Events*

Developments, activities and natural events that could have likely significant effects have been identified. Identifies whether these may overlap in time or space with those of the Project (whether they are scoped in or out of for further assessment).

## *Table 4.14 Other Project, Activities and Natural Events*

| Project, Activity or Natural Event | Description | Scoped in / out |
|---|---|---|
| Pan Africa Solar | Pan Africa Solar are developing a solar farm adjacent to the Azura Nova Solar development. The project will be constructed on a 120 hectare of land (1). The construction phase is anticipated to last approximately 12 months (2). Construction and operation of the facility is likely to overlap with the development of Nova Solar. | Scoped in – temporal and geographic overall |
| Kankiya Metal Works | In 1978 an area was gazetted by the government for the development of a steel mill. The factory was established in 1982 however has not operated at full capacity. In 2006 the Katsina State Government announced that the Kankiya metal works would be handed over to AMPRI Global Limited to operate as a public private partnership in order to stimulate the local economy (3, 4). In due course it is anticipated that the facility will directly employ 400 people. | Scoped out – factory already exists – considered in baseline |
| Water Supply Projects | Reportedly, the Katsina State Government has long standing plans to use the Zobe Dam to fill a reservoir at Kafin Soli to serve the Kankiya region including the projected affected area however no details were available. In 2003 construction of a water treatment plant near the reservoir was abandoned. | Scoped out – no definitive plans |
| Degazetting of areas of Forest Reserve | There is potential for the State Government to degazette parts of a Forest Reserve for light industrial use. | Scoped out – no definitive plans |
| Increased temperatures and decreased precipitation | Temperatures in Africa are projected to rise faster than the global average increase during the 21st century. According to the IPCC Fifth Assessment Report (AR5)(5) Temperature projections over West Africa for the end of the 21st century range between 3°C and 6°C above the late 20th century baseline under a range of scenarios. The Sahel and tropical West Africa are identified as hotspots with unprecedented climatic change projected to occur earliest (late 2030s to early 2040s) in these regions (6). Projections of changes to precipitation in the region demonstrate variability and there is currently low to medium confidence in the robustness of these projections. | Scoped in – operations phase only. |

(1) Pan-Africa (Katsina) Solar Power Project, http://ec.europa.eu/europeaid/blending/pan-africa-katsina-solar-power-project_en accessed 13/02/17

(2) Pan Africa Solar Limited (2015) Environmental Impact Assessment (EIA) of Proposed 80 MW Photovoltaic Power Plant Project and Associated Transmission in Kankiya, Katsina State, Nigeria https://www.miga.org/Documents/SPGDisclosures/ESIA%20-%20Pan%20Africa%20Solar%20-%20Sept%202015%20with%20Appendices.pdf Accessed 13/02/17.

(3) Katsina Post, Promise Fulfilled! Katsina Gov't revives Kankiya metal works, handed it over to private firm, http://katsinapost.com/2016/08/07/promise-fulfilled-katsina-govt-revives-Kankiya-metal-works-handed-it-over-to-private-firm/ last accessed 21/02/17

(4) African Spotlight, Katsina State revives metal company to boost economy http://africanspotlight.com/2016/08/06/katsina-state-revives-metal-company-boost-economy/ last access 21/02/17

(5) Intergovernmental Panel on Climate Change (IPCC) (2014), Fifth Assessment Report: Climate Change 2014: Impacts, Adaptation, and Vulnerability, Chapter 22: Africa, http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap22_FINAL.pdf accessed 15/02/17.

(6) Mora, C.F., A.G., Longman, R.J., Dacks, R.S., Walton, M.M., Tong, E.J., Sanchez, J.J., Kaiser, L.R., Stender, Y.O., Anderson, J.M., Ambrosino, C.M., Fernandez-Silva, I., Giuseffi, L.M., and Giambelluca, T.W., (2013), The projected timing of climate departure from recent variability, *Nature*, 502, 183-187.

| Project, Activity or Natural Event | Description | Scoped in / out |
|---|---|---|
| | The IPCC AR5 reports that by the end of the 21st century:<br>• Climate change will amplify existing stress on water availability in Africa (high confidence); and Climate change will interact with non-climate drivers and stressors to exacerbate vulnerability of agricultural systems, particularly in semi-arid areas (high confidence). | |

### 4.4.5 *Define Level of Detailed Assessment*

Cumulative effects are assessed to different levels of detail depending on such matters as the value of resources and receptors that are under cumulative pressure and the level of detail available for the other projects identified. Professional judgement has been applied where either data are unavailable and/or potential cumulative effects are not considered to be significant.

### 4.4.6 *Identification of Potential Impact Pathways by Identifying Cause and Effect Relationships between Planned and Proposed Projects*

The individual technical impact assessments in the ESIA and ESIA Addendum include detailed assessment, mitigation and summaries of any residual effects. If a receptor is not directly or indirectly affected by the Project, no cumulative effects are anticipated. Table 4.15 provides a summary of potential impacts associated with the Project. Where no potential impact has been identified no cumulative impacts have been assessed.

***Table 4.15 Summary of Nova Solar Residual Impacts***

| Assessment Topic | Residual Impact Significance |
|---|---|
| Air Quality | *Negligible* |
| Noise | Local Communities: *Negligible*<br>Fauna: *Minor* |
| Water Quality | *Minor* (contamination) |
| Terrestrial Ecology | *Minor* (displacement) |
| Soil Quality | *Minor* (contamination) |
| Socio-Economics / Human Health | *Various impacts range from Moderate negative (e.g. economic loss) to Beneficial impacts (e.g. acquisition of skills)* |

Based on the information identified in Table 4.12 to Table 4.15, the following potential cumulative impacts have been identified:

***Table 4.16 Potential Cumulative Impacts Assessed***

| Resource / Receptor | Other Project, Activity or Natural Event | Potential Cumulative Impact |
|---|---|---|
| Fauna | Pan Africa Solar | • Displacement due to project footprint or avoidance behaviour due to construction noise |

| Resource / Receptor | Other Project, Activity or Natural Event | Potential Cumulative Impact |
|---|---|---|
| Local Communities | Pan Africa Solar and climate change | • Land and economic displacement<br>• Increased water scarcity and decreased access<br>Potential community safety impacts due to increased traffic |

*Potential Impacts to Fauna*

Both Nova Solar and Pan Africa Solar (1) will generate short term noise impacts during the construction phases. The construction phases will be of short duration (estimated to be 12 months for each Project) therefore any overlap will be limited in duration. Noise impacts will be localised to the construction activities and may result in avoidance behaviour by fauna, causing fauna to migrate further into the adjacent forest area.

Access by fauna to the sites will also be restricted however the combined area of the sites is around 350 hectares and is already used to a large extent for agricultural and grazing activities. The project footprints represent a small proportion of the overall available land.

The Nova Solar impact assessment identified a Minor residual impact on fauna as a result of disturbance and displacement. Taking into consideration the above, it is not anticipated that activities by Pan Africa Solar will significantly alter the potential impacts to fauna. The cumulative impact is therefore assessed as *Minor*. No additional mitigations have therefore been identified.

*Potential Cumulative Impacts to Project-Affected Communities*

***Land acquisition and economic displacement:*** Both Nova Solar and Pan Africa Solar will have a land-take impact in the AoI. The combined land-take required for their respective sites is around 350 hectares. Nova Solar will involve economic displacement. Of the 350 hectares required in total for both projects, 210 hectares comprise forest reserve/grazing land, and 140 hectares is used for cultivation of economic trees and crops. Of the circa 200 hectare Nova Solar site, approximately 78 hectares comprise Forest Reserve land understood to currently be used by the community for grazing livestock, while 123 hectares is used for cultivation of economic trees and crops.

According to the Pan Africa Solar ESIA, "*The project site was owned by the Katsina Government before rights were granted to PASL*" and consequently "*The site would not require any physical or economic relocation or resettlement*" under Nigerian law. However, the potential for people to be impacted by economic displacement exists, as the ESIA states that "*grazing activities were observed on site during field activities*."

(1) Pan Africa Solar Limited (2015) EIA of Proposed 80 MW Photovoltaic Power Plant Project and Associated Transmission in Kankiya, Katsina State, Nigeria https://www.miga.org/Documents/SPGDisclosures/ESIA%20-%20Pan%20Africa%20Solar%20-%20Sept%202015%20with%20Appendices.pdf Accessed 13/02/17.

The cumulative land take for both Projects, pertaining in particular to 'productive' land, has the potential to cause some resource stress given the area is characterised by relative scarcity of suitable replacement land of this type. Livelihoods in the area are largely agricultural, necessitating access to land for either herding livestock or cultivation. Inability to access land has the potential to impact on food and income security of those deemed to be vulnerable. The cumulative impact is therefore assessed to be *Major*. Further, as discussed in *Section 3.7 Security Context*, competition for access to land between herdsmen and farmers is a known source of conflict throughout Nigeria.

The mitigation measures proposed in *Section 4.4.7 Determining Mitigation and Monitoring* however provide an opportunity to turn this risk into an opportunity through active collaboration between Nova Solar and Pan Africa Solar on livelihoods enhancement projects as part of their respective *Community Development* and *Livelihoods Restoration Plans*.

***Water scarcity and access:*** The area where both Projects are sited is known to be water scarce and prone to droughts (1). An increase in temperature is also projected to occur in the region during the lifetime of the Project, which could amplify the existing stress on water availability (2). Communities depend on shallow wells recharged from dams along the main river during the wet season for water for domestic and agricultural use. There are however no data to quantify the degree of water scarcity nor characterise the hydrology and size or abundance of the underground aquifers. It is understood that both Nova Solar and Pan Africa Solar intend to construct their own deep water wells that will tap water in aquifers at depth to avoid draining the near-surface water on which the community depends for farming and domestic use. However the presence of deep groundwater resources has not yet been confirmed. Site specific hydrogeological tests will be required to establish the potential sustainable groundwater yields in the project area if these are to be used. On the basis that a sustainable deep groundwater supply is identified, the cumulative impact of the Projects on water access and availability for communities and their livestock is estimated to be *Negligible* as they will be deriving their water from an alternative source.

***Traffic and community safety:*** As aforementioned, the overlap in the construction phase of both Projects is expected to be limited in duration and the associated increases in traffic volumes are assessed not to be significantly greater. For this reason, the anticipated cumulative impact of traffic and vehicle movements related to both Projects is expected to remain as *Minor*.

### 4.4.7 *Determining Mitigation and Monitoring*

*Potential Cumulative Impacts to Project-Affected Communities*

The main potential cumulative socio-economic impact on Project-affected communities is economic displacement with its associated loss of livelihood

(1) Ati OF, Iguisi EO, Mohammed SO, (2010), 'Effect of El Nino/Southern Oscillation (ENSO) on rainfall characteristics in Katsina, Nigeria', *The African Journal of Agricultural Research,* **5**(23): pp. 3273-3278.
(2) IPCC (2014) AR5: Climate Change 2014: Impacts, Adaptation, and Vulnerability, Chapter 22: Africa, http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap22_FINAL.pdf accessed 15/02/17.

and the scarcity of suitable replacement land. Given that Nova Solar's key mitigation measure to address this socio-economic impact is to implement a *Community Development Programme* focused on enhancing the livelihoods of those impacted (based on the understanding that most recipients of compensation have purchased alternative land) it is clear that a high degree of collaboration with the Pan Africa Solar *Livelihoods Restoration Programme* is required to ensure their respective work in this regard does not lead to duplication of efforts and that implementation and cost-sharing efficiencies can be sought. If certain livelihoods projects are implemented jointly, this presents an opportunity for *Positive* impacts that benefit both the Project-affected communities and the Projects.

Aside from alignment of community development and livelihoods restoration initiatives, Nova Solar shall ensure the continuation of its close and positive working relationship with Pan Africa Solar in order to seek efficiencies and coordinate activities in a way that minimises impact on affected communities and maximises benefits for both Projects. This includes, but is not limited to:

- During the overlapping construction period, ensure vehicle movements to and from sites are coordinated to manage traffic volumes in a way that does not have adverse impact on community safety;
- Sharing of key infrastructure such as the substation to be located within the Nova Solar site boundary; and
- Ensuring alignment of key messaging in community and stakeholder engagements with regards to the areas of collaboration. At the same time, clear messaging and differentiation of both Projects when conducting engagement and consultation is important, to avoid confusion among Project-affected communities.

# 5 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

## 5.1 INTRODUCTION

### 5.1.1 Purpose

During the course of the Nova Solar Environmental and Social Impact Assessment (ESIA) review process, a number of social risks and impacts were identified as requiring additional consideration and management planning prior to financial close and to complete the ESIA. Although the social aspects identified were not material to the planning consent decision-making process by the regulatory authorities, further management planning was considered necessary in order to fulfil Project sponsor and prospective lender requirements, particularly with respect to social aspects that will be managed by the Engineering, Procurement and Construction (EPC) Contractor during construction.

The purpose of this document is therefore to provide:

- framework management plans for mitigating key social impacts and enhancing social benefits related to the construction phase of the Nova Solar Project;
- an outline of the Nova Solar Project's Environment and Social Management System (ESMS) to ensure systematic management of environmental and social (E&S) risk and effective execution of these commitments at each stage of Project development.

Where relevant, this document stipulates the roles and responsibilities of both Nova Solar, and its EPC Contractor during the construction phase. It therefore provides assurance that E&S mitigation and management measures are fully accounted for, and will be implemented in line with the commitments made to date.

This document is considered a "live" document. Nova Solar's E&S management programme will continue to develop and evolve in response to the different phases of Project development and the outcomes of ongoing stakeholder engagement. This document will be reviewed periodically to enable continuous improvement and ensure that the company's approach to E&S management remains fit-for-purpose and achieves the intended outcomes of effective risk and impact management.

This Section is comprised of the following:

- *Section 5.2. Project Standards*– providing the key regulations and standards applicable to the Project;
- *Section 5.3. Nova Solar Environmental and Social Policy* – outlines the main principles to be applied across Nova Solar activities with regards E&S performance;
- *Section 5.4. Local Employment and Content Policy* – outlines the approach to promoting a local employment, local content and a safe working environment;
- *Section 5.5. Outline ESMS* – provides a description of how E&S risks will be managed through the Plan, Do, Check, Act system;

- *Section 5.6. Project Commitments* –a summary of all of Nova Solar's mitigations and commitments; and
- *Section 5.7. Framework Management Plans* – outline the guiding principles and actions to be taken by Nova Solar and its EPC Contractor in managing social impacts and benefits including:
    - *Local Employment and Local Content Policy and Plan;*
    - *Worker Grievance Mechanism;*
    - *Camp Management Plan; and*
    - *Occupational Health & Safety Management Plan.*

### 5.1.2 *Other Reference Documents*

Nova Solar commissioned a consultancy to complete the ESIA as part of the application and permitting process for the Project. Chapter 6 of the main ESIA outlines the mitigation measures identified during the ESIA process. Chapter 7 of the main ESIA presents the Project Environmental and Social Management Plan (ESMP).

Following the decision by Nova Solar and its shareholder, Azura, to seek financing a review and gap analysis of the ESIA report was prepared by Environmental Resources Management Limited (ERM). The full results of the review can be found in the document entitled *Katsina Solar Development ESIA and Resettlement Review* dated October 2016. ERM was subsequently contracted to assist Nova Solar and the Project Sponsors in supplementing the ESIA with complementary baseline information, impacts assessment and mitigation content, collectively referred to as the 'ESIA Addendum'. Section 4 of the ESIA Addendum includes additional mitigation measures identified during the assessment process.

As part of the work undertaken by ERM several additional management plans have been developed to support the ESMP. These include:

- Project Stakeholder Engagement Plan (SEP);
- Water and Wastewater Management Plan;
- Community Development Plan (CDP);
- Traffic and Transport Management Plan (TTMP);
- Local Content and Local Employment Policy and Plan;
- Worker Grievance Mechanism;
- Camp Management Plan; and
- OHS Management Plan.

The Project SEP outlines how stakeholder engagement will be managed. The water and wastewater management plan outlines mitigation measures around reducing the impacts of Project water usage on available resources and measures around treatment and disposal options for wastewater. The CDP has been developed to both address the impacts of economic displacement caused by the Project and to enhance the positive impacts of Nova Solar's presence in the area.

### 5.1.3 *Scope*

The scope of this document focuses on the activities to be undertaken as part of the preparatory work and construction phase of the Nova Solar Project by

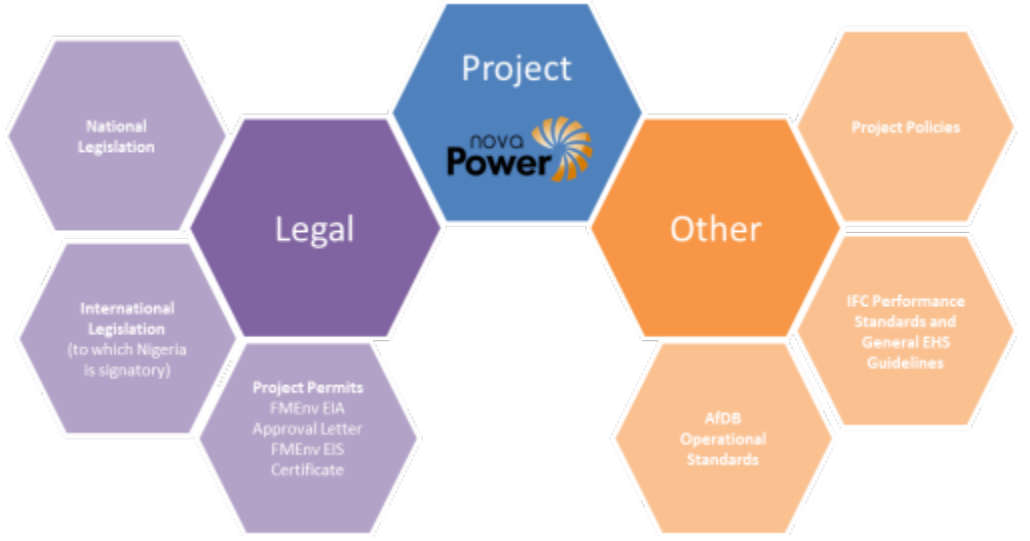
both the Project and its EPC Contractor. This document communicates and demonstrates how design-based risk assessment and ESIA mitigations will be considered and implemented as part of ongoing risk management during the construction phase.

## 5.2 *PROJECT STANDARDS*

### 5.2.1 *Introduction*

The Project Standards governing the development of the Project ESMS include a combination of national regulation and international good practice standards, and are summarised as shown in Figure 5.1 and detailed in the sections that follow.

***Figure 5.1 Project Standards***




### 5.2.2 *National Regulatory Requirements*

In 2015, Nova Solar conducted an ESIA exercise that aligned with the requirements of Nigerian legislation. The ESIA included commitments to align with all relevant Nigerian legislation and the Katsina State Development Plans. *Section 1.7 of Chapter 1* of the main ESIA describes in detail the *Administrative and Legal Framework* within which the Project is being developed and has been adopted as a preliminary *Register of Legal and Other Requirements*. For information, the main items of Nigerian Federal and State legislation that were found applicable to the Project are summarized below (Figure 5.2).

## *Figure 5.2 National Regulatory Requirements*

### Social

- ***The Labour Act, 1990:*** primary law protecting the employment rights of individual workers. covers protection of: wages; contracts; employment terms and conditions; and recruitment.
- **The Factories Act, 1990:** main law regulating health, safety and welfare of workers in industrial settings.
- **Trade Union Amendment Act, 1995:** governs union membership.

### Environmental

- ***Federal***
  - ***The National Policy on Environment, 1989 (revised 1999):*** provides for "a viable national mechanism for co-operation, co-ordination and regular consultation, as well as harmonious management of the policy formulation and implementation process which requires the establishment of effective institutions and linkages within and among the various tiers of government – federal, state and local governments".
  - ***National Environmental Protection (Effluent Limitation) Regulations, 1991*:** The regulation is specific for each category of waste generating facility.
  - ***National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Waste) Regulations, 1991*:** imposes restrictions on the release of toxic substances and stipulates requirements for pollution monitoring units, machinery for combating pollution and contingency plan by industries.
  - ***National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations, 1991*:** defines the requirements for groundwater protection, surface impoundment, land treatment, waste piles, landfills, incinerators etc.
  - ***The Environmental Impact Assessment Act, 2004*:** requires that for all new major public and private projects in Nigeria, where the extent, nature or location of a proposed project or activity is such that it is likely to significantly affect the environment, its EIA is undertaken in accordance with the provision of the Act.
  - ***EIA Procedural Guideline on Infrastructure Projects*:** provides detail on the various stages of the environmental impact assessment process from project screening to obtaining authorization and approval.
  - ***The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act, 2007:*** This Agency has the responsibility of enforcing all environmental laws, guidelines, policies, standards, and regulations in Nigeria. Administered by the Ministry of Environment.
  - ***The Forestry Act, 1958*:** Principal regulation for the forest sector.
- ***State***
  - ***Katsina State Environmental Protection Act (KSEPA) Edict, 1988*:** states the functions of the agency including monitoring of the implementation of the ESIA mitigations and liaise with the Federal Ministry of Environment to achieve National policy objectives on environment.
  - ***Katsina State Land Use Gazette KT. S.L.N. No 1, 2015*:** revised statutory compensation rates payable for farmlands and economic trees as it related to Katsina State.

### Power

- ***Electricity Power Reform Act, 2005*:** provides for the formation of initial and successor companies for the transfer of assets and liability of the National Electric Power Authority, development of a competitive electricity market, establishment, functions and powers of the *Nigerian Electricity Regulatory Commission* licenses and tariffs, acquisitions of land and access rights, consumer protection and licensee performance standards, completion and market power, the power consumer assistance fund, etc. for the regulation and control of electrical installations, and the generation, supply and use of electrical energy in Nigeria. Provides for the establishment of the *Rural Electrification Agency*, responsible for providing electricity to rural communities in Nigeria.

### Project Development

- ***The Nigerian Urban and Regional Planning, 2010:*** sets the urban and regional planning standards in Nigeria; supervises and monitors the execution of projects in urban and regional areas. Provides the requirement for the development of the Project such as planning authority approval; submission of a detailed environmental impact statement; validity of the development permit; land acquisition and compensation.
- ***Landuse Act, 1978:*** places the ownership, management and control of land in each state of the federation in the Governor. Land is therefore allocated with his authority for commercial, agricultural and other purposes. Under the Act there are two types of land rights: statutory occupancy and customary right of occupancy. The governor of the state holds the land in trust for the people of the state and is solely responsible for the allocation of land in all urban areas to individuals who reside in the state and to organisations for residential, agricultural and commercial purposes. It provides the processes through which land may be acquired by the federal government.
- ***National Building Code:*** sets standards on building pre-design, designs, construction and post-construction stages with a view to ensuring quality, safety and proficiency in the building industry.

In addition, Nigeria is signatory to a number of international conventions on environment, climate change and biodiversity, and these are summarised in *Section 1.7 of Chapter 1* of the main ESIA.

### 5.2.3 *Project-Specific Permitting Requirements*

The main ESIA Report was approved by the Nigerian Government in December 2015 following a Panel Review and Public Hearing. The ESIA approval resulted in the following permits issued by the Federal Ministry of the Environment (FMEnv):

- FMEnv EIA Approval Letter – FMENV/EA/EIA/3316/Vol.11/190; and
- FMEnv EIS Certificate - FMENV/EIA/00036.

They specify a number of conditions upon which Project approval is contingent, including:

- Ensure continuous consultation with the primary stakeholders/host communities and relevant regulatory authorities throughout the project's lifespan.
- Sign a Memorandum of Understanding (MoU) with the project host community and implement a robust Corporate Social Responsibility (CSR) plan.
- Implement the approved Environmental Management Plan (EMP) as contained in the final EIA report for the project.
- In collaboration with other relevant regulatory authorities shall carry out EIA Impact Mitigation Monitoring (IMM) exercises on the project. This shall be facilitated by Nova Solar Power Limited.
- There shall be full implementation of an Environmental Management System (EMS) throughout the project's lifespan.
- There shall be Environmental Audits (EAu) and Compliance Monitoring on the project in accordance with the extant laws. This shall be facilitated by Nova Solar Power Limited.
- Ensure that all compensation issues are adequately addressed.
- Provide perimeter fencing around the facility and display caution signs within the facility.
- Create an adequate buffer zone around the project facility.
- Spray carbolic acid within the facility on a regular basis and ensure the availability of anti-venom and syringes throughout the project's lifespan.
- Put in place an efficient waste management plan for the facility that includes the proper disposal of water transformer oil.

The following permits (and related documentation) are required from the *National Environmental Standards and Regulations Enforcement Agency*:

- An Eco Guard Certification (first requirement for a new facility);
- A Waste and Toxic Substances Permit (when entering operations); and

- An Air Quality Permit (when the Project entering operations).

The abovementioned mandatory regulatory requirements have been adopted as Project Standards and their requirements are incorporated into the Nova Solar ESMS and management plans.

### 5.2.4 *International Lender Requirements*

In addition to the regulatory requirements set out in the previous section, Nova Solar has committed to upholding the requirements of the Project sponsors and prospective Lenders. The ESIA, ESMS and Management Plans have been developed to align with the relevant requirements and relevant lender standards have been adopted as Project Standards for the Project. These are listed in Box 5.1.

***Box 5.1 International Lender Requirements***

**International Finance Corporation Performance Standards (PS), 2012**

- PS 1: Assessment and Management of Environmental and Social Risks and Impacts
- PS 2: Labour and Working Conditions
- PS 3: Resource Efficiency and Pollution Prevention
- PS 4: Community Health, Safety, and Security
- PS 5: Land Acquisition and Involuntary Resettlement
- PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS 8: Cultural Heritage

(**Note:** PS7 Indigenous People is not applicable to the Project)

**World Bank/IFC EHS Guidelines**

- General Environmental, Health and Safety (EHS) Guidelines (2007)

**African Development Bank Operational Safeguards (OS):**

- OS 1: Environmental and Social Assessment
- OS 3: Biodiversity, renewable resources and ecosystem services
- OS 4: Pollution prevention and control, hazardous materials and resource efficiency
- OS5: Labour conditions, health and safety

**Additional conventions and guidelines considered include:**

- IFC and EBRD guidance note on Workers' Accommodation: processes and standards
- United Nations (UN) Convention on Biological Diversity (1992) (ratified by Nigeria in 1994)
- Framework Convention on Climate Change (1992) (ratified by Nigeria in 1994)
- United Nations Educations, Scientific and Cultural Organisation (UNESCO) World Heritage Convention (1972) (ratified by Nigeria in 1991)
- Convention on the Conservation of Migratory Species of Wild Animals (1979) (ratified by Nigeria in 1988)
- Montreal Protocol on Substances that Deplete the Ozone Layer (ratified by Nigeria in 1987)
- African Convention on Conservation of Nature and Natural Resources (1968) (ratified by Nigeria in 1968)

#### *International Management System Requirements*

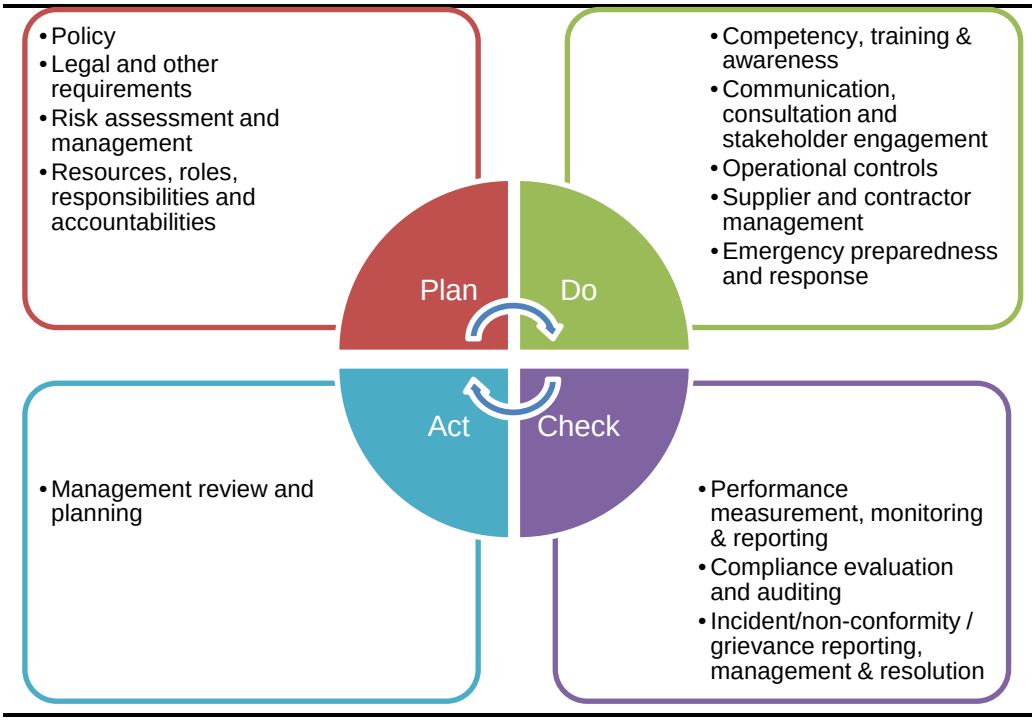
The IFS PS1 requires that a Project have an effective ESMS that "*entails a methodological approach to managing environmental and social risks and*

*impacts in a structured way on an ongoing basis*."

The Project ESMS is therefore developed to broadly align with the established "Plan-Do-Check-Act" (PDCA) model of systematic risk and process management, the key elements of which are summarised in Figure 5.3.

*Section 5.5* of this document provides a summary description of the procedures and processes that have/will be established in relation to each element of the ESMS.

***Figure 5.3 Plan-Do-Check-Act Model of Management***




### 5.2.5 *Project Policy and Strategic Objectives*

Nova Solar has developed an Environmental and Social Policy, articulating its vision for the Project that includes a number of strategic objectives and commitments which guide the direction of Project development. The Environmental and Social Policy is found in Section 5.3. The procedures that have been established to ensure adequate and ongoing maintenance and communication of the Policy are summarised in Section 5.2.5.

## 5.3 *NOVA SOLAR ENVIRONMENTAL AND SOCIAL POLICY*

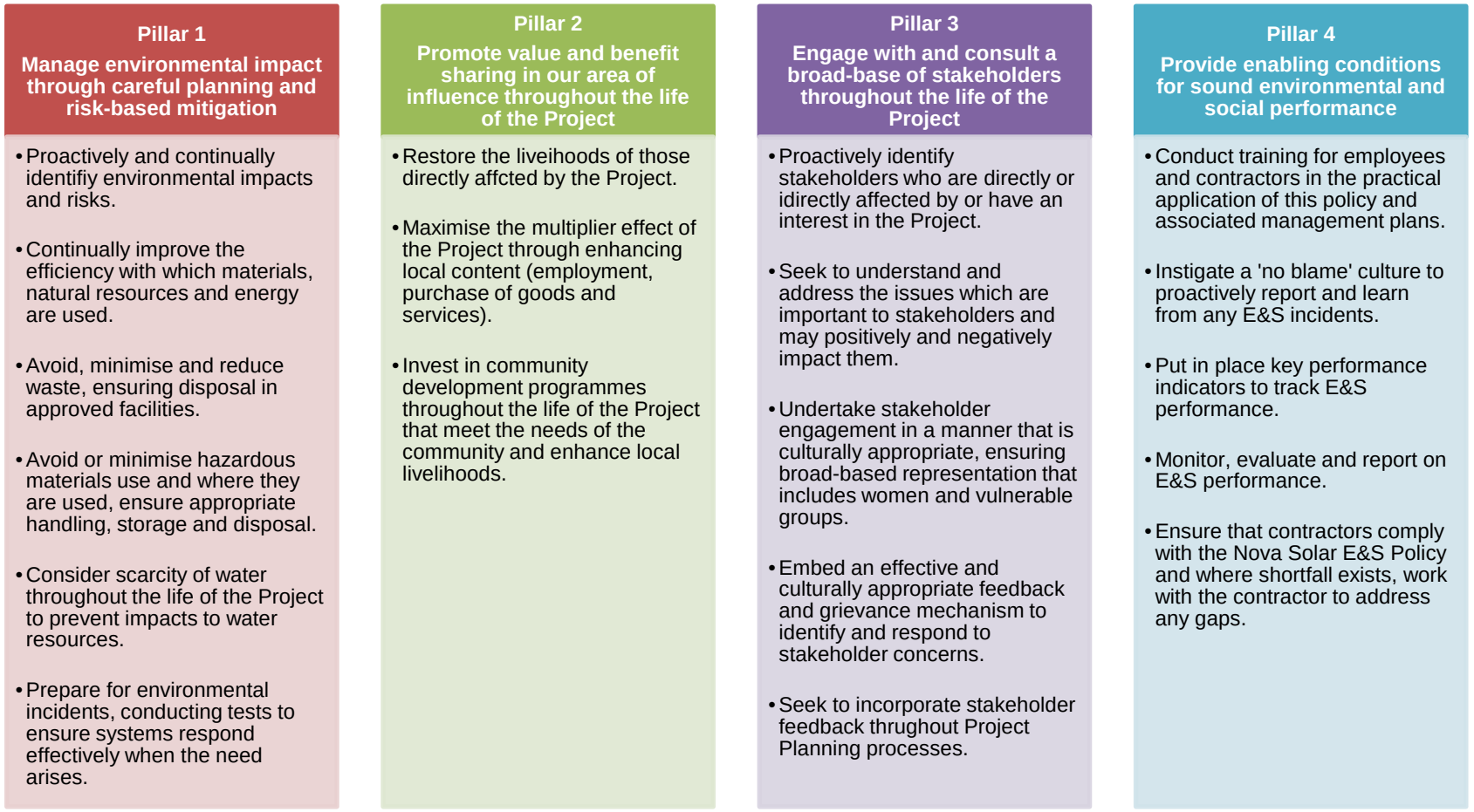
Nova Solar and its partners commit to undertaking activities in a manner that respects and protects the health, safety, security and human rights of workers and communities in which they operate, and to protect the natural environment through prevention, minimisation or mitigation and remediation of negative impacts and maximisation of benefits of activities, where possible.

In order to achieve these commitments we have four overarching pillars that govern the way we work:

- *Pillar 1: Manage environmental impact through careful planning and risk-based mitigation*
- *Pillar 2: Promote value and benefit sharing in our area of influence throughout the life of the Project*
- *Pillar 3: Engage with and consult a broad-base of stakeholders throughout the life of the Project*
- *Pillar 4: Provide enabling conditions for sound environmental and social performance*

The four pillars of the Nova Solar Environmental and Social Policy are outlined in Figure 5.4.

***Figure 5.4 The Four Pillars of the Nova Solar Environmental and Social Policy***



## 5.4 *NOVA SOLAR LOCAL EMPLOYMENT AND CONTENT POLICY*

Nova Solar and its EPC Contractor commit to ensuring that the workforce they employ, both directly and indirectly through contractors, are protected in their day to day work both physically and mentally through healthy and safe working practices and treated with fairness and integrity in line with international good practice and national labour law.

Nova Solar and its EPC Contractor will fulfil this commitment with the following actions:

- *Enable and encourage local employment* through preferential employment of local staff (i.e. within the AoI) and national (from Nigeria) in compliance with Nigeria's Local Content legislation and Nova Solar's own commitment to shared value.

- *Communicate and inform:* clearly communicate in an appropriate manner and document terms of employment, working conditions, benefits, compensation, and retrenchment processes (considering alternatives wherever possible) and giving due notice of any changes both in compliance with national law and in line with International Labour Organisation conventions;

- *Zero tolerance* to workplace discrimination, harassment or unfair treatment on the basis of race, colour, sexual orientation, religion, political opinion, national extraction or social origin;

- *Child and forced labour* will be prevented in all its forms;

- *Equal opportunities* will be promoted including the principle of fair and equitable remuneration whilst upholding legislation, policy and good practice, with specific attention given to vulnerable groups;

- *Personal and private* information will be protected in a legal and ethical manner;

- *The right of workers* to freedom of association and collective bargaining will be upheld in accordance with the Nigerian Trade Unions Act;

- *Training and development opportunities* and clear guidance will be provided on how to meet the expectations of each role;

- *A safe and healthy workplace* will be ensured for all employees and contractors, including worker accommodation and work related activities including provision of adequate risk management, training, PPE and incident management and response measures to protect the workforce and communities who could also be impacted;

- *A Worker Grievance Mechanism* will be in place that is confidential and without prejudice to the complainant's working conditions and communicated to all workers on a regular basis;

- *Key performance indicators* will be put in place to monitor and track labour management performance;

- *Regularly report* upon labour efforts, performance and lessons learnt; and

- *Integrate local content* into standard employment and procurement processes, to the extent practicable. This includes providing vocational and skills acquisition opportunities to local workers (from within the AoI) through the Nova Solar *Community Development Plan*.

## 5.5 *OUTLINE ENVIRONMENT AND SOCIAL MANAGEMENT SYSTEM*

This section set out the key components of the Project ESMS. The remainder of this section summarises the procedures, processes and approach adopted for each element of the PDCA cycle within the ESMS (Table 5.1).

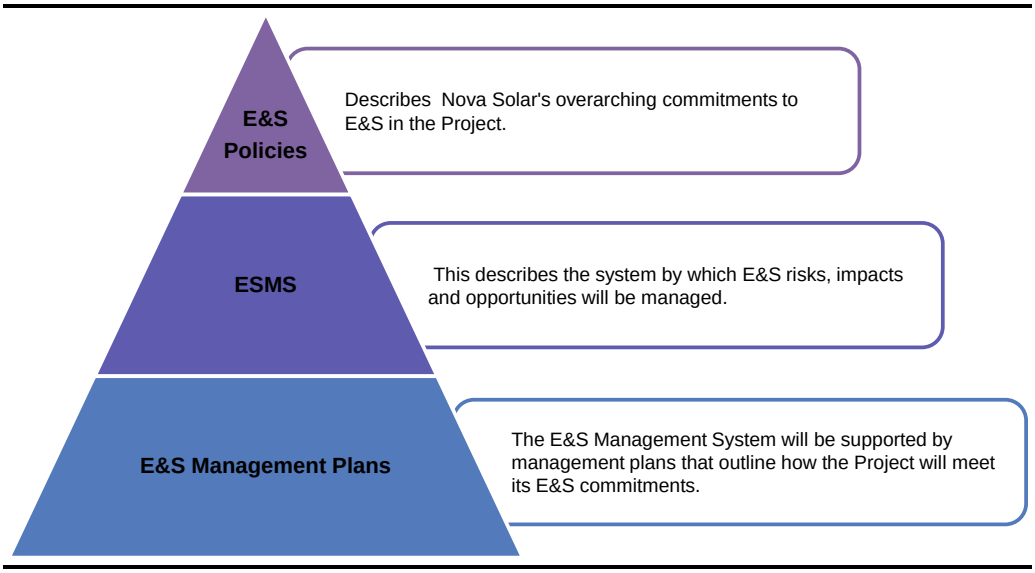
***Table 5.1 Components of the Project ESMS***

| Section | Component |
|---|---|
| 5.5.1 | Policy |
| 5.5.2 | Legal and other requirements |
| 5.5.3 | Risk Assessment and Management |
| 5.5.4 | Resources, roles, responsibilities and accountabilities |
| 5.5.5 | Competency, training & awareness |
| 5.5.6 | Communication, consultation and stakeholder engagement |
| 5.5.7 | Documentation and Record Management |
| 5.5.7 | Operational controls |
| 5.5.9 | Supplier and contractor management |
| 5.5.10 | Emergency preparedness and response |
| 5.5.11 | Performance measurement, monitoring and reporting |
| 5.5.12 | Compliance evaluation and auditing |
| 5.5.13 | Incident/ non-conformity / grievance reporting, management and resolution |
| 5.5.14 | Management review and planning |

Each of these sections summarises how Nova Solar will undertake its work to ensure compliance with requirements.

Figure 5.5 provides a visual representation of the Nova Solar E&S management hierarchy. It includes the policies, management system and management plans Nova Solar has developed for the Project. E&S operational-level templates, procedures and work instructions for construction activities will be developed by the EPC contractor.

***Figure 5.5 Project Environmental and Social Framework***




### 5.5.1 *Policy*

The Nova Solar Environmental and Social Policy has been developed in a manner that is appropriate to the nature and scale of Project risks, focusing on key E&S aspects requiring particular attention and proactive management, and providing the framework for setting and reviewing E&S objectives.

All contractors working for, or on behalf of the Project, will adopt the Project Environmental and Social Policy directly, and/or establish and maintain policies that are aligned with it, and reflect the vision and objectives that have been defined by Nova Solar as part of that Policy.

The policies will be communicated to Project personnel as part of EPC Contractor/Nova Solar site induction processes in order to ensure all personnel are aware of their individual E&S obligations. Both policies will be posted in visible areas on-site and made available to interested parties (on request, and via the Nova Solar web-site). The Community Relations Policy will be communicated in a culturally appropriate manner to local communities. Nova Solar envisages the policies can be included as a requirement in all contractual documentation, once it has been formally authorised.

The Project Environmental and Social Policy will be reviewed a minimum of once annually, as part of management review processes (see Section 5.5.14), and as the need arises - to ensure it is maintained appropriate to the nature and scale of the Project and Nova Solar's business objectives.

The Nova Solar Environmental and Social Policy can be found in Section 5.3.

### 5.5.2 *Legal and Other Requirements*

The compliance framework for the Project (i.e. the Project Standards) is illustrated in Section 5.2. Applicable E&S legislation was identified as part of

the ESIA process and is reported in the main ESIA Report. The project design, ESIAs, and this outline ESMS have been developed to take account of all relevant legal requirements and established Project Standards.

In line with IFC PS1, Nova Solar will operate in compliance with applicable laws and regulations. Nova Solar will require the EPC Contractor to establish processes to proactively identify legislation and other standards relevant to E&S management of their activities, and put measures in place to ensure Project personnel are aware of all relevant legal requirements and adhere to them. A register of Legal and Other Requirements will be compiled by the EPC Contractor in consideration of the Project Standards Nova Solar has adopted for the Project, and will be kept up to date and will be communicated to Project personnel where relevant. Nova Solar will periodically monitor the compliance of the EPC Contractor with the requirements of this ESMS.

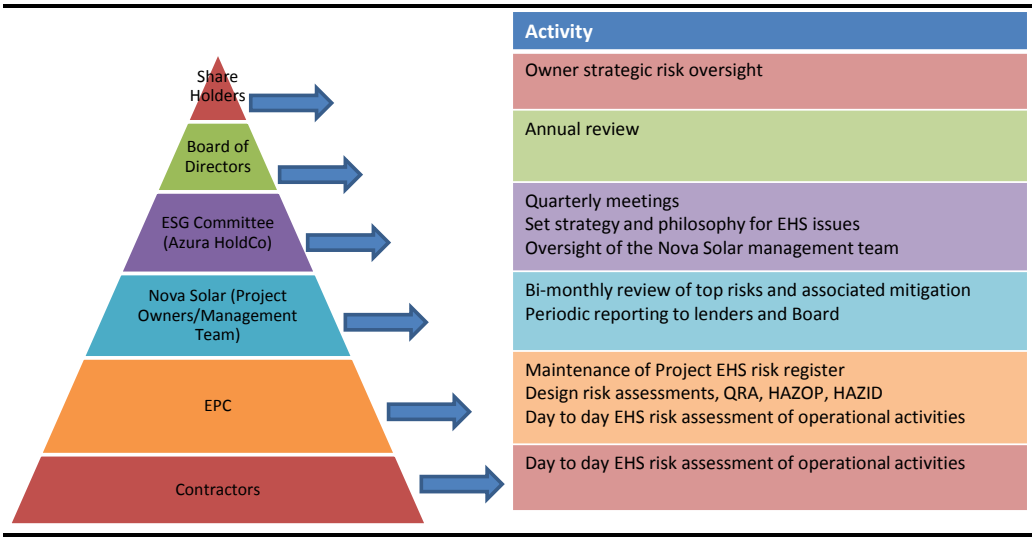
### 5.5.3 *Risk Assessment and Management*

The EPC Contractor will compile and maintain a risk register for the Project. The ESIA will inform the development of that risk register, particularly during the construction phase. As part of compiling the risk register for the Project, the EPC Contractor team will ensure EHS risks are proactively and systematically identified, assessed, evaluated and controlled.

The methodologies used to identify, assess and analyse risks will be defined with respect to their scope, nature and timing to ensure methods are proactive rather than reactive; and provide for the identification, prioritisation and documentation of risks, and the application of controls. The methodologies that are used will align with international good practice. The EPC Contractor will adhere to the Hierarchy of Control and ALARP (As Low As Reasonably Practicable) when devising risk control measures (see glossary of terms).

The EPC Contractor will ensure personnel working for or on behalf of the Project are aware of the key EHS risks identified as part of that risk assessment process and the measures that they are required to implement. The risk register and other significant risk assessment will be available to Nova Solar for review at all reasonable times. Risk information will be shared between the various project parties as shown in Figure 5.6. A minimum of once every two months, Nova Solar will review the top risks relevant to the Project and associated mitigation and management measures. Pertinent information will be included in the periodic reports to the Board of Directors and lenders, where relevant. E&S reporting will be proportional to activity and risk. It will therefore be more frequent during construction (monthly), with annual reporting for lenders and quarterly for the Board envisaged during operation.

***Figure 5.6 Hierarchy of Responsibility for Risk Management***




### 5.5.4 *Resources, Roles, Responsibilities and Accountabilities*

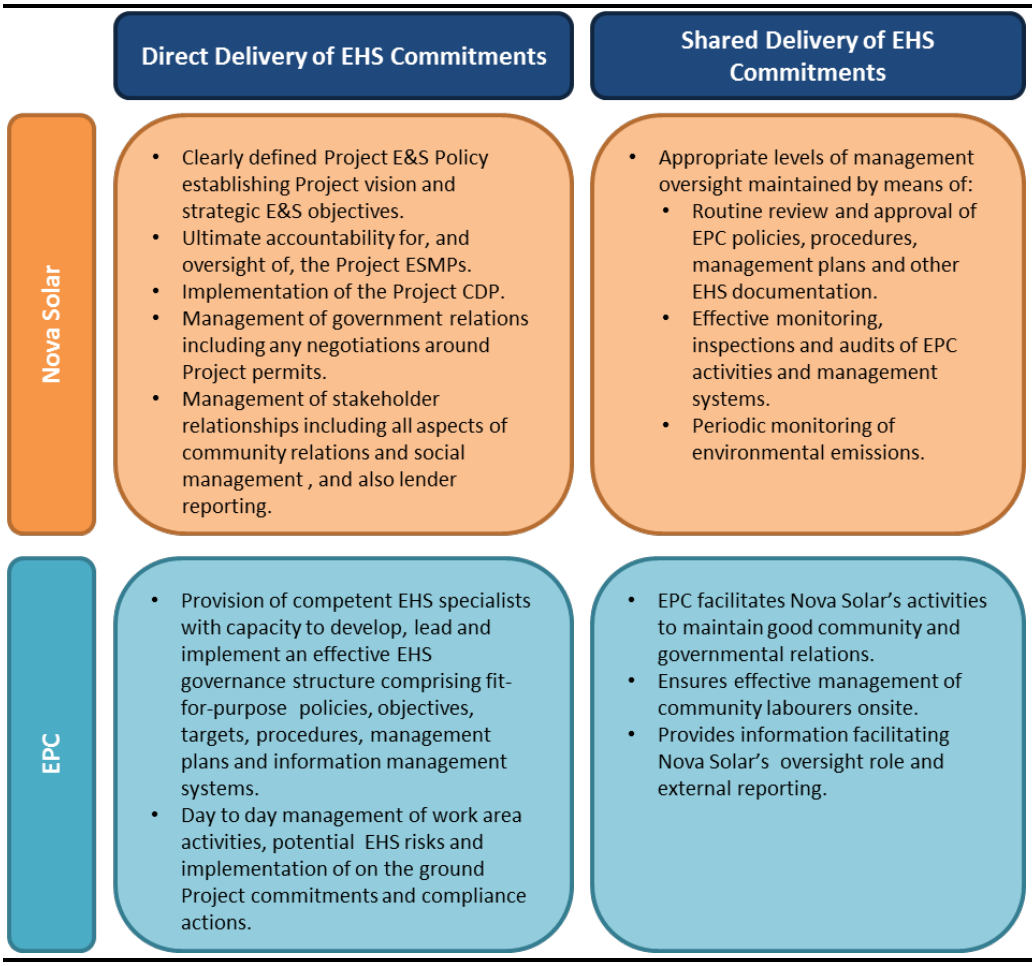
As the Project Owner, Nova Solar is ultimately accountable for EHS management at the Project and the delivery of the Project EHS commitments to date. These commitments have been established as part of the ESIA and ESIA Addendum process and are summarised in Section 5.6.

During construction Nova Solar will have a full-time Community Liaison Officer (CLO) on-site to manage stakeholder and community relations, as well as the implementation of the CDP. The EPC Contractor will have an Environmental, Health and Safety (EHS) Manager on site to ensure that the EPC Contractor workforce complies with the required EHS standards.

During the construction phase, Nova Solar intends to maintain direct responsibility for community relations, government relations and stakeholder relations. Within the site boundary (i.e. “inside the fence”), Nova Solar will adopt a stewardship role. Day-to-day management of work activities during construction will be led by the EPC Contractor. Nova Solar will maintain oversight through periodic site visits and inspections by its EHS representative. Nova Solar’s EHS management strategy is shown in Figure 5.7.

From an organisational perspective, the requirements and commitments set out in this document are directly applicable to all Nova Solar employees (including full-time, part-time, temporary and seconded staff etc.). Furthermore, all contractors and suppliers are required to implement equivalent management systems complying with the minimum standards set out by the Project ESMS.

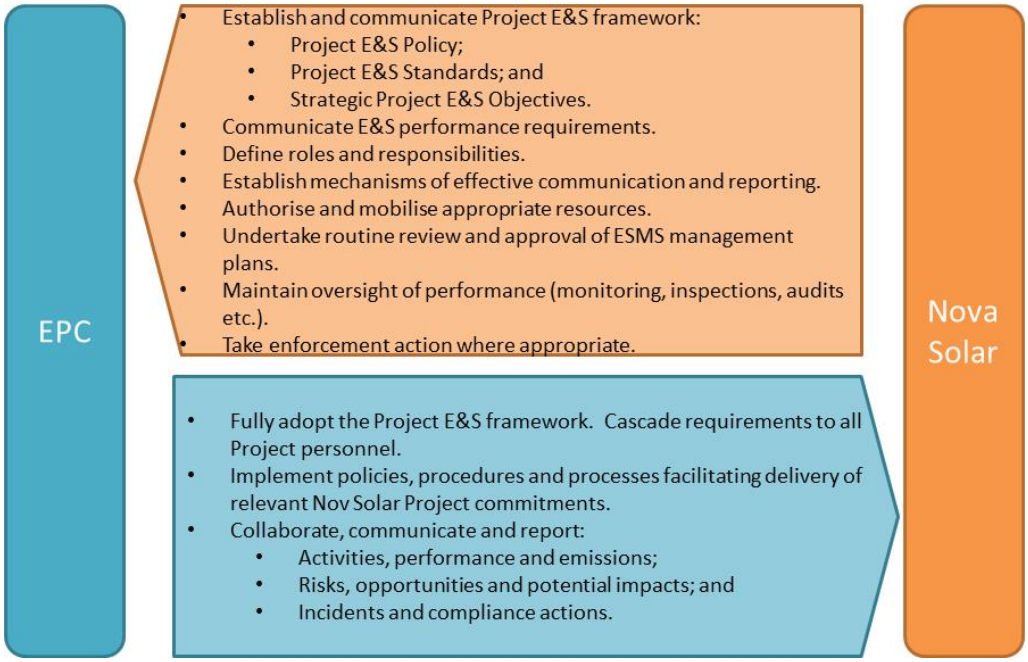
***Figure 5.7 Project Environmental and Social Management Strategy***




Nova Solar recognises that delivery of all relevant Project commitments will require effective and established mechanisms of communication, collaboration and co-ordination between the EPC Contractor and Nova Solar. With this in mind, the Nova Solar/EPC Contractor interface has been considered and the approach to that interface has been mapped out in principle. This will continue to evolve and become more refined in accordance with Project planning and need. At this stage, Nova Solar has identified a number of key aspects which will define that interface. A summary of some of these key aspects is provided in Figure 5.8 and further explanation with respect to each element is provided in the remaining sub-sections of this document.

During the construction phase of the Project, delivery of Project commitments will be shared between Nova Solar and various contractors, with Nova Solar providing effective oversight of all activities.

***Figure 5.8 The Nova Solar – EPC Contractor Interface***




Once the structure of the Nova Solar team, including responsibilities for EHS, is defined it will be included in a subsequent update of the Project ESMS. A summary of anticipated key EHS roles and responsibilities within the Project is provided in Table 5.2, however will be subject to change following definition of the Nova Solar team structure.

### *Table 5.2 Key EHS Roles and Responsibilities*

| Role | Responsibilities |
|---|---|
| Project Director | • Ensures adequate resources (technical, financial and human) are available where necessary to ensure effective EHS management.<br>• Ensures all environmental standards and guidelines throughout the Project life cycle are followed and implemented.<br>• Maintains oversight of Project and company activities and performance, including EHS performance.<br>• Responsible for liaising with the relevant stakeholders, including local community members, through a Community Liaison Officer (to be appointed). |
| Site Project Manager | • Ensures roles, responsibilities, accountabilities and delegated authorities are identified, documented, communicated and understood by all relevant personnel.<br>• The appointed top management member with responsibility for EHS management, irrespective of other responsibilities. |
| EHS Officer / Representative | • Part of a team member's role<br>• Acts on behalf of Nova Solar in a Project Owner capacity representing Company interests.<br>• Custodian of the Project EHS Policy on-site.<br>• Provides visible leadership in the field and clearly communicates Nova Solar requirements with respect to EHS management.<br>• Maintains daily oversight of EPC Contractor activities and material EHS risks across the Project.<br>• Intervenes where necessary to protect Nova Solar's business interests and ensure EHS performance aligns with Nova Solar expectations.<br>• Acts as a key interface between Nova Solar and the EPC Contractor's EHS team and personnel to catalyse and facilitate open and transparent reporting and communications. |
| EHS Manager (EPC Contractor) | • Ensures that all EHS control mechanisms and associated EHS procedures are prepared, implemented, evaluated and improved on a continuous basis, including planning, risk assessment and risk response measures, monitoring and evaluation, etc.<br>• Reports EHS performances to the Nova Solar EHS Manager (and/or Project Leadership Team) on a periodic basis.<br>• Reviews the Project Standards to ensure that all Project activities are carried out in accordance with these.<br>• Conducts EHS assessments and evaluations and participates in external/internal audits, to ensure any non-conformity is identified, managed and closed out effectively.<br>• Co-ordinates investigation of incidents and accidents, as well as other EHS-related concerns and complaints.<br>• Ensures the EHS competency of all Project personnel through co-ordination of critical personnel, appropriate training, and communication and awareness initiatives.<br>• Ensures all relevant documentation is managed in accordance with Project Standards, including legal requirements. |

| Role | Responsibilities |
|---|---|
| Community Liaison Officer | • Direct interaction with communities in order to manage and maintain positive relationships in that regard.<br>Ensure the effectiveness in implementation of the grievance mechanism. |

Nova Solar requires all contractors to identify and define EHS roles, responsibility and authorities, and to ensure that human, technical and financial resources are provided where essential to the implementation and control of EHS management.

Although yet to be defined, it is anticipated that the EPC Contractor will have one full-time EHS Advisor present on site at the Project at all times. Additional EHS support may be drawn upon when required, such as during periods of higher risk activity. If necessary, the EHS Advisor may provide training to a number of workers who will be designated EHS Representatives, acting as EHS resource persons for their respective work areas enabling delegation of EHS responsibilities and workload.

An EHS Manager will be available to support and provide advice remotely and will be available to come to site at short notice.

### 5.5.5 *Competency, Training and Awareness*

Nova Solar will work to ensure the competency of the Nova Solar Project team through:

- clear definition of competency requirements of each position (e.g. job/roles descriptions) and any consulting role;
- robust interview, recruitment and procurement processes; and
- maintaining oversight of all personnel.

Where necessary, the size/competency of the team will be bolstered with the help of specialist consultants to work in partnership with Nova Solar staff to assist in ensuring Project activities are carried out in a manner that avoids and/or manages EHS risks and impacts.

All Project personnel will receive:

- EHS induction training – provided by the EPC Contractor; and
- Community Induction – provided by Nova Solar.

Project personnel will be provided with periodic refresher training.

### 5.5.6 *Communication, Consultation and Stakeholder Engagement*

A Project SEP has been developed to guide engagement with stakeholders and to support the maintenance of a Social Licence to Operate. This includes the following process elements:

- Identification of international and national regulations and best practice governing stakeholder engagement;
- Identification and analysis of the stakeholders relevant to the Project;

- Development of a methodology and programme of engagement activities during the ESIA process;
- Establishment of a Grievance Mechanism in accordance with international good practice; and
- Establishment of effective mechanisms of monitoring and reporting.

Going forward:

- Nova Solar will lead all stakeholder engagement with communities, the government and other external parties including the media;
- Engagement with Project personnel will be led and managed by the EPC Contractor; and
- Cross team collaboration between all parties working for or on behalf of the Project (and particularly between Nova Solar and the EPC Contractor) will be facilitated by means of a number of mechanisms.

Communication, consultation and stakeholder engagement will occur as illustrated Figure 5.9.

***Figure 5.9 Stakeholder Engagement Plans***

| Nova Solar | |
|---|---|
| Stakeholder | Engagement Plan |
| Communities | • As defined in Project SEP and Grievance Mechanism<br>• Activities of Communities and Government Relations Team<br>• Project Reviews<br>• Regular engagement with community committees and representatives |
| Regulators and Government Representatives | • Regular engagement as part of impact mitigation and monitoring process |
| Lenders | • Quarterly reporting<br>• Site audits and associated engagement<br>• Other ad hoc engagement as required |
| Media / Investors | • As the need arises and where deemed appropriate by the Project Owners |

| EPC | |
|---|---|
| Stakeholder | Engagement Plan |
| Project workforce, EPS employees, subcontractors, suppliers, onsite personnel | • Induction, training and worker communications<br>• Standard procedure and practices of line management and HR functions<br>• Union representation and engagement<br>• Worker grievance mechanism |

### 5.5.7 *Documentation and Record Management*

Nova Solar and its contractors will maintain appropriate levels of documentation to demonstrate compliance with Project Standards and requirements as defined in this document. This documentation shall be available for review at all reasonable times.

The EPC Contractor will operate an Open File Policy whereby Nova Solar representatives can review any aspect of the Project EHS documentation at all reasonable times. EPC project management procedures should also include provisions for review, approval, updates, version control, confidentiality, distribution, storage, retention and disposal.

Over the course of the construction period, project documentation may also be released to the public arena via the company website, release of physical documents and/or lender websites.

### 5.5.8 *Operational Controls*

Nova Solar requires contractors to identify activities with the potential to cause EHS impacts and implement appropriate controls. The Project ESIA is an important input to this exercise and is made available to the EPC Contractor and other contractors for this purpose. These controls include effective supplier and contractor management procedures controlling purchase of goods, equipment and services, control of any workplace visitors and stipulated operating criteria.

As part of the ESIA and ESIA Addendum process, Nova Solar identified a number of Project Standards, which drive good operational practices at the Project. These standards are listed in Section 5.2. The specific management and mitigation measures to be implemented by the EPC Contractor as part of day-to-day management of operations (e.g. Project commitments, mitigation and control measures, and Management Plans, as presented in Section 5.6) are embedded into the EPC contract.

Management of day-to-day site activities (and associated EHS aspects) during the construction phase will be led by the EPC Contractor, along with management of EHS considerations during the detailed design process. The EPC Contractor will develop an EHS manual to provide a description of the policies, procedures and systems to be implemented in this regard, and to ensure appropriate delivery of Nova Solar Project commitments. The EPC Contractor is required to ensure all subcontractors adhere to Nova Solar Project Standards and Management Plans.

The Project Commitments (Section 5.6) includes a number of EHS and other documents, relating to Operational Control, which Nova Solar reserves specific right to review and approve prior to the documents being finalised and implemented. This table will be fully embedded in the EPC Contractor's contract. The ongoing EPC Contractor/Nova Solar review and approval process (i.e. QA/QC) for critical risks and operational control procedures is an integral part of the Project Reviews and this process will also be embedded in the EPC Contract. The EPC Contractor will be required to maintain an open file policy whereby any documents can be requested and reviewed by the Project Owner at any time. The EPC Contractor will also be required to facilitate any internal or external audits by interested parties once given due time for consideration of work planning.

Nova Solar's commitments with respect to local employment and local procurement during the construction phase are described in Section 5.7.

### 5.5.9 *Supplier and Contractor Management*

For all contracted labour or service agreements, there will be an agreed scope of work including an analysis of the risks associated with the contractor's activities and associated management controls. All contractors will be asked either to reflect Nova Solar's EHS expectations and requirements including all relevant operational procedures within the contract scope, or demonstrate that the contractor's own management controls conform to Nova Solar standards. This must be considered within any costings to ensure that contractors are able to deliver on these performance expectations. There will also be a

process in place to ensure that all contractor tools and equipment are inspected and evaluated to be in a safe condition and conform to Nova Solar's requirements.

The process for management of contractors includes the following stages:

- Contractor screening (focusing on H&S, environmental and labour management);
- Contractor award (selection of contractor following screening process and issue of contracts including EHS requirements);
- Orientation and training (induction of contractors prior to commencement of work and provision of any necessary EHS training);
- Contractor management (ongoing supervision during construction); and
- Contractor evaluation (review of contractor EHS performance).

### 5.5.10 *Emergency Preparedness and Response*

Nova Solar requires all contractors to identify emergency situations and respond to these situations in an appropriate manner in order to prevent or mitigate potentially adverse EHS impacts. The needs of relevant interested parties will be taken into account (e.g. emergency services, communities, neighbours) and procedures will be reviewed, tested and revised periodically, and where required.

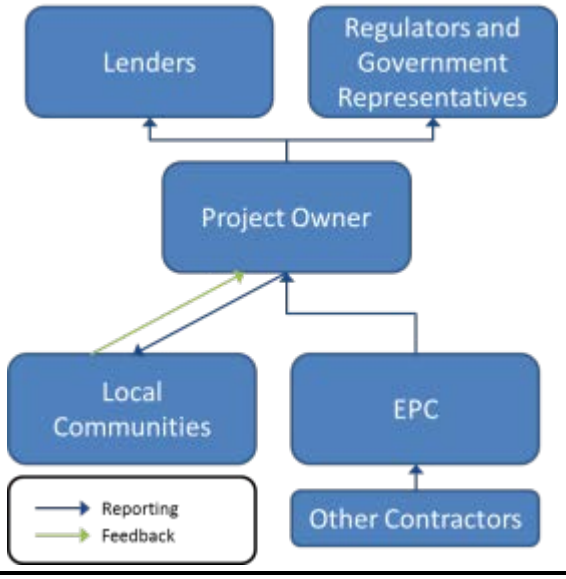
The EPC Contractor will be required to develop emergency response procedures in response to the above requirements.

### 5.5.11 *Performance Measurement, Monitoring and Reporting*

*General Requirements*

The minimum performance reporting requirements, along with the required timing and an overview of required content will be defined following discussion with the Lenders and included in this section in a subsequent update.
A summary of Project reporting lines is provided in Figure 5.10.

***Figure 5.10 Project Reporting***



Nova Solar will conduct regular audits in conjunction with applicable regulatory agencies to monitor compliance of the Project with Project Standards. These audits will be conducted annually during construction and every three years during operations. The findings from these audits will be reported to the Commissioner for Environment and Federal Ministry of Environment, and corrective action plans will be developed and followed-up for performance improvement

### 5.5.12 *Compliance Evaluation and Auditing*

Nova Solar will require all contractors to operate in accordance with the established Project Standards (see Section 2.4) and evaluate compliance with these standards periodically. The evaluation should be documented and the EPC Contractor is required to take action to respond to any non-compliance identified. Nova Solar also requires that the contractor audit the effectiveness of their own EHS Management Systems at periodic intervals, using established and appropriate audit processes, to verify that the system aligns with Project Standards, has been properly implemented and maintained, and is effective in meeting the policy and objectives that Nova Solar has defined for the Project with the EPC Contractor.

Records of the audit will be provided to Nova Solar. These requirements will be fully embedded in the EPC Contract. The EPC Contractor will establish inspection and auditing procedures aligning with Nova Solar requirements.

With respect to communities and social management, Nova Solar's Community Relations team will carry out bimonthly Project reviews to assess the extent to which social management and community relations at the Project align with Nova Solar's Community Relations Policy, strategic objectives and Project commitments.

### 5.5.13 *Incident/Non-Conformity / Grievance Reporting, Management and Resolution*

Nova Solar will establish and fully communicate the Project reporting requirements that the lenders require to the EPC Contractor.

Incidents and nonconformities relating to construction activities and EHS management within the site fence will be managed by the EPC Contractor. On-site incidents and nonconformities must be reported, in the first instance, by the EPC Contractor to Nova Solar EHS Officer. The EPC Contractor will develop incident reporting and investigation procedures to align with Nova Solar requirements.

In cases where an incident/non-conformity inside the fence involves a member of a local community, Nova Solar's CLO will be notified within 24 hours. Nova Solar envisages that the incident investigation and management process will be led by the EPC Contractor and carried out in accordance with the agreed labour management processes. The CLO will work with the EPC Contractor in this regard to ensure the relationship with the wider community continues to be upheld during this process.

Nova Solar's Project Grievance Mechanism (GM) establishes how grievances from the community, will be managed (refer to Project SEP for further detail).

Incident/nonconformity reporting procedures will be fully communicated as part of Project induction training prior to any individual commencing work for, or on behalf of, the Project.

### 5.5.14 *Management Review and Planning*

As the Project ESMS continues to develop and evolve, Nova Solar's EHS function and senior leadership team will periodically review (annually at a minimum) the overall effectiveness of the system, and decide if any changes are necessary or desired. The review will take into account the results of internal and external audits, incidents, regulatory developments, communications with external parties etc.

This review process will take place in collaboration with the EPC Contractor during the construction phase. The review frequency will be confirmed at the initiation of the construction period and again on its completion, to take into consideration the maturity of the Project Management System and the evolving requirements of the Project.

## 5.6 *PROJECT COMMITMENTS*

As part of the regulatory approval of its ESIA, Nova Solar made a commitment to implement EHS mitigation measures outlined within it to minimise impacts and enhance benefits of the Project. The ESIA Addendum further expands the mitigations required in order for the Project's ESIA to better reflect Project sponsor and good international industry practice.

Project commitments are detailed in the framework management plans which have been developed as part of the ESIA and ESIA Addendum process and other management plans developed by Nova Solar.

***Table 5.3 Project Commitments***

| **Management Plan** |
|---|
| Environmental and Social Management Plan (ESMP)[1] which includes the need to develop the following plans:<br>• Training and Awareness;<br>• Public Participation/Involvement;<br>• Regulatory Compliance;<br>• Inspection and Maintenance;<br>• Risk Assessment and Management;<br>• Worker Safety and Health;<br>• Pollution Control Guidelines (including Air Quality Management Plan);<br>• Emergency Response;<br>• Communication;<br>• Environmental Monitoring;<br>• Waste Management;<br>• Security; and<br>• Decommissioning. |
| Stakeholder Engagement Plan (SEP) [2] |
| Community Development Plan (CDP) [2] |

| Management Plan |
|---|
| Local Content and Local Employment Policy and Plan [2] |
| Worker Grievance Mechanism [2] |
| Camp Management Plan [2] |
| OHS Management Plan [2] |
| Traffic and Transport Management Plan [2] |
| Water and Wastewater Management Plan [2] |

**Note:**
(1) The ESMP was developed as part of the main ESIA development and has been appended to this document for ease of reference. Additional management plans not in place will be developed by Nova Solar / EPC Contractor, as relevant.
(2) The framework management plans developed as part of the ESIA Addendum process are presented in Section 5.7. These are to be developed further prior to Project pre-engineering and construction by Nova Solar / EPC Contractor.

The commitments herein will be added to as necessary through the course of the Project's development and operation, to reflect evolving EHS risks, impacts and opportunities.

## 5.7 *FRAMEWORK MANAGEMENT PLANS*

A series of framework management plans have been developed as part of the ESIA and ESIA Addendum process for the Project as identified in Table 5.4.

***Table 5.4 Project Framework Management Plans***

| Management Plan [1] | Annex |
|---|---|
| Environmental and Social Management Plan (ESMP) | A |
| Stakeholder Engagement Plan (SEP) | B |
| Community Development Plan (CDP) | C |
| Worker Management Plan | D |
| Local Content and Local Employment Policy and Plan | E |
| Worker Grievance Mechanism | F |
| Camp Management Plan | G |
| OHS Management Plan | H |
| Traffic and Transport Management Plan | I |
| Water and Wastewater Management Plan | J |

**Note:**
(1) The ESMP was developed as part of the main ESIA development and has been appended to this document for ease of reference. The remainder of the management plans presented in Annexes B – J have been developed through the ESIA Addendum process.

Once additional information becomes available, the framework management plans will be further developed and enhanced by Nova Solar and the EPC Contractor.

Annex A

# Project Environmental and Social Management Plan

# 6 ANNEX A: PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

## 6.1 INTRODUCTION

Annex A presents the Environmental and Social Management Plan (ESMP) developed by Fugro Nigeria Limited as part of the main ESIA development.

Note: Where indigenous people are referenced within the main ESIA and ESMP this is the Nigerian use of the term referring to local communities, indigenes, rather than the IFC PS7 definition of indigenous people. There are no indigenous people as per the IFC Performance Standard definition on the site.

This has been supplemented by a series of additional management plans developed as part of the ESIA Addendum which outline additional mitigation measures to be implemented alongside the ESMP measures contained within.

# CHAPTER SEVEN

# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

## 7.1 General

This chapter presents the Environmental, Social and Management Plan (ESMP), developed for the proposed NOVA Solar Five Farms Limited (NSF) utility scale PV-based solar power plant Project. The ESMP is essentially a management tool that provides assurance to NSF and regulators that mitigation measures developed for the significant impacts of the proposed project (as documented in **chapter six**), will be implemented throughout the project's life span. It also outlines management strategies for complying with health, safety and environmental issues from the project.

The management of NSF has documented goals and policies as part of this ESMP in order to achieve a conserved, safe and healthy environment. The ESMP provides assurance that a reliable scheme has been put in place to monitor the interaction between the planned operations and the environment throughout the duration of the project. This ESMP was developed in accordance with the general requirements of World Bank and International Finance Corporation Performance Standards, ISO 14001 Environmental Management System (EMS), OHSAS 18001 Health and Safety Management System, Equator Principles as well as other national and international regulatory requirements.

The Environmental Social Management Plan (ESMP) was developed, which would be an environmental management tool to ensure that all mitigation measures are implemented and adhered to during the duration of the power plant operation. The ESMP also enables a rapid rescue/ response if an unforeseen environmental impact occurs. It is found in this chapter of the report.

## 7.2 ESMP Objectives and Guiding Principles

The main objective of the ESMP is to ensure that all significant impacts of the proposed project are either prevented or reduced to acceptable limits. Specifically, the ESMP will:

- Show that a systematic procedure to ensure that all project activities with regards to the environment are executed and managed in compliance with applicable legislation/ guidelines and relevant NSF policies;
- Ensure that all mitigation/ enhancement measures prescribed in the ESIA document for eliminating or minimising all negative impacts of the project are fully implemented;
- Ensure that appropriate recovery preparedness are in place in the event that control is lost during the implementation of the proposed project;
- Present an effective monitoring plan that would be used for assuring the effectiveness of mitigation measures and for identifying unforeseen impacts arising during the project; and
- Provide a feedback for continual improvement in environmental performance.

These objectives shall be achieved by:

- Ensuring compliance with all stipulated legislation on protection of the environment and with national and local environmental policies;
- Integrating environmental, health, safety, security, and social issues fully into the project development and operational philosophies;
- Promoting environmental, health, safety, security, and socio-economic awareness amongst workers and host community;
- Rationalising and streamlining existing environmental, and social activities to add value to efficiency and effectiveness;
- Ensuring that only environmentally, and socially sound procedures are employed during the different project phases and the associated activities;
- Continuous consultations with the relevant regulatory bodies (Federal Ministry of Environment, Katsina State Ministry of Environment etc.), community leaders (District Head, village heads, group heads, family heads, landlords, etc.), women group,

community based organisations (CBOs), Kankiya L.G.A. and other stakeholders throughout the project lifecycle.

Constructive suggestions by NSF staff and stakeholders shall be assessed and evaluated by the NSF HSE Coordinator and integrated into the ESMP during review process as necessary.

## 7.3 Project Management and Responsibilities

***Country Deputy Director***

The Country Deputy Director (CDD) shall be responsible for ensuring that all environmental standards and guidelines throughout the project life cycle are followed and implemented. The CDD is also responsible for environmental operation, including environmental supervision of contractors through the Site Project Manager and HSE Officer. He shall ensure implementation of the environmental management plan during the project phases. The CDD is also responsible for liaising with the relevant stakeholders as well as the local community members through a Community Liaison Officer to be appointed.

***Site Project Manager***

The overall management of the proposed power project from site preparation through construction, to operation and decommissioning is the sole responsibility of the Site Project Manager (SPM). The SPM supervises all activities during the project and reports to NSF management through the CDD.

***Engineering, Procurement and Construction Company***

The Engineering, Procurement and Construction (EPC) Company that would eventually be selected would be NSF technical partner, and have deep understanding of the construction, installation and operation of utility scale PV-based solar power plants. They would supervise and ensure the successful execution and commissioning of the project.

***Site Health, Safety Environmental Officer***

The Site Health, Safety and Environmental (HSE) Officer is to report directly to the SPM. He/ she shall ensure that all safety, health and environmental policies and standards are kept and adhered to during the project execution. As a minimum, the Site HSE officer shall ensure all requirements of the ESMP are met. The designated HSE Officer may, at his/ her discretion, stop any work, activity or process not in accordance with directives of NSF.

***Federal Ministry of Environment***

The Federal Ministry of Environment (FMEnv) is saddled with the responsibility of enforcing national and international environmental laws which Nigeria subscribed to. As part of this project, the FMEnv would:

- serve as a regulatory oversight body in the implementation of this ESMP;
- in coordination with the Katsina State Ministry of Environment ensure that NSF periodically make available, documentations in form of monthly/quarterly reports or as may be designed in the monitoring plan in **section 7.4.12**;
- require NSF to show evidences of caring out monitoring requirements, etc

NSF shall work closely with the Federal and State Ministry of Environment to ensure that all environmental standards are upheld as agreed. NSF shall conduct her business according to the standards stipulated. The company's implementation organogram defining the general line of authority in NSF is presented overleaf as **Figure 7.1**.

## 7.4 ESMP Safeguard Guidelines

Mitigation measures are proffered for all significant impacts of the proposed power plant project in order to avoid, minimize or reduce expected impacts to as low as reasonably practicable (ALARP). To ensure these measures are achieved, responsibilities have been assigned for each task as presented in **Table 7.1**.

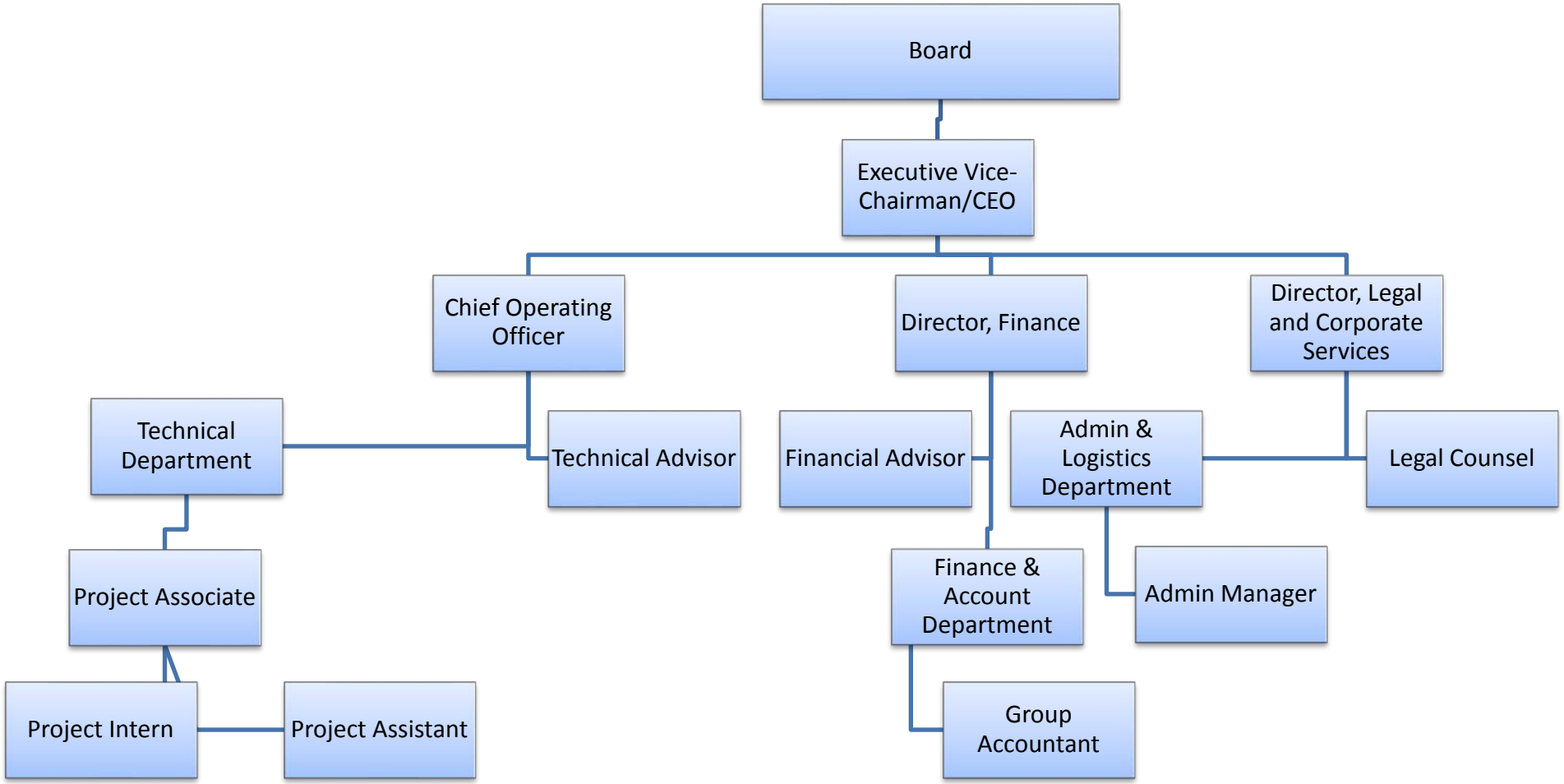



**Figure 7.1: NSF Organisational Structure**

## Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Pre-Construction Phase** | | | |
| • Permitting<br>• Community engagement<br>• Land acquisition<br>• Recruitment<br>• Mobilisation to site<br>• Land preparation and clearing | Employment opportunities arising from recruitment of workers | NSF shall:<br>• Ensure early stakeholders' engagement sessions are held, and all agreed issues properly documented, signed, and implemented in timely manner<br>• Make transparent communication on hiring policies amongst local communities | NSF Management/ EPC Manager |
| | Conflicts/ community agitations over employment issues (quotas and methods) | NSF shall:<br>• Ensure early stakeholders' engagement sessions are held, and all agreed issues properly documented, signed, and implemented in timely manner<br>• Due consultation of relevant groups within host community at all phases of the project<br>• Ensure that its workers are briefed on the socio-cultural norms and sensitivity of the host communities<br>• Explore ways of encouraging goodwill and friendly relationship between its workers/service contractors and members of the community<br>• Establish and publicise grievance management procedure | NSF Management/ Community Liaison Officer |
| | Influx of people (migrant workers, sub-contractors and suppliers) and increased pressure on existing social infrastructure | NSF shall:<br>• In the future construct infrastructural facilities in the area to ease pressure on the existing amenities/ infrastructure<br>• Encourage personnel to participate in community development affairs<br>• Ensure that workers are educated on health issues | Site Project Manager/ Community Liaison Officer |
| | Increase in social vices (like theft, prostitution) resulting from increased number of people in the area | | |
| | Community agitations over land disputes, wrong stakeholder identification, leadership tussles, etc | NSF shall:<br>• Ensure early stakeholders' engagement sessions are held, and all agreed issues properly documented and signed<br>• Transparent communication of hiring policies amongst local communities | NSF Management |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Pre-Construction Phase** | | | |
| • Permitting<br>• Community engagement<br>• Land acquisition<br>• Recruitment<br>• Mobilisation to site<br>• Land preparation and clearing | Increased risks of accidents leading to injury/ death and loss of asset during mobilisation | NSF shall:<br>• Develop and maintain an effective journey management schedule<br>• Enforce speed limits of 100km/hr (major roads) 40-60km/hr (built-up areas) and 10-30km/hr (construction sites);<br>• Make sure vehicle drivers undergo and pass competency training on driving<br>• Use road signs at strategic points, sirens and public announcements where necessary to warn people of on-coming heavy duty vehicles<br>• Ensure all its vehicles are certified roadworthy and in good maintenance condition<br>• Ensure night trips are avoided | Site Project Manager/ Site HSE Officer |
| | Risks of armed robbery attack and hostage taking leading to injury/ death of personnel | NSF shall:<br>• Ensure a detailed security plan is developed (Appendix 1.2) and communicated to personnel<br>• Make sure there is open communication with security operatives in the area<br>• Possibly assist in equipping law enforcement agencies with personnel and equipment to combat crime | Site Project Manager/ Site Security Officer |
| | Nuisance (noise and vibrations) from movement of heavy duty equipment and vehicles affecting site workers and wildlife | NSF shall:<br>• Maintain all its work equipment at optimal operating conditions<br>• Make use of equipment with low noise and vibration capacity<br>• Ensure all personnel wear appropriate protective PPE such as ear defenders in area of high noise at work site<br>• Conduct HSE awareness training routinely | Site HSE Officer |
| | Dust particles and vehicular emissions from increased movement | NSF shall:<br>• Ensure site preparation and clearing are conducted under favourable weather condition when risk of generating dust is minimal.<br>• Maintain all its work equipment at optimal operating conditions<br>• Minimise venting from vehicle and equipment through the use of venturi or impingement scrubbers to control particulate matter emissions | |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Construction and Installation Phase** | | | |
| • Plant foundation works<br>• Piling, trenching, etc<br>• Plant component erection<br>• Fabrication, carpentry, painting and coating<br>• Transportation and logistics<br>• Waste generation | Generation of wastes such as scrap metal, wood, sand, concrete, paper, domestic waste etc | NSF shall:<br>• Make sure all waste generated are separated at source to enhance efficiency in waste handling and disposal<br>• Ensure personnel working at site are trained in the handling and management of wastes<br>• Treat and discharge all effluents (wastewater, sewage) in accordance with regulatory (FMEnv and DPR) requirements and in line with NSF waste management procedure/ plan | Site HSE Officer |
| | Risks of injury/ death and loss of assets resulting from accident associated with road transportation to and from construction site | NSF shall:<br>• Develop and maintain an effective journey management schedule<br>• Ensure its drivers observe road traffic and speed limits<br>• Make sure vehicle drivers undergo and pass competency training on driving, and identification of road signs and traffic codes before mobilisation<br>• Ensure all its vehicles are certified roadworthy and in good maintenance state | Site Project Manager/ Site HSE Officer |
| | Workplace accidents leading to injury or fatalities from burns, cuts, bruises, trips, falls from objects at height | NSF shall:<br>• Ensure that HSE briefings are conducted prior to work commencement<br>• Ensure personnel wear adequate PPE<br>• Design work area to meet best industrial standards recognizing all ergonomic factors<br>• Encourage employees to maintain good house keeping | Site HSE Officer |
| | Generation of dust and particles from heavy duty equipment usage | NSF shall:<br>• Ensure construction activities are conducted in favourable weather conditions when risk of generating dust is minimal<br>• Maintain all its heavy duty equipment at optimal operating conditions | |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Construction and Installation Phase** | | | |
| • Plant foundation works<br>• Piling, trenching, etc<br>• Plant component erection<br>• Fabrication, carpentry, painting and coating<br>• Transportation and logistics<br>• Waste generation | Fauna (birds, mammals etc) disturbance and displacement as a result of migration away from construction activity areas | NSF shall:<br>• Ensure that machinery, vehicles and equipment that produce high levels of noise should be avoided to reduce the overall impact.<br>• Personnel working with machinery, vehicles and instruments that produce high levels of noise should be supplied with ear plugs and ear muffs<br>• Plan work activities to avoid heavy duty movement during peak hours | Site HSE Officer |
| | Soil/ groundwater contamination resulting from accidental leakages and spills of hazardous substances (diesel, petrol, cleaning agents, lubricants, hydraulic oil) | NSF shall:<br>• Ensure that fuel storage facilities are leak-free and have bond wall protection<br>• Ensure that only competent and trained personnel are used in handling fuel and chemicals<br>• Hydrocarbon/chemical spill containment and prevention measures and equipment are functional and effective on site | |
| | Increased risks of accidents leading to injury/ death and loss of asset during construction | NSF shall:<br>• Make sure vehicle drivers undergo and pass competency training on driving, and identification of road signs and traffic codes before mobilisation<br>• Use road signs at strategic points, sirens and public announcements where necessary to warn people of on-coming heavy duty vehicles<br>• Ensure all its vehicles are certified roadworthy and in good maintenance state | Site Project Manager/ Site HSE Officer |
| | Potential collapse of power plant structures as a result of unsuitable geotechnical conditions | NSF shall:<br>• Carry out a comprehensive geotechnical study of the project site before construction works<br>• Ensure geotechnical report provide all strength values and settlement potential required for adequate foundation design<br>• Make use of experts with requisite experience in plant design and construction | Site Project Manager/ EPC Manager |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Construction and Installation Phase** | | | |
| • Plant foundation works<br>• Piling, trenching, etc<br>• Plant component erection<br>• Fabrication, carpentry, painting and coating<br>• Transportation and logistics<br>• Waste generation | Cement dust and toxic fumes inhalation by onsite workers during foundation works and welding of plant components | NSF shall:<br>• Ensure personnel wear appropriate PPE (eye goggles, nose masks etc)<br>• Make use of competent and well trained personnel for construction works<br>• Ensure periodic medical checks are carried out on personnel | Site HSE Officer |
| | Hazards from construction of base camp, and electric evacuation lines | | |
| | Risk of electrocution and burns during welding | NSF shall:<br>• Ensure strict adherence to standard work operations including the use of PPE (nose masks, hand gloves, etc) are maintained as stated in the company's HSE policy<br>• Ensure all electrical and welding equipment are maintained at optimal working conditions<br>• Make sure first aid facility are in place at construction site | |
| | Noise nuisance (including impulsive noise) from construction activities (e.g. piling, digging) resulting to temporary migration of mammals and rodents | NSF shall:<br>• Make sure machinery, vehicles and equipment that produce high levels of noise are avoided<br>• Personnel working with machinery, vehicles and instruments that produce high levels of noise should be supplied with ear plugs and ear muffs<br>• Plan work activities to avoid heavy duty movement during peak hours<br>• Ensure construction works are avoided at night time | Site HSE Officer/ EPC Manager |
| | Risks of fire/ explosions resulting from accidental ignition of onsite petrol/ diesel storage tanks | NSF shall:<br>• Ensure that fuel storage facilities are leak-free and have bund wall facility<br>• Ensure that only competent and trained personnel are used in handling fuel<br>• Develop oil spill contingency plan for prompt clean up<br>• Use booms and other spill containment equipment to ensure that incidental spills/leaks are promptly and adequately contained to prevent fire ignition<br>• Provide fire prevention and fighting apparatus | Site HSE Officer/ EPC Manager |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Construction and Installation Phase** | | | |
| • Plant foundation works<br>• Piling, trenching, etc<br>• Plant component erection<br>• Fabrication, carpentry, painting and coating<br>• Transportation and logistics<br>• Waste generation | Generation of wastes from construction activities such as scrap metal, wood, sand, concrete, paper, domestic waste, used oil etc | NSF shall:<br>• Make sure all waste generated are separated at source to enhance efficiency in waste handling and disposal<br>• Ensure personnel working at site are trained in the handling and management of wastes<br>• Treat and discharge all effluents (wastewater, sewage) in accordance to regulatory (FMEnv and DPR) requirements | Site HSE Officer |
| **Operational Phase** | | | |
| • Testing and commissioning<br>• Power generation<br>• Power plant<br>• Maintenance and servicing | Injuries/ fatalities to personnel due to incidents/ accidents from operating the power plant | NSF shall:<br>• Make sure vehicle drivers undergo competency training on driving, and identification of road signs and traffic codes<br>• Ensure a dedicated transport system is provide for its personnel to limit number of vehicles<br>• Ensure all its vehicles are certified roadworthy and in good maintenance state | Site HSE Officer |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Operational Phase** | | | |
| • Testing and commissioning<br>• Power generation<br>• Power plant<br>• Maintenance and servicing | Soil/ groundwater contamination from accidental petrol /engine oil spill during refueling of vehicle | NSF shall:<br>• Ensure that fuel storage facilities are leak-free and have bond wall protection<br>• Ensure that only competent and trained personnel are used in handling fuel and chemicals<br>• Use booms and other spill containment equipment to ensure that incidental spills/leaks are promptly and adequately contained to prevent fire ignition | Site HSE Officer |
| | Workplace accidents/ incidents (cuts, trip, falls etc) leading to injury/ death of personnel during operations | NSF shall:<br>• Ensure that HSE briefings are conducted prior to work commencement<br>• Ensure personnel wear adequate PPE while working in the plant<br>• Design work area to meet industrial standards recognizing all ergonomic factors<br>• Encourage employees to maintain good housekeeping within work site at all times | |
| | Depletion of groundwater resources for washing solar modules, and domestic use | NSF shall:<br>• Monitor and control the use of water to reduce wastages<br>• Ensure all water pumping and transmission mechanisms are maintained at optimal working conditions<br>• Ensure groundwater levels are monitored to check status | Site HSE Officer |

**Table 7.1: ESMP Guidelines for the Proposed PV-based Solar Power Plant Project- cont'd**

| Project Activities / Environmental Aspects | Potential and Associated Impacts | Mitigation / Enhancement Measures | Responsible Parties |
|---|---|---|---|
| **Decommission Phase** | | | |
| • Mobilisation of personnel and equipment<br>• Power plant decommissioning<br>• Abandonment/ restoration | Loss of employment, business opportunities and decreased economic activity | NSF shall ensure:<br>• Plans are developed to integrate disengaged workers from the plant into other projects (if any)<br>• That host communities are informed prior to decommissioning | NSF Management/ Site Project Manager |
| | Reduced power generation to national grid and low power supply | NSF shall ensure:<br>• Plans are made for another plant to continue generating electricity | NSF Management |
| | Risk of accident and injury to workers during demolition of structures | NSF shall:<br>• Ensure that HSE briefings are conducted prior to demolition activities<br>• Ensure personnel wear adequate PPE while carrying out demolition<br>• Encourage employees to maintain good housekeeping within work site<br>• Make sure trees or shrubs are re-grown on project site to restore its original form | Site HSE Officer |
| | Increased dust and vehicular emissions from decommissioning activities | NSF shall:<br>• Ensure demolition activities are conducted after sprinkling of water to prevent dust build up<br>• Ensure personnel wear adequate PPE while carrying out demolition<br>• Maintain all its vehicles at optimal working conditions | |

As part of the Environmental, Social and Management Plan for the project, the following guidelines have been developed by NSF to meet both national (FMEnv) and international (World Bank/ IFC) requirements.

### 7.4.1 Training and Awareness Plan

At the construction phase of the project, the following environmental awareness and trainings programs shall be conducted:

*Induction Training*

An induction training program shall be a requirement for every construction worker to be engaged in the project and shall be provided by the contractors. The training shall include:

- The proposed tasks for new worker;
- Safe work procedures;
- Use of personal protective equipment;
- Emergency responses and warning notices;
- Personal hygiene and site sanitation;
- Environmental protection ; and
- Hazard recognition and incident reporting**.**

*Weekly Safety and Environmental Forum*

There shall be a weekly environmental and safety awareness forum for construction workers during the construction activities at the project site. NSF shall be responsible for coordinating these meetings.

At the operation phase of the project, NSF shall educate all its workers on environment, health, and safety issues using the following means to disseminate information to staff and workers:

- Staff and workers meetings;
- Local area network (intranet)/ the internet; and
- Annual bulletins on NSF operations.

### 7.4.2 Public Participation/ Involvement Plan

NSF shall welcome suggestions and information from relevant stakeholders, contractors, visitors and the general public, which shall help improve its operations in order to minimize impact on the environment and worker health and safety. The office of the Site Manager/ Community Liaison Officer shall be open to the general public for complaints and suggestions.

Complaints received from the public shall be documented and follow-ups made to ensure that such grievances are addressed accordingly and in line with the NSF grievance redress mechanism. A grievance or compliant register would be developed for this purpose.

*Project Grievance Management Mechanism Approach*

Grievances are feedback, responds or complaints concerning the way a project is being handled or managed. A grievance mechanism provides a formal and ongoing avenue for stakeholders to engage with the project proponent. Grievance monitoring allows for early warning or signals of any escalating conflicts or disputes. Identifying and responding to grievances supports the development of positive relationships between the proponent and the community, and other stakeholders. A grievance mechanism is not a substitute for a company's community engagement process or vice versa. The two are complementary and should be mutually reinforcing.

An effective grievance management process should include the following components:

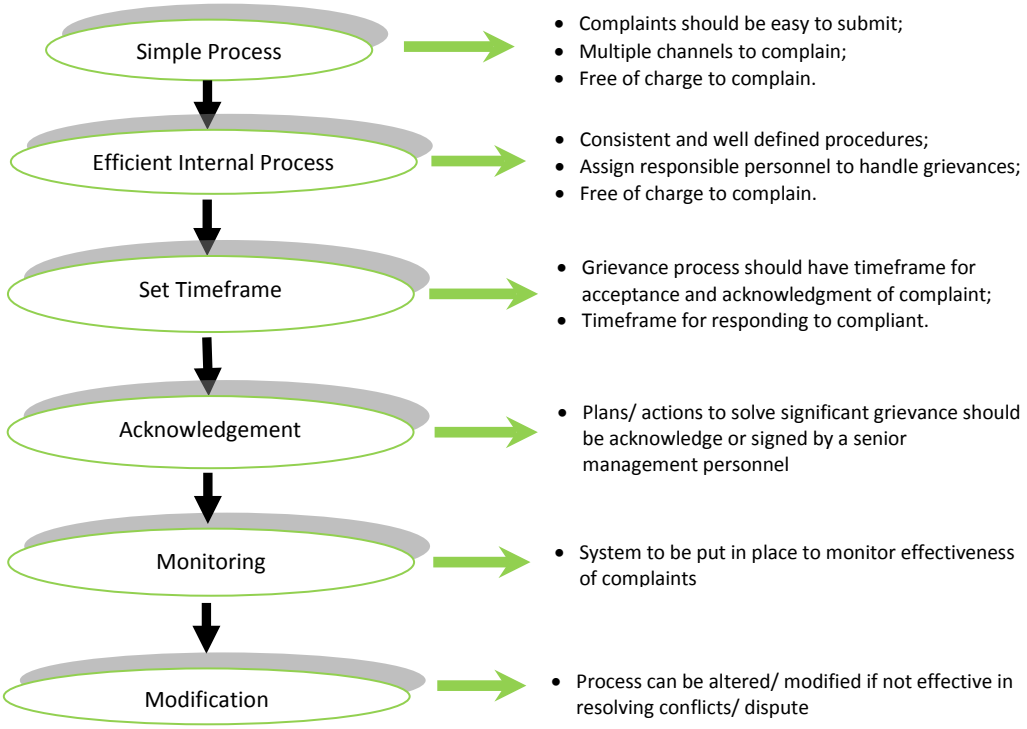



**Figure 7.2: Effective Grievance Mechanism Components**

According to World Bank Standard (i.e. OP 4.12), it is expected that projects implement a Grievance Mechanism, in order to accommodate any grievances, complaints or concerns that stakeholders may have.

NSF plans to employ a Community Liaison Officer (CLO) who will serve to meet all community liaison responsibilities and related assignment. He shall also ensure the effectiveness in implementation of the grievance mechanism. The grievance mechanism will be advertised and announced to affected stakeholders so that they are aware of their rights to submit comments and how to go about it. The NSF grievance mechanism will be founded on the following principles:

*Responsibilities Will Be Adequately Assigned*
A responsible person, team or function will be assigned to organise the resolution of grievances. This will enable the system run without undue impediments.

*The Process Will Be Accorded Due Importance*
It is important for affected communities and other stakeholder groups seeking to have their complaints resolved, to perceive the grievance management process as transparent and fairness. The NSF grievance management process will enhance outcomes and give people satisfaction that their complaints have been heard, even if the outcome is less than optimal. The grievance procedures will be readily understandable, accessible and culturally appropriated by the local population. From the outset, clarification will be made on who is expected to use this procedure The people will be assured that there will be neither costs nor retribution associated with lodging a grievance. The entire process (from how a complaint is received and reviewed, through to how decisions are made and what possibilities may exist for appeal) will be made as transparent as possible through good communication.

*The Mechanism Will Be Scaled Needed for the Project*

The NSF grievance mechanisms will be designed to fit the context and needs of the 125MWp utility scale PV-based solar power plant project. As much as possible, it will have relatively simple means of addressing complaints, such as through community meetings, community liaison personnel and suggestion boxes allowing for anonymity. It may also need a more formalized process and mechanism, and a higher level of dedicated resources for receiving, recording, tracking, and resolving complaints. The NSF grievance mechanisms will not be taken as a substitute for community engagement process or vice-versa. The two are complementary and will be made mutually reinforcing. Not all grievances shall be handled in the same way. For example, a complaint about a company truck running over chickens in the road may be readily resolved through direct interaction between the complainant and the company's community liaison staff (with a more formal grievance process only as a back-up if staff are not responsive). However, allegations of widespread ground water contamination, for example, may be of such a serious or urgent nature that they require immediate intervention by senior managers and subsequent mediation. In other words, NSF will consider creating different levels of redress within the grievance mechanism that correspond to the scale and seriousness of the complaint.

*The Process will be Documented and Publicized*

The process will be put in writing and publicized.NSF recognises that the policy or process for addressing complaints cannot be effective if nobody knows about it. Thus the grievance procedures will be put into writing, publicized, and explained to relevant stakeholder groups. The people will be informed on where to go and whom to talk to if they have a complaint, and understand what the process will be for handling it. As with all information, it will be provided in a format and language readily understandable to the local population and/or communicated orally in areas where literacy levels are low. It will not be overly complicated to use nor will it require legal counsel to complete.

*Third Parties Will Be Brought In Where Needed*

NSF recognises that sometimes ensuring "fairness of process" for affected individuals or groups require certain measures to level the playing field of perceived power. Thus, at a minimum, the host communities will need to have access to information. NSF will facilitate this by providing project-related information in a timely and understandable manner. In cases where significant imbalances in knowledge, power, and influence exist, NSF may wish to reach out to other partners to assist in the process. In terms of advocacy, an NGO might be brought in to assist local communities and advocate on their behalf. Where mediation is desired, academic or other local institutions may be sought out to play an "honest broker" role in mediating between NSF and stakeholder groups. In certain circumstances, NSF may consider providing funding for such third-party advice or facilitation in a way that is acceptable to all parties and does not compromise the integrity of the process

*The Process Will Be Made Accessible*

Projects that make it easy for people to raise concerns and feel confident that these will be heard and acted upon can reap the benefits of both a good reputation and better community relations. One of the best ways to achieve this is to localize your points of contact. Hire people with the right skills, training, and disposition for community liaison work and get them into the field as quickly as possible. Maintaining a regular presence in the local communities greatly helps to personalize the relationship with the company and engender trust. Talking with a familiar face who comes to the village regularly, or lives nearby, creates an informal atmosphere in which grievances can be aired and sorted out, or referred up the chain of command. This is usually more convenient and less intimidating to people than having to travel distances to the company offices during business hours to file a formal complaint.

*Response Time Will Be Defined and Transparency Upheld*

NSF will publicly commit to a certain time frame in which all recorded complaints will be responded to (be it 48 hours, one week or 30 days) and ensure this response time is enforced. This will help allay frustration by letting people know when they can expect to be

contacted by NSF personnel and/or receive a response to their complaint. Combining this with a transparent process by which stakeholders can understand how decisions are reached will inspire confidence in the NSF system. During critical time periods, such as construction, will be immediate responses to time-sensitive complaints, such as a fence being knocked down by a contractor, for example, and livestock getting out. A related issue is making sure that NSF personnel receiving grievances (typically community relations staff) have the authority to resolve basic complaints themselves, as well as a direct reporting line to senior managers if the issue is more serious or costly to address.

*Good Record-Keeping and Feedback*
A log book will be kept where necessary, and a sophisticated database will be maintainend where required. Written records of all complaints will be kept as this is critical for effective grievance management. The record shall contain the name of the individual or organization; the date and nature of the complaint; any follow-up actions taken; the final result; and how and when this decision was communicated to the complainant. In some countries, detailed personal information such as passport numbers are required to officially "register" a grievance. This can be intimidating to stakeholders and discourage them from using the mechanism. Thus, overly personal data will therefore be optional and kept confidential unless required to disclose to authorities. In addition to informing the complainant of the outcome (in writing where appropriate), as part of the broader community engagement process NSF will report back periodically to communities and other stakeholder groups as to how the company has been responding to the grievances it has received.

*Access to Legal Remedies will not be Impeded*
If the project is unable to resolve a complaint, it may be appropriate to enable complainants to have recourse to external experts. These may include public defenders, legal advisors, legal NGOs, or university staff. NSF may find that it can work in collaboration with these third parties and affected communities to find successful resolution of the issues. However, this is not always possible, and situations may arise where complainants will choose to pursue legal recourse. Under these circumstances, NSF will be familiar with the judicial and administrative channels for dispute resolution available in the Katsina State, and Nigeria at large and will not impede access to these mechanisms.

### 7.4.3 Regulatory Compliance Plan
NSF HSE Officer shall identify and develop a comprehensive checklist of every HSE-related regulation applicable to the proposed project including those contained in this ESIA report. The specific requirements of each of the regulations, standards, or codes shall also be clearly defined in a checklist. Project-specific compliance requirements shall be interpreted and documented into a Regulatory Compliance Plan (RCP), which will be approved by NSF and then incorporated into the detailed project design.

### 7.4.4 Project Design Guidelines
The specifications to be used for the design, construction, and operations of the proposed utility scale PV-based solar power project are based on applicable regulations, industry standards and codes that are in agreement with standard power and electrical industry practices. Applicable requirements to be incorporated into the project design would be clearly approved national and international project specifications and standards (see **Appendix 3.3** for applicable codes).

### 7.4.5 Project Execution Guidelines
***Vegetation Clearance***
All clearance works at the construction site shall be carried out within defined perimeters and only when necessary. Clearing of vegetation shall be kept to the minimum necessary to permit safe operations. Trees felled from site shall be re-utilised for the benefit of the neighboring communities or as otherwise desired by NSF in consultation with the communities. Areas cleared in excess of operational requirements shall be reinstated with

indigenous topsoil and vegetation. A buffer zone or green belt shall be achieved to incorporate environmental conservation practices and improved aesthetic quality at the site.

***Foundation Works, Sand Filling and Surfacing***
Work within the construction site shall be carried out in such a manner that there is no interference with existing water courses (if any). Work shall be limited to defined operational perimeter.

If existing watercourse (if any) require to be temporarily diverted to enable the works to be carried out, approval for such diversions shall first be obtained from the relevant authorities. The diversion shall be maintained while the work is being carried out and shall be re-instated, including the removal of any obstruction to flow, as soon as practicable after the work is completed. No excavated material or debris shall be discharged into existing watercourses (if any exists).

***Use of Public Access Roads***
All transportation, construction, installation and surfacing works shall be executed in such a manner that will ensure that interference with the use of public access roads is minimal. However, if operational safety demands the blockade of public roads, then the Site HSE and Community Liaison Officers after due consultation from relevant State Government approving authorities, may approve such operation only when temporary traffic control and diversion arrangements have been provided. Dumping or storage of litter/debris, tools and equipment in public or private roads shall be prohibited. Contractors shall develop road-clearing strategies to ensure that public roads are kept clear, safe, passable and free of traffic.

***Hydrological Properties and Drainage Protection***
NSF shall ensure that all hydrological characteristics and qualities of the area is maintained at its present status or improved on. During excavation, construction and installation works the contractors shall where necessary ensure that surface water (if any) flows on land areas are controlled and if necessary channeled into temporary discharge pits. Such pits shall be located, designed and constructed in a manner that will minimise the potential threat of erosion. Muddy water and surface runoff from work sites shall be drained into suitable silt traps, bagged and disposed-off with local waste contractors for discharge. The silt trap shall be of adequate size and regularly de-silted. Excessive site clearing shall be avoided and exposed surfaces shall be re-vegetated as soon as practicable to minimise erosion.

In general, NSF intends to carry out the following activities during the project execution phases:

- Schedule project activities to avoid heavy rainfall periods to the extent that is practical;
- Mulching and re-vegetation to stabilise exposed areas;
- Design channels and ditches for post-construction flows;
- Provide adequate drainage systems to minimise and control infiltration;
- Minimise dust from material handling sources by using covers and/or control equipment (i.e. water suppression and bag house)
- Minimise dust from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing moisture content;
- Totally avoid open burning of solid wastes;
- Using impervious surfaces for refueling areas and other fluid transfer areas at plant site;
- Train workers on the correct transfer, handling of fuels, chemicals and response to spills; and
- Provide portable spill containment and cleanup equipment on site and training in the equipment deployment.

### 7.4.6 Inspection and Maintenance Plan
In order to maintain technical integrity of the facility upon completion, a well-defined

inspection and maintenance management system shall be activated to ensure compliance. NSF's maintenance programme shall deal with establishing processes to develop and sustain necessary maintenance procedures. The system shall identify what procedures are required, classifying procedures to their impact on operating integrity, controlling deviations from procedures, and updating of procedures to capture lessons learned. It will also address training and verifying competency for facility-specific procedures.

The maintenance system will include plans and procedures for:

- Normal maintenance (routine and breakdown maintenance performed by the Maintenance Technicians involved in the project );
- Preventive maintenance (activities carried out at pre-determined intervals);
- Predictive maintenance (as initiated by facility condition monitoring and assessment); and
- Inspection (in accordance with a pre-defined programme and based on statutory and company requirements);

The Site Project Manager will develop a comprehensive Maintenance and Inspection Programme (MIP) for all equipment and machinery before commencement of operations. The programme will cover routine equipment checks; inspection of wastewater discharge units, emissions monitoring; inspection and maintenance of corrosion protection system in serviceable condition; plant component servicing and inspection; and general inspection and maintenance of the turbine generators and diesel tanks; etc. The maintenance and inspection schedule contained in the programme will be designed in line with manufacturer's specifications for each of the equipment and in compliance with specific guidelines as contained in relevant national and international guidelines.

### 7.4.7 Risk Assessment and Management Plan

Risk assessment and management shall be an integral part of the proposed project's execution. Risks related to project execution and operations shall be identified by a structured approach. Risk assessments shall be planned and conducted in advance of appropriate activities to allow resolution of risk without schedule interruption. Competent personnel shall be included in risk assessments to ensure that risks are correctly identified and assessed.

The responsibility of risk management in the proposed project lies with the EPC contractor. Monitoring by the NSF Management Team will ensure that contractor processes are being implemented fully and effectively.

Workers to be involved in the construction and operational phases of the project will be employed by the EPC contractor; therefore NSF will pay particular attention to applying appropriate contractor control, mitigation and monitoring activities for contractors. NSF expects contractors to have HSE systems in place consistent with Katsina State Government (DSG) guidelines. Personnel working in the area shall work in accordance with job specifications developed by EPC/ NSF. They will have the direct responsibility for executing the work using sound engineering, fabrication, installation, and commercial practices, while maintaining adequate controls. The designs will take into account applicable laws and regulations, and, in the absence of such, generally accepted industry standards. The contractors will develop operating manuals and appropriate documentation regarding the proper operation and maintenance of the power plant facility for approval by NSF. This data will be provided in a timely manner such that facility-specific training can be given to personnel prior to start-up.

### 7.4.8 Worker Safety and Health Plan

Operations within the work site shall be subject to industry policies and IFC Environmental, Health, and Safety Guidelines. All NSF and contractor staff shall be well informed and trained on the policies and guidelines. Facility will be designed to enhance safety planning.

Contractors shall provide adequate health services as well as first aid services for its workforce. The first aid services shall be extended to visiting personnel and temporary (casual) workers. All construction activities shall be properly managed through careful planning and application of relevant HSE policies including the following:

- Use of permit-to-work;
- Job hazard/ safety analysis and toolbox meetings;
- Use of PPE in designated hazard areas;
- Prohibition on drinking of alcohol during work hours and at work sites and within facilities;
- Prohibition to night trips;
- Regular emergency drills; and
- Prohibition to smoking in fire hazard areas.

*Integrity of Workplace Structures*

- All structures and installations would be design to enable easy cleaning and repair, and limit the accumulation of hazardous compounds;
- Buildings will be structurally safe, provide appropriate protection against climate change and have acceptable light and noise conditions;
- Facility design would ensure that fire resistant, noise-absorbing materials are used, to extent feasible, on ceilings and walls;
- Floors would be level, even, and non-skid to prevent trips and fall; and

*Workspace and Exit*

- Space to be provided for each worker would be adequate for safe execution of all activities, including storage of materials and products; and
- All emergency exits route would be unobstructed at all times. Exits would be clearly marked. The number and capacity of emergency exits would be sufficient for safe and orderly evacuation of the people during emergency situations.

*Fire Precautions*

- NSF shall equip the facility with fire detectors, alarm systems, and fire-fighting equipment. The equipment would be maintained in good working condition and be readily accessible; and
- Provision of manual fire-fighting equipment that is easily accessible and simple to use.

Other requirements to be met by NSF include:

- Water supplied for food preparation or for the purpose of personal hygiene (washing or bathing) would meet national and international drinking water quality standards;
- Equipment and installations requiring servicing, inspection, and/or cleaning would have unobstructed, unrestricted, and ready access;
- Hand, knee and foot railings would be installed on stairs, platforms, permanent and interim floor openings, offices and plant building;
- Ensure that well equipped first-aid is provided at designated areas at site. First-aid stations would be easily accessible throughout the place of work;
- Eye-wash stations and/or emergency showers would be provided close to all workstations as first-aid response;
- Sufficient fresh air (ventilation) would be supplied for indoor and confined work spaces;
- Temperature in office areas would, during service hours, be maintained at a level appropriate for the purpose of the facility;
- Fall prevention and protection measures would be implemented whenever a worker is exposed to the hazard of falling height;

### 7.4.9 Pollution Control Guidelines

***Air Quality Management Plan***

In operating equipment, all practical methods and devices available to control, prevent and otherwise minimise atmospheric emissions or the discharge of air contaminants from the power plant shall be utilised. Good engine efficiency of equipment and vehicles shall be maintained. Indiscriminate burning of materials resulting from clearance of trees, bushes and combustible materials shall also not be permitted.

Though the operation of PV-based solar power plants produces no emissions, NSF intends to manage air emissions from all sources during all phases of the project by ensuring:

- Emissions do not result in pollutant concentrations that exceed the FMEnv and WHO ambient quality limits;
- Implementing a leak detection and repair (LDAR) program that controls fugitive emissions by regularly monitoring to detect leaks, and implementing repairs within a predefined period;
- Use of dust control methods, such as covers, water suppression, or increased moisture content for open materials storage piles;
- Use of water suppression for control of loose materials on paved or unpaved road surfaces during construction;
- Vehicle manufacture's recommended engine maintenance programs are implemented;
- Emissions control devices such as catalytic converters, wet scrubber are installed and maintained;
- Fuel switching (e.g. selection of lower sulfur fuels) during fuel combustion to reduce amount of particulate matter emission;

***Note***: By implementing the above, NSF would ensure air pollutant gases are below the following WHO (IFC) limits during all phases of the project:

- $SPM_{2.5}$= 10µg/$m^3$ (annual mean), 25µg/$m^3$ (24 hour mean);
- $NO_2$ = 40µg/$m^3$ (annual mean), 200µg/$m^3$ (1 hour mean); and
- $SO_2$ = 20µg/$m^3$ (24 hour mean), 500µg/$m^3$ (10 minute mean).

***Water and Soil Pollution***

Pollution of soil/surface water by wastewater shall be prevented by proper management practices. Effluent water from the chemical/ fuel storage and processing facilities shall be collected, transported and treated to FMEnv requirements of 10ppm oil in water. Waste shall be managed using wastewater treatment plant being considered or stored and transferred to disposal center with capability of managing such, before discharge.

All excavation, construction and surfacing activities shall be performed by methods that will prevent pollution of the soil media by accidental spills of contaminants, debris, and other objectionable pollutants. Regular checks shall be conducted on site equipment to minimise minor lube oil and combustible leaks from engines.

Groundwater from boreholes for drinking purposes shall be monitored in line with WHO drinking water quality limits.

***Noise Pollution***

NSF shall comply with all noise control requirements pertaining to FMEnv and IFC standards. All equipment shall be maintained at optimal working conditions and recommended work practices shall be employed to minimise noise. Ear defenders shall be provided for all workers and any other person present within the vicinity of high noise generating equipment or operations. Noise pollution will be significant mostly during construction phase. If noise level at any time gives rise to public complaint, the issue shall be treated, as public nuisance and NSF will take appropriate measures to resolve the

problem. Safe separation distances and buffer zones shall be established between facilities, work sites and neighboring communities to reduce the impact of high noise levels from the facilities.

NSF intends to manage impact from noise by ensuring:

- Equipment with lower sound power levels are used;
- Project execution are done during the day so as to limit noise impact at night;
- Noise control by installing suitable mufflers on engine exhausts;
- Acoustic enclosures are installed for equipment radiating noise;
- Installation of vibration isolation for mechanical equipment;
- Reduced project traffic routing through community areas wherever possible;
- The re-location of noise sources to less sensitive areas within the site to take advantage of distance and shielding
- That noise levels from the facility do not exceed IFC noise limit of 70dB(A); and
- Continuous noise monitoring is carried out to check levels of noise all through the project phases (see **Table 7.2**).

It should be noted that the ambient noise baseline level recorded during the study were in compliance with the FMEnv/ IFC-WHO noise limit as discussed in **chapter 4**.

### 7.4.10 Emergency Response Plan

NSF and contractors will demonstrate that all potentially significant hazards and potential impacts of the project activities have been identified, the associated risks evaluated and understood, and that controls and recovery measures to effectively manage these risks and impacts are in place before mobilisation to site. NSF will assist the contractors, where necessary, with the provision of an hazard list for guidance.

In case of an emergency during the life span of the power project, the Emergency Response Procedure (ERP) will be activated. Its objectives are:

- To ensure no loss of life;
- To ensure that the environment is protected;
- To ensure that manpower, equipment and funds are available to effectively contain and clean up oil/ chemical spills; and
- To ensure that good record keeping is maintained and accurate information concerning emergencies is disseminated to the workers, public and government.

The ERPs cover the following situations and issues:

- Point and fugitive leakages;
- Isolation of supply points;
- Notification of authorities;
- Fire outbreak/ disasters;
- Safety precautions and environmental protection;
- Repair methods and procedures;
- Emergency repair;
- Contractor arrangements; and
- Re-commissioning and start-up.

NSF and its contractors shall identify all potential emergency situations and develop procedures to use in such scenarios as explosions and/ or fires, medevac, hydrocarbon/ chemical spills, weather related disasters, hostage taking, community disturbance, kidnapping, etc. Emergency drills will be conducted to demonstrate preparedness for response and a schedule of drills and testing of emergency instruments will be prepared by all contractors on the project. Every technical contractor on the proposed project will prepare and submit to NSF for approval a contingency plan for emergency situations and possible incidents beyond the capability of site facilities.

### 7.4.11 Communication Plan

Effective two-way communication between NSF and contractor staff on HSE and security issues will be maintained. This will include awareness programmes to motivate staff and contractors. HSE and security information and experiences will be shared between NSF and contractors to facilitate improvement in HSE and security performance.

NSF shall ensure its staff at all levels involved in the proposed project become familiar with the importance of compliance with the adopted NSF HSE policies, regulatory compliance plan and security plan and their individual roles and responsibilities in achieving compliance. Each person will be aware of their respective work activity risks and hazards and the controls, mitigation measures and emergency response procedures that have been established. They will also be aware of the potential consequence of departure from agreed operating procedures.
Contractors will set up appropriate procedures and lines of communication to handle HSE and security issues (e.g. direct access to the nearest clinic, direct access to emergency services, etc).

Contractors will be able to communicate easily with their base, work site, their entire workforce and with NSF in an emergency. Appropriate safety programmes and promotion will be employed to effectively promote HSE and create awareness e.g. minutes of meetings, plans and performance targets, HSE performance and news board, posters, bulletins, video, news flash, e-mail, etc.

### 7.4.12 Environmental Monitoring Plan

All contractors shall be required to monitor their performance with respect to environmental and social performance. The NSF HSE Officer shall also undertake monthly, quarterly and yearly environmental assessment and spot checks throughout the plant project lifecycle. Assessment findings shall be reviewed by the Project Management Team (PMT) and where corrective actions are necessary, specific plans (with designated responsibility and timing) shall be developed to ensure continuous performance improvement.

In addition to assessing operational aspects and monitoring, assessments shall also consider compliance with agreed objectives and targets, and the effectiveness of the ESMP and its implementation programs. The ESMP shall, therefore, be subject to ongoing review and development to ensure that it remains appropriate for all aspects of the project. As is typical with all FMEnv approved projects, the ministry will carry out an assessment before the end of the project to confirm compliance of project activities to the terms and conditions of the ESIA approval.

The objectives of the monitoring programme are to:

- Ensure compliance with regulatory emission and discharge limits;
- Monitor changes in existing physico-chemical, biological and social characteristics of the environment, compared both to the environmental baseline and predicted conditions;
- Ensure continual interactions and flow of information between NSF and the stakeholders;
- Determine whether any detected changes in socio-economic and environmental components are caused by the project or by other forces;
- Determine the effectiveness of the control and mitigation/ enhancement measures and provide a basis for recommending additional measures; and
- Ensure sustenance of accountability and a sense of local ownership throughout the project lifecycle.

The monitoring programme (including data collection) designed for the utility scale PV-based solar power plant project is presented in **Table 7.2** overleaf. The monitoring frequency is subject to review after the first year to determine its effectiveness and possibly include other identified areas of concern.

**Table 7.2: Recommended Environmental and Social Monitoring Programme**

| Indicator Parameters | Impact Category | Monitoring Method | Location | Frequency | Project Phase | Responsibility |
|---|---|---|---|---|---|---|
| **Environment Aspects** | | | | | | |
| Noise Levels | Noise | Point and ambient measurements | Stations measured in this ESIA | Monthly- construction<br>Quarterly- operation | Throughout the project | NSF HSE Officer/ Regulators |
| Air Polluants: $NO_x$ , $CO_x$ , $SO_x$, $H_2S$, $NH_3$, $C_XH_Y$ and SPM | Air quality | Point measurement | Sample point location in ESIA | Bi-annually- construction<br>Bi-annually- operation | Throughout the project | NSF HSE Officer/ Regulators |
| Soil: Characteristics | Soil | Sample collection using soil auger and analyses | Along sample point location in EIA | 3years – after commissioning and every 5 years afterwards | Throughout the project | NSF HSE Officer/ Regulators |
| Groundwater Characteristics | Groundwater | Sample collection and laboratory analyses | From installed boreholes with project site | Quarterly-construction<br>Bi annually –operation (for first three years) | Throughout the project | NSF HSE Officer/ Regulators |
| Effluent Quality | Waste water quality | Sample collection for laboratory analyses | At sample collection point before evacuation by disposal agency | Quarterly-construction<br>Quarterly-operation | Operational phase | NSF HSE Officer/ Regulators |
| **Social Aspects** | | | | | | |
| Engagement Issues: (employment, contractors, suppliers) | Socio-economic | Review of MoU, consultation and employment policies | NSF site | Monthly-construction<br>Quarterly-operation | Throughout the project | NSF HSE and CLO Officers |
| Social Cultural Issues | Socio-economic | Feedback, consultation and review of complaints | NSF Site/ community | | | |
| Community health: (prevalent diseases in host community) | Socio-economic/ health | Collection of health statics from clinic and hospitals with the LGA | Community/ LGA | Yearly-construction<br>Yearly-operation | Throughout the project | NSF Management |

### 7.4.13 Waste Management Plan

Waste generated shall be managed in accordance with Federal Ministry of Environment guidelines and NSF waste management procedures. The manner in which wastes are to be handled, stored and disposed is dictated by the nature of the waste. NSF's Waste Management Plan (WMP) takes into consideration the nature of all wastes that will be generated during the lifetime of the project. The following objectives form the basis for the WMP for the proposed project:

- Progressive reduction of wastes with the target to minimise overall emissions/ discharges, which have adverse impact on the environment;
- Meet the environmental requirements of FMEnv and Katsina State Waste Management Law as well as other international bodies (such as IFC/ World Bank) on waste management;
- To establish, implement and maintain waste segregation aimed at enhancing recycling;
- To ensure that NSF and its contractors are responsible for effective waste handling and disposal process;
- To ensure that waste management programme is in line with provisions of the Environmental Management Programme of ISO 14001;

The WMP would be binding on all staff and contractors involved in the proposed project implementation with respect to the:

- Emission or release of air pollutant and fugitive gases;
- Management of spill and untreated liquid effluent from the project site;
- Management of solid wastes from project activities; and
- Generation of noise.

The waste management principles of NSF is designed to ensure that wastes generated are properly handled and disposed of in an environmentally friendly manner by adopting the principle of waste source reduction, recovery and reusing. All wastes, which cannot be reused, are managed and disposed of in accordance with NSF HSE policy and in line with the company's Environmental Management System (EMS).

***NSF Waste Management Plan***

NSF has developed a Waste Management Plan/ Policy containing procedures to be followed in the management of wastes and discharges from its facility. NSF recognizes that her operations produce waste which must be handled from "cradle to grave". The Waste Management Policy is intended to help staff and the general public comply with Local, State, Federal and International Regulations on waste management.

*Waste Handling*

For proper handling and disposal, wastes shall be well defined at source and labels transmitted along with the wastes to the final disposal points. NSF personnel and contractors shall record and document all wastes generated in the course of work in a Monthly Waste Report, which shall be used to track/ monitor wastes generated from the plant facility. Basic information that must be provided as a minimum for adequate definition of wastes include:

- Waste type identification;
- Proper waste categorization (domestic, office, industrial and hazardous wastes);
- Waste segregation information; and
- Recommended management practices.

*Waste Minimisation*

Waste minimisation implies reduction, to the greatest extent possible, the volume of waste materials. The four principles of waste minimisation process are **recycle, reduce, reuse and recover**, and shall be adopted as applicable in this project.

*Waste Segregation*

Waste segregation and characterisation shall be carried out on wastes that are similar and may be combined to simplify storage, treatment, recycling, and/or effective implementation of appropriate waste disposal methods. Wastes shall be segregated, preferably at source into clearly designated bins at strategic locations within the plant facility. Particular attention shall be given to work area and offices where relatively significant amount of wastes including food packaging would be generated. The Site HSE Officer shall be responsible for the maintenance of the waste segregation scheme.

*Waste Disposal*

All spoil materials, rubbish and debris shall be cleared regularly from the site and disposed of, at designated areas and facilities as specified in PWM guideline. Instructions on material safety handling sheet shall be strictly adhered to and would form basis for the disposal of hazardous wastes. Wastes in transit shall be accompanied and tracked by Waste Disposal Notes. Waste streams to be generated in the facility would be collected and handled as shown in **Table 7.3**.

**Table 7.3: Waste Handling and Disposal Method**

| Waste Streams | Category | Frequency of Generation | Recommended Practice | Future Practice |
|---|---|---|---|---|
| Bulbs and mercury tubes | H | Monthly | Segregate and transport well bagged wastes to recycling center in Katsina Town, Katsina State.. Wastes must be clearly labeled | Same |
| Clinical wastes from first aid treatment | H | Daily | Transport to NSF Retainer Clinic in sealed bags for incineration. Wastes must be clearly labeled | Same |
| Food wastes/ office sweepings, nylon bags etc | D | Daily | Segregate and store in bags. Disposed-off by NSF's waste disposal agent to be engaged | To be recycled at site |
| Glass | O | Monthly | Segregate and transport to recycling center in Katsina Town | As currently practiced |
| Pigging wastes | H | Weekly | Weigh and store in watertight bags placed in drums with lid and transport to the approved dumpsite for incineration | To be incinerated at site |
| Crude oil/ oily sludge/ fuel filter cartridges | H | Weekly | Transport to collection centre in Katsina Town | As currently practiced |
| Papers | O | Daily | Segregate (all confidential papers must be separated from non confidential) shred at source and transported to a recycling depot | As currently practiced |

**Table 7.3: Waste Handling and Disposal Method cnt'd.**

| Waste Streams | Category | Frequency of Generation | Recommended Practice | Future Practice |
|---|---|---|---|---|
| Printer, cartridges, computer toners, photocopier toners | O | Weekly | Segregate and transport to recycling canter | As currently practiced |
| Aerosol cans and spent lubricants | H | Monthly | Collect, segregate and transfer to disposal centre in Katsina for recycling | Same |
| Oily rags, sorbents; used protective clothing | H | Monthly | Transport to collection centre in Katsina Town | As currently practiced |
| Refrigerants (HCFC) from fridge and air condition units | O & H | Once spoilt | Safely contain in designated locations for return to manufacturer, or to recycling centre | As currently practiced |

**Note**: O- office wastes, D- domestic wastes, H- hazardous wastes

Specifically, solid wastes are to be collected/ segregated and stored in waste bins placed in strategic locations around the plant facility. The bins would be transferred into well labeled bags which would be evacuated and transferred to waste collection center in Katsina Town, Katsina State. Scrap metals are to be neatly arranged until evacuation. Access to waste storage area would be restricted, except for authorised personnel.

Liquid wastes such as wastewater and used oil are to be transferred into a collecting tank. This would be evacuated once the storage tank is filled up. Sewage is to be collected in a septic tank which would also be evacuated when the need arises. NSF supports no discharge of waste into the environment and as such would ensure that solid and liquid wastes from its facility are transferred to treatment site. NSF key elements of its waste management principles are presented in the flow diagram below.

***Accredited Waste Disposal Contractors***

Solid waste management in Katsina is handled centrally by The Katsina State Environmental Protection Agency (SEPA). SEPA has created designated refuse collection centers for community storage and evacuation. In addition to the State Environmental Protection Agency (SEPA) that is responsible for managing entire waste of Katsina State, there are also four private waste management agencies that alongside with SEPA manage the solid waste in Urban Katsina. These are:

1. Immaculate Company: Responsible for the provision of household refuse storage facilities to their clients, they also transport the refuse to dispose at collection points. This company is responsible for managing the entire household refuse generated at Barhim Housing Estate, behind Katsina State Secretariat, and some part of Umaru Musa YarâAdua University.
2. Express Environmental Services Operates similar services as Immaculate Company above, but for the Federal College of Education and Diamond Bank branches in urban Katsina.
3. Tri-Dynamic Waste Management Company Operates similar services as Express Environmental Services above for its respective clients. These include: Federal Medical Center and the Administrative Blocks of Umaru Musa YarâAdua University. The company also operates special services such as general cleaning when invited among others.
4. Annur Cleaners operation is mainly special services such as general cleaning, soak-away evacuation, spraying, fumigation, etc. Source: State Environmental Protection Agency, 2011

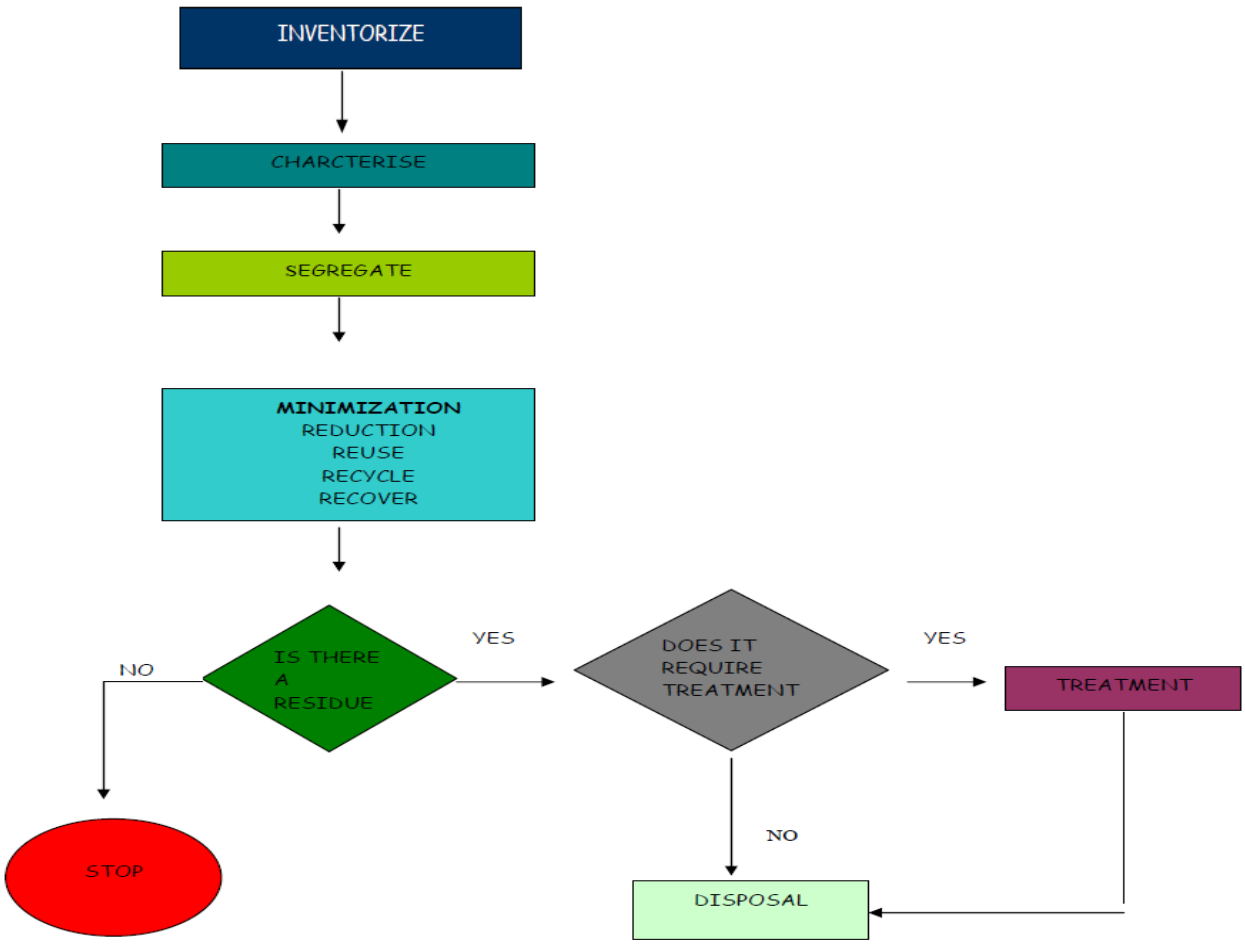



**Figure 7.3: NSF Waste Management Principles**

Waste management audit for the facility shall be carried out and findings properly documented and followed up. Catering services and camp sites shall maintain acceptable standards of hygiene and good housekeeping. Every employee has a vital role to play in achieving effective environmental protection.

### 7.4.14 Security Plan

The project team led by the Site Project Manager shall ensure that adequate security arrangements are made to handle security-related issues effectively. The project team will identify, evaluate and manage the risks to personnel and property arising from routine operations, malicious practices, crime, civil disorder or armed conflict.

In addition, each contractor will be required to prepare a Project Site Security Plan and submit it to NSF for review and approval before mobilisation to site. The project team will also organise a security workshop to identify, evaluate and recommend contingency plans for all security risks. A Site Security Officer would be engaged at the site. NSF project security plan is presented in **Appendix 1.2**.

### 7.4.15 Consultations

NSF recognises the importance of consultations in all phases of the proposed power plant project. This is because it involves soliciting people's views on proposed actions and engaging them in a dialogue. It is characterised by a two-way information flow, from the NSF to people/ stakeholders, authorities, and from people to the NSF. The overall aim of the consultation plan for the proposed project therefore, is addressing the concerns and opinions of the stakeholders with the ultimate view to assuring a smooth project implementation.

While the Federal Government, Katsina State Government and NOVA Solar Five Farms Limited retain decision-making authority, interaction with people and eliciting feedback allows the affected populations to influence the decision-making process by raising issues that should be considered in scoping; project design; mitigation; monitoring and management plans; and the analysis of alternatives. The overall result would be the optimisation of the potentials of the proposed project and maximisation of its benefits.

Consultations, which began during the ESIA process, shall continue throughout the project life cycle and shall be by way of:

- Visits and courtesy calls on the community leaders and other stakeholders to discuss the effectiveness of the addressed social issues on the lives of the people;
- Direct visits to the affected communities to consider (through questionnaires, interviews and visual observations) their opinions on the social acceptability and environmental soundness of the project;
- Organising large public meetings (participatory rural appraisal) to discuss public welfare, clarify misconceptions and address new issues as regards the project;
- Holding workshops and extension courses on resource management (using simply written materials, visual representation, videos and scale models to decode technical languages) and sensitising the indigenous people on the latest impact mitigation techniques; and
- Organising public seminars aimed at identifying new ways of rendering socio-economic assistance for the local people.

### 7.4.16 NSF Corporate Social Responsibility

The Corporate Social Responsibility (CSR) component of the project is enshrined in the grand bargain with the state that makes the project a Public Private Partnership (PPP). The investor consortium has agreed that the project company structure its transactions (contracts) and operations to:

I. Optimize local content in concentric circles (from the community, then the state, then Nigeria before sourcing from outside Nigeria what is needed for the project).
II. Optimize community participation - by providing a grant of $200,000.00 to be applied to community projects that enhance the community's ability to convert electrical energy into improved living standards
III. Optimize community involvement as first line of asset protection - community participation in the project in I and II provides the basis for the community as the first line of asset defense.

I, II and III will be scoped out in further detail by the project company in close consultation with the community and affected people on the project site. The rationale being that it is the project company that is the entity that owns the assets. Further, it is the project company that will be controlled by the investors and to whom the lenders lend, and ultimately who the community has to manage a relationship with for 25+ years.

The CSR component will involve extensive consultations, mapping and assessments to determine what interventions are desired by the community that the project company can provide resources for (including the proposed $200,000 grant). What issues and opportunities may present themselves at the time the project becomes operational. And the critical focal points within the community that can be engaged to kick-start these conversations.

NSF community assistance project begins with a policy of integrating local content into contracting so that , locals from Kankiya, then Katsina, then Nigeria are provided opportunities to be selected for work on the project during its development, construction and operations and maintenance phases. The local community in Kankiya will have additional support from a grant facility that is bespoke to their desires and needs for economic development using electricity as a vector for socio-economic inclusion in Kankiya.

### 7.4.17 Environmental Audit and Review

NSF will conduct regular audits in conjunction with applicable regulatory agencies to monitor compliance with its project. The scope shall cover the major project activities including the overall ESMP requirements throughout the life of the project. Contractors' performances towards meeting these requirements will be assessed.

Generally, the audit programme will be conducted in line with the relevant regulatory guidelines. It will be conducted annually during construction and every three (3) years during operations. The findings from these audits will be reported to the Commissioner for Environment and Federal Ministry of Environment, and corrective action plans will be developed and followed-up for performance improvement.

### 7.4.18 Decommissioning and Abandonment

The design of the facilities shall take due recognition of the need to decommission the power plant and the ancillary facilities at the end of their operational life. The abandonment plan shall take due note of the current national and international legislative requirements for decommissioning and abandonment.

*Decommissioning after Construction Phase*

Temporary structures (camp, storage yard, offices, etc.) would be installed at the construction phase to support site operations/ activities. Upon actualisation of construction phase, all areas temporarily used will be cleared, cleaned and re-instated.

*Decommissioning after Operation Phase*

This very last phase of the project is expected to occur after 60 years of usage. The following are activities to be carried out once the plant life span comes to an end:

- Operating processes would be systemically shut down in a safe manner;
- Liquid and solid wastes would be removed for treatment and disposal; and
- fuel storage tanks would be flushed and cleaned to remove oils and gases.

The fate of the emptied and cleaned structures and equipment are then decided by a feasibility study as part of an "Abandonment Assessment" to determine the best environmental and economic solution consistent with Nigerian requirements for decommissioning utility scale PV-based solar power plant facility. The general order of preference of decommissioning options available for redundant structures and equipment are as follows:

- **Re-use:** by sale and/ or transport to another project or company;
- **Re-cycle**: breaking down structures and equipment for raw materials. This is expected to be the fate of majority of metalwork used. The break-up of structures can be done on location or after transport to a breaking or salvage yard, dependent upon ease of transport and safety considerations;
- **Disposal**: some materials not suitable for recycling must be disposed to a licensed waste management facility;
- **Leave in-situ**: in some cases the best environmental and economic option may be to leave material in-situ.

## 7.5 Cost for ESMP Implementation and Monitoring

Mitigation measures to be adopted for each of the project phases have been presented in Chapter 6 and 7. The EPC Contractor will be directly responsible for financing the implementation of mitigation and monitoring measures from inception to the completion of the power plant project. The cost of impacts mitigation monitoring will be included in the EPC contract value and will be monitored by NSF Management Team.

NSF shall be responsible for auditing the activities of the EPC, and for the associated funding. During operations, NSF will be responsible for financing and managing mitigation

measures and monitoring activities in-line with international practices. Part of the conditions for the approval of the ESIA by the Federal Ministry of Environment (FMEnv) is that there will be regulatory monitoring of the approved project impacts mitigations and monitoring measures. The timing and frequency of the monitoring is determined by the FMEnv. FMEnv works closely with the Katsina State Ministry of Environment in monitoring the implementation of the ESIA approval terms and conditions.

Funding of the Impacts Mitigation and Monitoring (IMM) is borne by NSF. In the past, FMEnv will request funding for the monitoring while the project is in progress and the monitoring activity will be carried out after payment of the requested fund. Current practice is that FMEnv now issues a pre-approval letter which includes the cost of IMM and other conditions that has to be fulfilled prior to the issuance of the approval. Meeting the conditions, along with payment of the funds have therefore become prerequisites to the issuance of the ESIA approval. Payment prior to approval also ensures that the funding for monitoring is secured and the activity effected as at when due. The current cost is about ₦500, 000.

Annex B

# Stakeholder Engagement Plan

# 7 ANNEX B: STAKEHOLDER ENGAGEMENT PLAN

## 7.1 CONTEXT AND PURPOSE OF THE DOCUMENT

### 7.1.1 Introduction

The Stakeholder Engagement Plan (SEP) provides a framework that guides the stakeholder engagement and consultation process for the Nova Solar Project and its associated activities. Given that the Project is in the planning phase, the pre-construction engagement is presented in greatest detail, with engagement phases thereafter addressed at a higher level. The scope of the SEP, and the stages of engagement it covers, is summarized in Figure B7.1. As such, this SEP applies throughout the life of the Nova Solar Project

***Table B7.1 Stages of Engagement and Progress to Date***

| Project Stage | Completed/Planned |
|---|---|
| ***ESIA engagement*** | |
| **Stage 1:** Scoping/Draft ESIA Engagement | Completed - 2015 |
| **Stage 2:** ESIA Disclosure | Completed – December 2015 |
| **Stage 3:** Follow-on data collection and stakeholder engagement for ESIA Addendum and Community Development Plan | Completed – December 2016 and January 2017 |
| **Stage 4:** Ongoing engagement (monthly and *ad hoc)* | Ongoing/Monthly – Q1 2017 onwards |
| ***Community Development Plan engagement*** | |
| **Stage 5:** Community Development Plan project prioritisation | Completed – May 2017 |
| **Stage 6:** Community Development Plan implementation | Ongoing from Q3 2017 |
| ***Project execution*** | |
| **Stage 6:** Pre-engineering | Consultation to be carried out by the Project Community Liaison Officer. Timescale to be defined. |
| **Stage 7:** Construction | |
| **Stage 8:** Operation | |
| **Stage 9:** Decommissioning | |

The purpose of the SEP is to ensure that stakeholders are provided with opportunities to express their views on Project risks, impacts and mitigation measures throughout the life of the Project. It is a “living” document that will be updated as the Project evolves, in accordance with key milestones, to ensure full stakeholder participation in project decision making. This SEP therefore presents an approach based on current engagement activities and the future engagement strategy, guided by international best practice.

In summary, the key objectives of the SEP are to:

- provide a practical framework for public participation through the life of the Project;

- identify and map key stakeholders of the Project, including vulnerable groups, as well as providing a methodology for updating this periodically throughout the life of the project;

- ensuring two-way communication between the company and stakeholder groups through effective consultation methods;

- ensure that project decision-making is informed by stakeholder views, such that conflict is avoided wherever possible, or effectively addressed should it arise; and

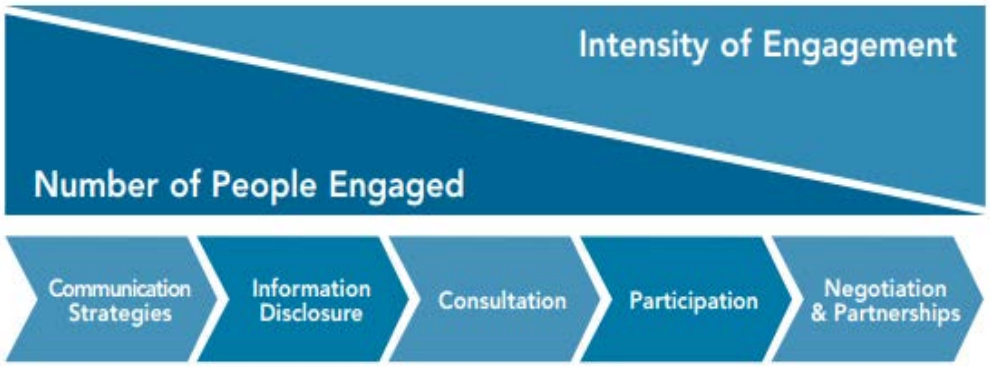
- provide an effective mechanism for reporting and managing grievances.

### 7.1.2 *Approach*

The approach to consultation detailed in this SEP has been prepared in line with international standards, namely the International Finance Corporation (IFC) Performance Standard 1 (PS 1) (as commonly accepted good practice) and African Development Bank (AfDB) Operational Safeguard 1. These elements are detailed in Section 2.2.

As a general rule, the intensity and frequency of stakeholder engagement will vary depending on Project milestones and activity, in keeping with the spectrum of stakeholder engagement outlined in Figure B7.1.

***Figure B7.1 Spectrum of Stakeholder Engagement***




**Source:** IFC, 2007, '*Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets'*

In the same way, the SEP (including the associated Grievance Mechanism) must be appropriate to, and fit with, the reality of the Project context. The stakeholder engagement approach taken by Nova Solar will be risk-based and scaled to suit the size and complexity of the Project and ongoing activities, as well as recognize the capacity and strengths of its team.

The stages of engagement for the Project and progress to date are summarised in Table B7.1 above.

## 7.2 *PROJECT OVERVIEW*

The proposed Nova Solar Farm (the 'Project') is a photovoltaic solar farm installation that is expected to generate 100 $MW_{AC}$ of electricity which would supply the national grid. The Project site is located approximately 3 km northwest of Kankiya, in Katsina State, Nigeria. The solar panels will be installed using aluminium or galvanized steel poles, part of which will be buried beneath the ground surface. The Project will require circa 200 ha of land.

The Project will be implemented in phases:

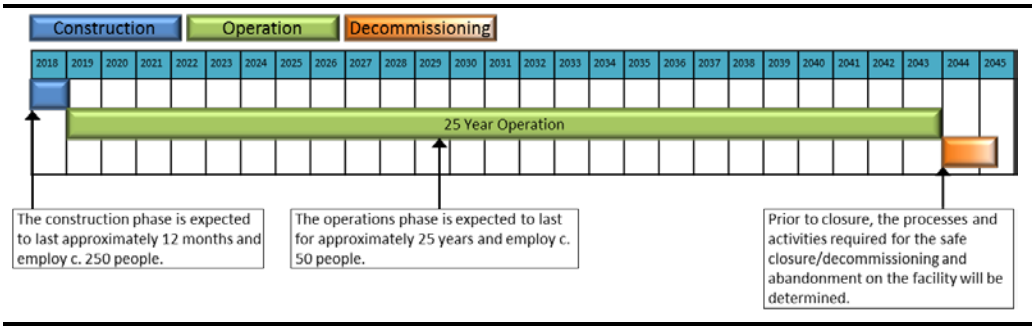
- pre-engineering (design and site preparation);
- construction and installation;
- operation; and
- decommissioning.

The Project will be located in Kankiya Local Government Area (LGA), which was chosen due to its terrain, accessibility (utilising the Kankiya-Katsina A9 highway), favourable climate and the high average annual Global Horizontal Irradiation index for the area, making it ideal for generation of solar power. It is also a strategic location in which to place a generation asset to power an area typically underserved by the Grid.

The Project will incorporate a switchyard, which will connect plant step up transformers to 132 kV transmission lines. Infrastructure on site will also include an office, a medium voltage/high voltage (MV/HV) station and communications infrastructure.

Figure B7.2 presents an overview of the planned Project timeframe for the phases of implementation. A map of the Project site, showing the presence of farm plots in a portion of the area is shown in Figure B7.3.

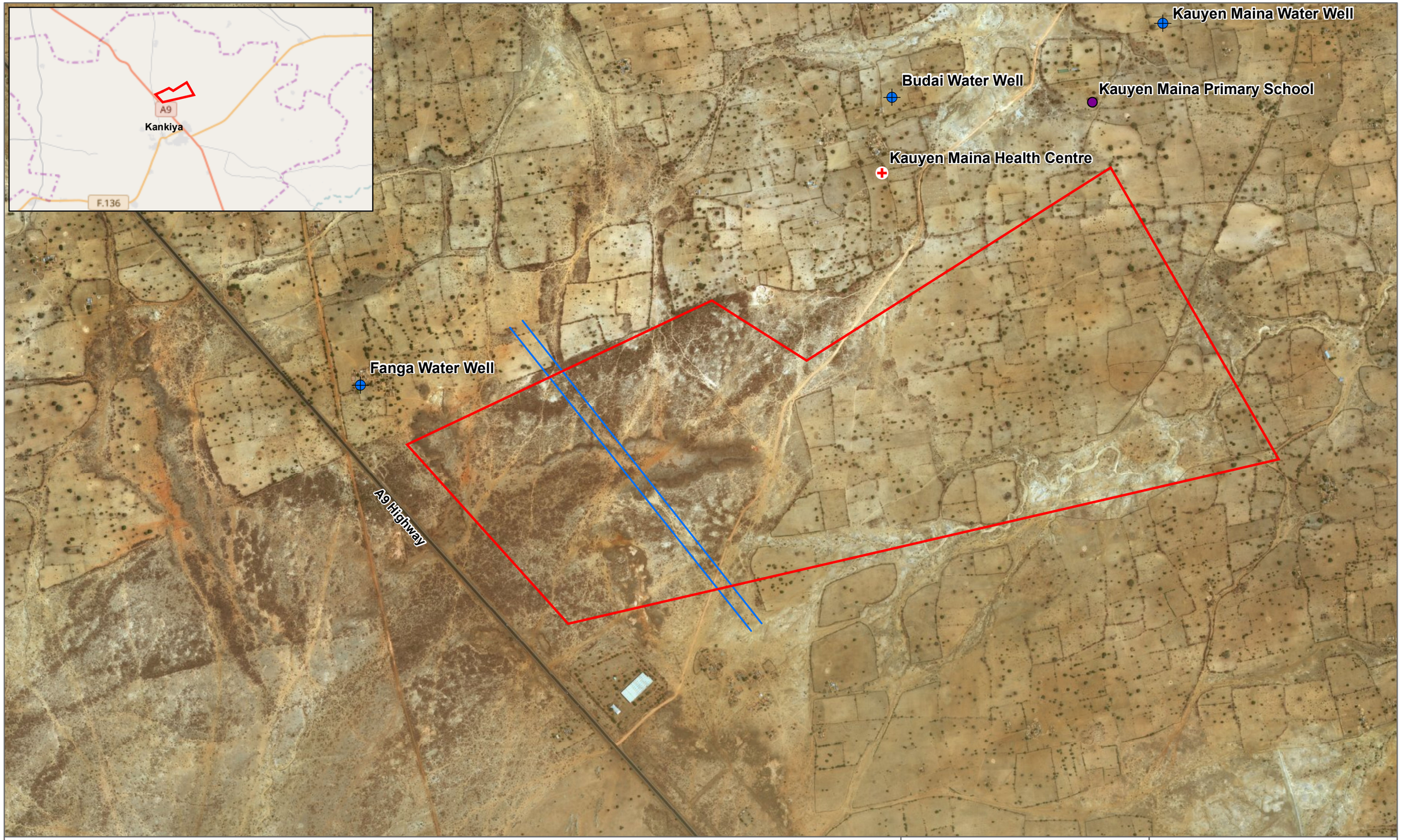
***Figure B7.2 Indicative Project Timeframe***




Although there is potential for variation, it is currently estimated that the peak workforce numbers will be 250 (mostly contractors) in the pre-engineering and construction phase, reducing to 50 (mostly permanent workers) when the

Project enters production. The Nova Solar *Worker Management Plan* and *Local Content Management Plan* provide further details on how the workforce will be managed and how local content in the workforce will be maximised, respectively.

Further details around the Project design can be found in *Chapter 3: Project Description*, of the full ESIA, *125 MWp Katsina Solar PV Power Plant – ESIA.*




Site Boundary
Right of Way
Kauyen-maina Health Centre
Kauyen-maina Primary School
Well

0 100 200 300 400
Meters

N

**Figure B7.3**
**Project Site**

| | |
|---|---|
| SCALE: 1:11,000 | VERSION: A01 |
| SIZE: A4 | DRAWN: RC |
| PROJECT: 0381947 | CHECKED: SF |
| DATE: 18/04/2017 | APPROVED: SF |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: © OpenStreetMap (and) contributors, CC-BY-SA

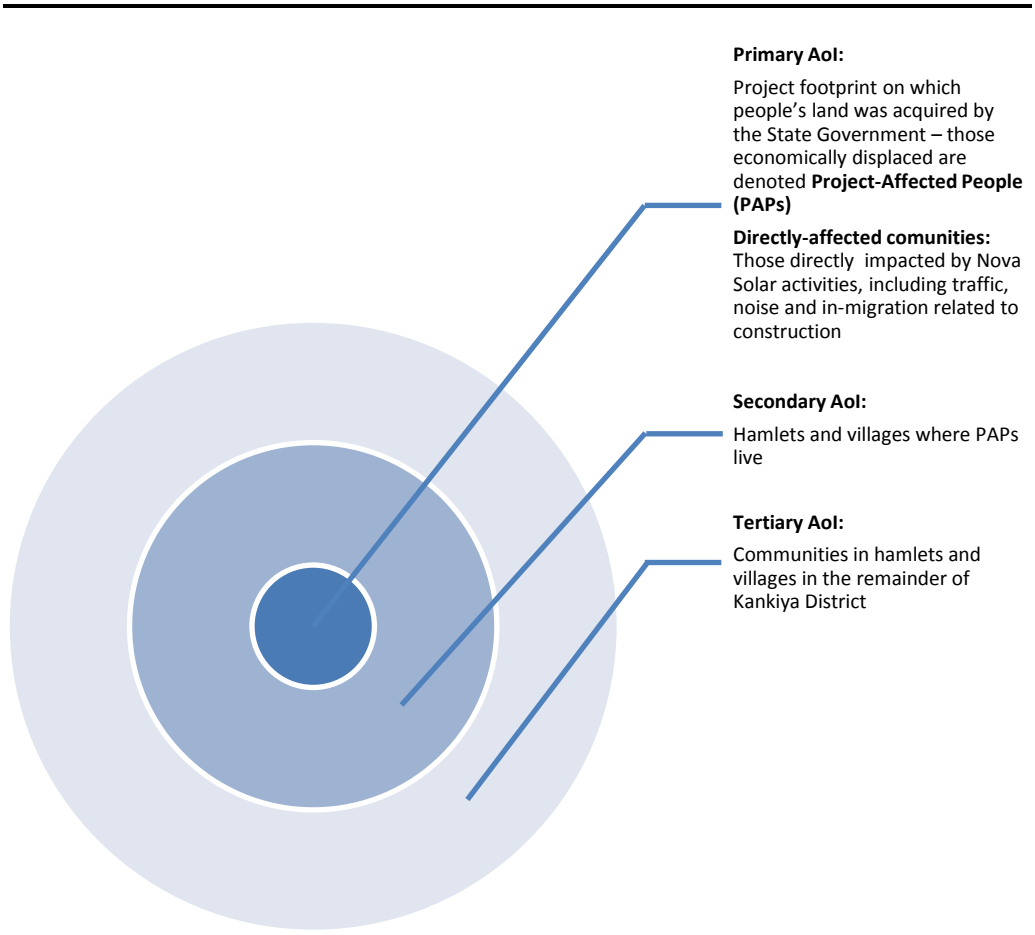
Path: \\uklonsv01\DATA\London\Confidential Projects\0381947 Azura Solar RAP & ESIA.SF\GIS\Maps\Figure1.2_0381947_NovaSolar_ProjectSite.mxd

### 7.2.1 *Social Area of Influence*

For the purposes of this SEP, and taking into account the Project's stage of development, the social area of influence (AoI) of the Project is outlined in Figure B7.4. As the nature and the impact of Project activities will change over time, so may the Project's social area of influence. The AoI will therefore be reviewed periodically, as a minimum when transitioning from one Project milestone to another or after a change that entails a significant socio-economic or environmental impact.

In line with the spectrum of engagement shown in Figure B7.1, the intensity and frequency of engagement with which a stakeholder or a local community is engaged may vary throughout the social AoI. It is likely the regularity and intensity of engagement will be greater in the primary AoI (consultation and participation), reducing in intensity and regularity towards the secondary and tertiary AoI (information disclosure).

***Figure B7.4 Project Social Area of Influence (AoI)***




## 7.3 *STRUCTURE OF THIS SEP*

This SEP is structured as follows:

- *Section 7.4 National and International Requirements – outlines the national and international requirements applicable to Project-related stakeholder engagement*
- *Section 7.5 Stakeholder Identification and Mapping – lists Project stakeholders, their interest and potential impact on the Project, as well as the frequency with which they are engaged*
- *Section 7.6 Communication Methods – describes the main communication methods and tools used in stakeholder engagement*
- *Section 7.7 Stakeholder Engagement Process – summarises outcomes of stakeholder engagement carried out to date and provides a framework for engagement to be carried out in future*
- *Section 7.8 Grievance and Feedback Mechanism – outlines how stakeholders can raise a grievance about the Project and the process by which Nova Solar will manage the grievance and close it out*
- *Section 7.9 Roles and Responsibilities – Outlines how responsibility for stakeholder engagement is assigned across the team.*
- *Section 7.10 Data Management and Monitoring – outlines how stakeholder records and grievances are recorded and reviewed for monitoring purposes*

This SEP is supported by the following annexes:

- *Appendix B1: National and International Requirements for Stakeholder Engagement*
- *Appendix B2*: *Project Standard Questions and Answers*
- *Appendix B3: Community/Stakeholder Record Form*
- *Appendix B4: Stakeholder Engagement Log*
- *Appendix B5: Stakeholder List*
- *Appendix B6: Grievance Form*

## 7.4 *NATIONAL AND INTERNATIONAL REQUIREMENTS*

This section outlines national and international regulations and requirements for stakeholder engagement applicable to this SEP and that form the basis on which Project-related stakeholder engagement is carried out. More detailed information about the principles and requirements of these is provided in Appendix B1.

### 7.4.1 *National Requirements*

The Nigerian Environmental Impact Assessment Act, 1994 requires stakeholder engagement for the purposes of project development as part of the ESIA process, namely for new projects or for project expansions sufficiently large that they trigger an ESIA process. These requirements were incorporated into the Nova Solar ESIA-related stakeholder engagement strategy and the outcomes of these consultations are provided in Section 7.7. Clauses that relate to public participation/engagement in the ESIA process are provided in Annex B1.

There is no additional specific regulation governing engagement at the operational stage of a Project such as Nova Solar's.

### 7.4.2 *International Requirements*

The SEP is also based on international stakeholder engagement requirements, namely the International Finance Corporation (IFC) (1) and African Development Bank (AfDB) guidelines *Operational Safeguard 1: Environmental and Social Assessment.* Requirements and principles for both standards are broadly aligned and are described in more detail in Annex B1.

Unlike Nigerian regulatory requirements, international standards require that there is regular engagement throughout the Project lifecycle.

Nova Solar has committed to meet both national and international sets of requirements in the stakeholder engagement undertaken for the Project and this is mirrored in the SEP.

Where there is a need for a more in-depth engagement and consultation process, an "*informed consultation and participation"* (ICP) process should take place. ICP is an organized and iterative consultation that involves a more in-depth exchange of views and information including "*free, prior and informed consent."*

## 7.5 *STAKEHOLDER IDENTIFICATION AND MAPPING*

### 7.5.1 *Overview*

Stakeholders include individuals or groups that may influence or be impacted by the Project, as described in Box B7.1 below.

***Box B7.1 IFC Definition of a Stakeholder***

*"Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses."*

The purpose of stakeholder identification and mapping is to establish which organisations and individuals:

a) have the potential to be directly or indirectly affected, both positively or negatively, by the Project, as well as
b) the degree to which they in turn can influence and have an impact upon the Project.

(1) International Finance Corporation (2012) *Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts*

The identification and mapping of stakeholders enables the Project to carry out stakeholder engagement in manner that is better tailored and targeted to specific stakeholder groups, while also helping to ensure that a more representative and diverse range of views and concerns are considered in the Project's development. It is an ongoing process requiring regular review and update.

The level of interest and impact of different stakeholders depends on various factors. These include level of authority, country and historical and socio-economic context, and cultural and educational factors. As such, the stakeholder mapping and prioritisation process for the Project is based on this approach.

A visual representation of the stakeholder groups, plotted against the level of high/medium/low impact/influence and interest in the Project is provided in Figure B7.5. The baseline context, summarised in Table 3.1 determines specific stakeholder groups and the engagement approach applicable to each. Communication methods are detailed in Section 7.6.

### 7.5.2 *Baseline Context*

Through the baseline assessment process it is possible to identify Project stakeholders in the Project AoI and the range of groups within it, including vulnerable groups. Aspects of the baseline context that help to identify specific stakeholder groups and that are relevant to the engagement plan are provided in Table B7.2. Discussion of potentially vulnerable groups is provided in Box B7.2. Information has been summarised form the main ESIA *Chapter 4: Description of Existing Environment* and then supplemented with additional information by the Project team.

Understanding the baseline context helps to determine specific stakeholder groups and the engagement approach applicable to each, including communication methods. These methods are detailed in Section 4. Special attention may need to be paid to vulnerable groups to ensure that engagement is inclusive of them and sensitive of their needs.

***Table B7.2 Environmental and Social Context - Key Sensitivities***

| Aspect | Key Information |
|---|---|
| Water | **Water and sanitation:** The Project is located in an area that is water scarce and drought prone. Rainfall is limited, occurring seasonally in the months of April to October, with peak rainfall occurring in August. Kankiya dam is a small man-made earth dam that collects water from Kwartalle and Incimamu streams (secondary tributaries to the main river feeding Zobe dam). It provides a store of water for the dry season to provide water for irrigation and livestock.<br><br>People living around the Project area dig shallow wells that are refilled from the shallow groundwater during the dry season. They use this water for domestic and farming purposes. Water is also drawn from a number of wells and boreholes in the area. Water consumed is not treated. The groundwater from these was found not to comply with WHO drinking water standards.<br><br>There is a piped water supply in Kankiya town from large overhead tanks that provide pipe borne water to the population there. The water in Kankiya town is treated however there is potential for issues as to maintenance of the system, including reliability of supply due to power outages and non-payment of electricity bills. |

Anecdotally, there appears to be significant existing and planned investment in water reticulation and irrigation to and in Kankiya. There is an incomplete Federal Government of Nigeria water reticulation project designed to pump water (nearly 100 km from Zobe Dam to Katsina via various reservoirs, storage and treatment centres via Charanchi- Kankiya- Kafin-Soli- Dutsin-Ma- and Zobe, the source. Four structures at various stages of completion are located at Tafashi (3Km from Kankiya town centre), Kafin Soli (a reservoir and treatment plant with water tower) and Rimawi/Dutsin-Ma.

Social

**Traditional governance structure:** The traditional leadership in Kankiya is composed of a District Council with the District Head (Hakimi Kankiya) as leader, representing Kankiya on the Katsina (State) Emirate Council. The District Council nominates an eligible candidate for District Head to the Emir of Katsina who then appoints him. The District Head sits on the Katsina Emirate Council. The primary criteria for nomination as Hakimi are education, experience, temperament and lineage.

At the Kankiya District level, the District Council is the most important decision-making authority. It is composed of the District Head (Hakimi Kankiya), the Magaji Ngari and Kankiya village and ward heads. Village heads are responsible for managing village affairs and resolving disputes, which are typically brought before the Village heads and escalated to the District Head.

The Local Government Area defers to the District Council and District Head on issues. The Hakimi is assisted by the Magajin Gari – (a functionary that combines the roles of Prime Minister and Chief Whip among Village and Ward Heads who make up the council).Village heads are responsible for Village governance and community harmony.

**Dispute resolution:** Individual civil and domestic disputes are usually resolved through the local Sharia or Magistrates courts. Criminal cases arising in the villages may be escalated to the police. Police records indicate seasonal fluctuations in property related offenses related to criminal damage (charged as “Criminal Mischief”) and livestock theft or injury, most commonly occurring during the rainy and harvest seasons. Community related grievances are resolved through Village councils or are escalated to the District Council if needed.

**Land tenure:** As per the Land Use Act, land is controlled by the State (at state and local government level), which has authority to allocate land for commercial, agricultural and other purposes. Overlain on this is the system of customary land tenure, whereby land belonging to a family is handed from one generation to the next, as well as land that is communally owned and managed. Residents were conscious of a gradual decrease in communal lands over the years.

**Population and household composition:** According to the National Population Commission of Nigeria’s 2006 Census (NPC 2006), the population of Kankiya Local Government Area numbered 151,395, with an annual growth rate of 3.2% per year. Using the annual growth rate or 2016, the current population for Kankiya Local Government Area (LGA) is estimated to be 214,073. The population of Kankiya LGA is projected to reach 235,268 by 2020. Assuming that the rate of population growth remains at 3.2% per year, this represents a population doubling time of roughly 22 years.

Average household size in Kankiya LGA was 5.1 in 2006. Children aged 0 to 14 years in Kankiya made up 48% of the population and 67% of the population was aged below 25 years. ESIA respondents indicated that 29% of households have lived in Kankiya for less than ten years, indicating a high proportion of migrants. Anecdotal evidence suggests significant out-migration of economically active men from Kankiya.

**Ethno-linguistic groups, religion and marriage:** Hausa is the main ethno-linguistic group in Kankiya, followed by Fulani. Minority ethno-linguistic groups in the area are Yoruba, Birom, Zaria, Igbo and Idoma. Islam is the dominant religion in Kankiya town and LGA. The marital system is a mixture of polygynous and monogamous. It is common practice for young married women to stay at home and to restrict their movement outside the house. A notice may be placed at the entrance to restrict men from entering into houses where there are married women. The PAPs in the project area are primarily Fulani.

Livelihoods

**Crop cultivation:** Farming is the primary livelihood activity in the area, accounting for over 50% of the main livelihood of houses in Kankiya. Inhabitants practice mainly subsistence farming with the sale of surplus or processed produce in the local markets. Farming practice is typically shifting cultivation. Farming equipment is highly manual with limited access to farming inputs such as fertilisers. Cultivated crops include millet, maize and cashew.

| | |
|---|---|
| | **Economic trees:** The Project is located in an area with economic trees including mango, neem, date palm, gum Arabic, African fan palm, Shea and African rosewood.<br><br>**Crafts and vocational skills:** There are a number of small craft businesses in Kankiya that include tailor shops, auto mechanic workshops, welding workshops, furniture/cabinet maker, masons and block makers. Women crafts include pottery cookware (for local products such as Massa, wara (local cottage cheese).<br><br>**Trading and market access:** There is a daily market at in Kankiya Town Centre near the Police Station, the Local Electricity utility and Bank, where trading of agricultural produce, inputs and other commodities such as clothing, beauty products and implements takes place. Women in particular, sell food, handicrafts, pottery cookware and surplus farm produce from their houses as they do not have access to selling in the formal markets. |
| Livestock | **Livestock:** Livestock herding is the second main livelihood in the area, traditionally a livelihood activity of the Fulani. The main livestock species identified are guinea fowl, cattle, camels, donkeys, goat and sheep. Some residents have started semi-intensive breeding of rabbits. Seasonal grasslands in the areas surrounding Kankiya are often used for grazing livestock. Both nomadic and sedentary herding is practiced in the area. As stated in Section 3.7.3 grazing conflicts have not traditionally been an issue in the Project AoI.<br><br>**Fulani herdsmen:** Fulani tribesmen inhabit the Project AoI, living mostly in temporary houses in close proximity to their animals and grazing. Some herder groups are seasonally nomadic while others are more sedentary. The Fulanis living in the area surrounding the Project footprint (indicating a more sedentary way of living) can be distinguished by their hamlets from more concentrated villages. Grazing is supplemented in the dry season with dried corn husks and wheat bran. |
| Health | **Health:** There is a General Hospital, a Comprehensive Health Centre and three private clinics in Kankiya. The public facilities provide outreach services in the wider community, including health promotion and ante-natal care. Endemic disease vectors include malarial mosquitoes, Tsetse fly (vector for African Trypanosomiasis or sleeping sickness) and rodents. Health conditions most commonly reported by health facilities are malaria, respiratory tract infections and diarrhoeal disease. Traditional plant-based medicine is also used, including barks and roots.<br><br>**Nutrition:** Food constituted the largest single household expenditure (35%) in the baseline survey. Meals consist mainly of carbohydrates, the main sources of protein being beef, milk/dairy products and poultry. Fruit is not consumed regularly. The baseline reported that nutritional status in the North-West of Nigeria is below the national average. |
| Education | **Education:** The (English language) adult literacy rates in Kankiya LGA are lower than both the nation and North West averages. A large proportion of the population (>50%) has not attended school and more females than men fall within this group. The education infrastructure includes both public and private primary schools and public secondary schools. The public education infrastructure in the Project area in particular is in poor condition. Even though some have basic amenities such as toilets and water supply, others lack adequate facilities. There is also a technical school (Business and Apprenticeship Training Centre), and a tertiary institution (Katsina School of Health Technology). There is also a technical school (Business and Apprenticeship Training Centre), and a tertiary institution (Katsina School of Health Technology). |

**Source:** Nova Solar ESIA, *Chapter 4: Description of Existing Environment*

### *Box B7.2 Potentially Vulnerable Groups*

- **Females and female-headed households:** Unable to access as wide a range of income-generating opportunities as men on account of social norms and their economic dependence on men. The main ESIA baseline states that young married women keep within the household and restrict their movement outside, making it difficult for them to sell goods in the open markets, without men. Women are less able to access formal employment in part due to lower literacy and educational achievement, itself a product of social norms. Having fewer economic means makes them less able to access replacement land of their own, especially if compensation provided is insufficient; or they are highly dependent on the income that they generate from the processing of produce grown on the land for which they were compensated.

- **Project-affected households without alternative/multiple plots:** It is common in the Project AoI for households to practice shifting cultivation, meaning they rotate cultivation across several plots every few years, allowing the soils to recover. This provides a degree of resilience to losing land within the Project footprint, especially if the CDP is able to support the intensification of production on the same land. The most vulnerable households will be those which do not have alternative land across which they can rotate cultivation. Although this is thought to be unlikely, the vulnerability exists where a) PAPs do not use their compensation to purchase replacement land, either because the compensation was insufficient or compensation was allocated towards other costs; and/or b) they are unable to secure access to a plot of land of equal size and quality, either due to land scarcity or insufficient compensation.

- **Disabled and elderly:** who are less able to support themselves through land-based livelihoods requiring physical ability and less able to adapt to the changes brought about by economic displacement.

### 7.5.3 *Stakeholder Identification*

A list of stakeholders identified so far, along with their interest in the Project, is presented in Table B7.3. This table is updated as the Project progresses throughout the Project lifecycle and as circumstances and stakeholder groups change.

### *Table B7.3 Stakeholder List*

| Stakeholders | Interest in the Project | Frequency of engagement<br>Engagement Method and Tool |
|---|---|---|
| ***Federal Government*** | | |
| Ministry of Finance | • Put Call Option Agreement (PCOA)<br>• Power Purchase Agreement | As needed - linked to permitting and financing milestones |
| Ministry of Power | • Power Purchase Agreement<br>• Licensing and operational inspections | • As needed - linked to permitting and financing milestones<br>• Periodic inspections carried out on site |
| Ministry of Environment | • Environmental Permitting<br>• Periodic environmental inspections | • Linked to permitting and financing milestones<br>• Periodic inspections carried out on site |
| Ministry of Agriculture | • Land use agreements<br>• Grazing routes<br>• Forestry | As needed |
| Ministry of Water Resources | • Water usage policy<br>• Irrigation (as relates to CDP)<br>• Water reticulation | As needed |
| Ministry of Labour | • Working conditions<br>• Periodic workplace inspections during construction<br>• Reporting of labour/workforce statistics | As needed |
| ***State Government and District Authorities*** | | |
| Ministry of Land and Surveys | • Compensation<br>• Lease maintenance | Continuous |
| Ministry of Resource Development | State-designated Project management and coordination agency | Continuous |
| Ministry of Agriculture | • Agricultural extension services<br>• Forestry management<br>• Consultation in the Nova Solar CDP | Continuous – during development phase only |
| Kankiya LGA | Visibility of the Project's shared benefits in the community | Ad hoc |
| ***Customary Leadership*** | | |
| Kankiya District Head (Hakimi Kankiya) | • Governance – Chair of the District Council<br>• Security<br>• Advisory<br>• Communal dispute mechanisms | Continuous – throughout the project |
| Magajin Gari | Similar to above | Continuous – throughout the project |

| Stakeholders | Interest in the Project | Frequency of engagement<br>Engagement Method and Tool |
|---|---|---|
| Village and Hamlet – affected | • Part of traditional leadership<br>• On the District Council<br>• Direct reporting of issues to Nova on issues affecting PAPs | |
| ***Communities*** | | |
| Project Affected Persons / Households (PAPs/ PAHS) | • Priority access to CDP programmes that support and enhance livelihoods<br>• Access to shared benefits of the Project in general | Continuous – as per Project milestones |
| Communities and households within the social area of influence | Access to shared benefits of the Project including:<br>• CDP livelihoods programmes<br>• Access to shared benefits in general, including employment opportunities | Continuous – as per Project milestones |
| Local business / tradespeople | • Opportunities to be part of the Project supply chain<br>• Access to small business support through the CDP | Ad hoc |
| Local public services (namely health and education) | Access to shared benefits of the Project, namely support through CDP programmes | Ad hoc |
| ***Other Investments/Developments*** | | |
| Pan Africa Solar | • Alignment of activities so as not to create mixed message<br>• No overspill or 'collateral impact' from negative sentiment towards Nova Solar<br>• Avoid competition for resources such as access to labour, key stakeholders, land and CDP implementing partners | Continuous due to ongoing collaboration |
| Kankiya Metal Works | • Currently no activity – unlikely to have an active interest in the Project<br>• Has infrastructure and some land | As needed |
| ***Non-Governmental & Community-Based Organisations (NGOs & CBOs)*** | | |
| TBC during CDP development process | | |

### 7.5.4 *Stakeholder Mapping*

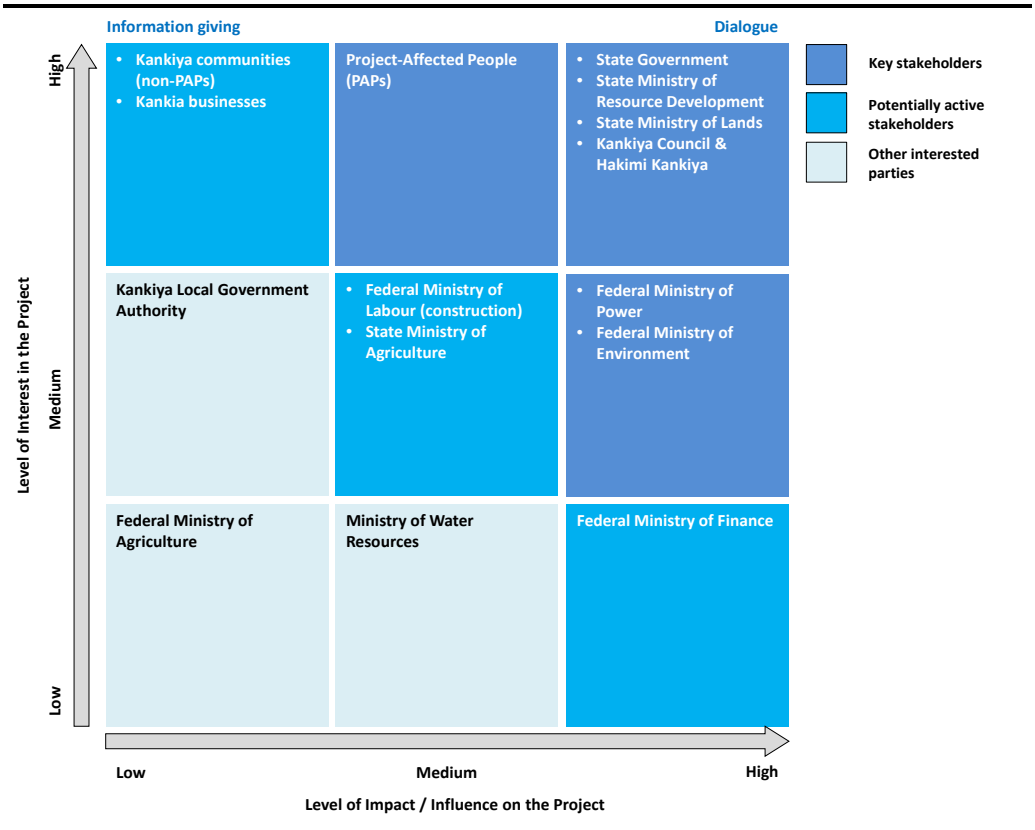
Prioritisation of stakeholders determining the level and frequency of consultation with each group is based on the level of impact experienced and/or their interest in the Project, as illustrated in *Figure B7.5*. Stakeholder groups can be divided into three categories:

- **Key stakeholders:** Stakeholders who have a high level of interest in the Project, particularly regarding approvals e.g., Federal Ministry of Power, the Kankiya Council and Hakimi Kankiya, and those who are likely to experience direct impacts e.g., neighbouring communities, including vulnerable groups.

- **Potentially active stakeholders:** Stakeholders who are likely to voice their opinions and/or concerns about the project and who may experience indirect impacts. These stakeholders require information updates about the project and some consultation. The project may also require some information from them to feed into various project aspects.

- **Other interested parties:** Stakeholders that are likely to voice their opinions and/or concerns but unlikely to experience any impacts from the project. These stakeholders require some level of information regarding the project. The project may also require some information from them to feed into various project aspects.

***Figure B7.5 Stakeholder Map***



### 7.5.5 *Stakeholder Engagement Context*

For stakeholder engagement to be of value, it is important to understand the local customary leadership and decision-making hierarchy. This supports the engagement of stakeholders and communities in a culturally-appropriate manner, ensuring the Project is aligned with local practices

The highest local customary leadership body is the Kankiya District Council, composed of the Hakimi (as head, the Magajin (as second in charge) and other customary leaders. The District Council has a very important role to play in decision-making, opinion-formation and in disseminating key information to the wider population. They are also responsible for some dispute-resolution in the local area and provide a key point of reference for formal state institutions such as the Local Government Authority, the Courts and Police, which in turn ensures a positive security situation.

The local customary decision-making hierarchy will be respected by ensuring the District Council, including the Hakimi and Magajin are initially consulted and informed of Project developments, given their important voice-piece role. Equally, any request, advice or opinion of theirs shall be given its due importance and consideration.

At the same time, the Project will take care to ensure it maintains a balanced and inclusive approach in engagement and consultation by including a broad spectrum of stakeholder groups across the local social hierarchy.

## 7.6 *COMMUNICATION METHODS*

During engagement and public participation activities, a variety of methods will be used to engage with specific groups, reflecting their level of authority, socio-economic context, and cultural and educational factors.

Although English is the official language of Nigeria it is only widely spoken by those in Kankiya who have some level of secondary school education. The most widely spoken and written language is Hausa, followed by Fullata (a Fulani or Fulfude dialect). In combination with limited access to education, use of written communication will not be understood by many in the Project AoI, with women at a particular disadvantage with respect to understanding written communication. The majority of engagement in the Project AoI will therefore be verbal, with frequent use of informal channels of communication, as this is seen as the most appropriate mode of disseminating messages in the local context.

Where written information materials and documentation are prepared, they will be in Hausa and Fulani and tailored to vernacular or local usage in this area. Nova Solar will strive to ensure that verbal communications will be in the relevant language of the target group. Interpreters will be used in situations where there are mixed language groups.

As discussed in Section 7.5.5, the influence and importance of customary leaders in the communities of the AoI is significant. They are therefore an important stakeholder group, in terms of disseminating key messages about

the Project.  However, the Project will have a variety of channels to engage communities, to ensure that messages are accurately presented and not shaped by the interests of a particular stakeholder group. Both formal and informal channels of communication will be used to disseminate Project information. These will be managed carefully through tailoring messages appropriately for each means and avoiding miscommunication or mixed messages.

Table B7.4 below provides an overview of the communication methods and engagement tools used to disseminate Project information to stakeholders. Methods of communication may be discussed and agreed with stakeholders prior to and during activities to ensure information dissemination and engagement is being done in the most appropriate manner.

### *Table B7.4 Communication Methods and Tools*

| Tool | Purpose | Stakeholder Groups |
|---|---|---|
| ***Verbal Communication*** | | |
| Formal meetings | Structured to convey a set of key items of information and messages | • State and Federal Ministries<br>• District Authorities<br>• Customary leadership<br>• Communities in the Project AoI, including PAPs |
| Informal conversations | As part of ongoing community relations work carried out by the Project CLO | • Customary leadership<br>• Communities in the Project AoI, including PAPs |
| Meetings with customary leadership | Showing respect for the local customary hierarchy in dissemination of information | Communities in the Project AoI, including PAPs |
| Radio announcement | • Reaching a wide audience of people<br>• Conveying simple message, for information purposes only | • Communities in the Project AoI |
| ***Communication Materials*** | | |
| Background Information Document | • Present general information about the Project<br>• Range from complex to simple<br>• Can be either heavily pictorial or text-based | |
| Power Point presentations | • Formal engagement and meetings<br>• Provide detailed information about the Project, including technical details | State and Federal Ministries |
| Posters | • Present basic pictorial information about the Project<br>• Displayed in public and central locations with high foot-fall<br>• Announce the date, time and venue of meetings<br>• Provide contact details for getting in touch with Nova Solar | All |
| Leaflets / Flyers | • Can be text-based, pictorial or mixed<br>• Provides an overview of a specific topic being discussed<br>• Allows stakeholder to take information home and have the contact details of Nova Solar should they have any questions | All, but particularly group that are literate if text-heavy |

| Tool | Purpose | Stakeholder Groups |
|---|---|---|
| Reports and Plans | • Technical written reports and management plans that present details on potential impacts of the project and how Nova Solar are managing the environmental and social aspects of the project to minimise adverse impacts and maximize benefits. This includes the ESIA, management plans and any other supporting documentation, such as annual reports.<br>• Available on the Project website for disclosure purposes, uploaded on an as needs basis and as finalised documents become available | • State and Federal Ministries<br>• Academics<br>• Civil society<br>• Wider public |
| ***Communication Tools*** | | |
| Question and Answer Guide | • To support the Nova Solar team in communicating consistent messages about the Project<br>• Assists in preparation for meeting with stakeholders | All |
| Stakeholder/Community record<br><br>See template in *Appendix B3* | • Document and make a record of the meeting, request, complaint, suggestion<br>• Can take hand-written notes of meetings | All |
| Stakeholder Database<br><br>See template in *Appendix B4* | • Keep a record of stakeholder meetings, engagements and complaints<br>• Allows tracking of stakeholder engagements<br>• Central repository for community and stakeholder records that are of importance and relevance for the Project | All |

## 7.7 *STAKEHOLDER ENGAGEMENT PROCESS*

### 7.7.1 *Engagement Background*

Table B7.5 shows the various stages of engagement required, including those carried out to date in relation to the ESIA and the development of the Project.

### *Table B7.5 Stages of Engagement and Progress to Date – Summary*

| Project Stage | Purpose | Status |
|---|---|---|
| ***ESIAEngagement*** | | |
| **Stage 1:** ESIA Scoping/Draft Engagement | Federal, State, District and local level engagement to provide information about the Project and ESIA process, as well as collect information on stakeholder opinions and concerns relating to the Project and potential impacts. | Completed – February 2015 |
| **Stage 2:** ESIA Disclosure | A Public Forum was held to disclose the main findings of the ESIA and gather feedback and perceptions from the main stakeholder groups. | Completed – August 2015 |
| **Stage 3:** Follow-on data collection and stakeholder engagement for ESIA Addendum and Community Development Plan | **1.** Additional follow-on engagement and consultation was carried out with a sample of Project-Affected Persons (PAPs) to better understand how the Government-led compensation process was handled.<br>**2.** Focus-group discussions were help with PAPs and community members in the AoI to gather additional information about local livelihoods, needs and challenges to inform the Nova Solar *Community Development Plan*.<br>**3.** Meetings were held with key State Government Ministries to better understand local development plans and land availability. | Completed – December 2016 and January 2017 |
| **Stage 4:** Ongoing engagement (monthly and *ad hoc)* | Ongoing engagement with PAPs on a monthly basis, and with other community members on an *ad hoc* basis to respond to questions that arise. | Ongoing/Monthly – Q1 2017 onwards |
| ***CDP Engagement*** | | |
| **Stage 5:** Community Development Plan engagement | Engagement with local leadership, PAPs and community members in the Project AoI on the Community Development Plan. The key purpose will be to seek their feedback and input into its development and to ensure it has their buy in. | Completed – May 2017 |
| ***Project Execution Engagement*** | | |

| Project Stage | Purpose | Status |
|---|---|---|
| **Stage 6:** Pre-engineering | • Nova Solar will engage with stakeholders prior to the start of construction in an intensive stakeholder engagement exercise to explain the process for vacating land, explain the local employment approach, introduce the contractors who will be working on-site, changes they will experience in the local environment as a result of heavy-duty vehicles and other sources of impact, mitigation of impact, maintenance of community health and safety, and the construction schedule.<br>• Nova Solar will roll out and inform stakeholders about its feedback and grievance mechanism, how it can be accessed, timelines for resolving complaints or grievances, and how confidentially is ensured. | Consultation during the pre-engineering phase is to be carried out by the Project Community Liaison Officer. |
| **Stage 7: Construction** | • Nova Solar will continue to engage with stakeholders during construction to continually update them of disturbances that they may experience and associated timeframes. This will include ongoing relationship building and participation of affected communities regarding management of construction impacts and effectiveness of monitoring.<br>• As construction comes to an end, Nova Solar will engage stakeholders regarding the impacts associated with the end of the construction Phase, including the conclusion of temporary contracts with local employees supporting construction works, as well as the process of transitioning to operation.<br>• The grievance mechanism will continue to be discussed at meetings. | Consultation during the construction phase is to be carried out by the Project Community Liaison Officer. |
| **Stage 8:** Operation | As with construction, the project will continue to engage with stakeholders periodically and a grievance mechanism will remain in place. However, with time the intensity of engagement will reduce and become more routine and 'steady state'. As per the spectrum of engagement in Figure B7.1, it may reduce from consultation and participation to information provision. | Consultation during the operation phase is to be carried out by the Project Community Liaison Officer. |
| **Stage 9:** Decommissioning | Prior to decommissioning, Nova Solar will prepare a Site Closure Plan for the project. The project will consult with stakeholder | Consultation during the operation phase is to be carried out by the Project Community Liaison Officer. |

| Project Stage | Purpose | Status |
|---|---|---|
| | groups to ensure that feedback regarding the impacts of decommissioning is considered in the Plan. | |

Details of the community and stakeholder engagement carried out to date (Stages 1 to 3) are found in Appendix B2. This section described the stakeholder engagement for the Project that is ongoing and planned for future phases of the Project (Stages 4 to 9).

### 7.7.2 *Stage 4: Ongoing engagement (monthly and ad hoc)*

The Nova Solar team continues to engage with PAPs on a monthly basis and with other local community members on an *ad hoc* basis in order to:

- Respond to specific questions or concerns that arise;
- Provide updates on Project developments;
- Sustain the constructive company-community relationship; and
- Ensure the continuity of open channels of communication for stakeholders to be able to voice their views when needed.

### 7.7.3 *Stage 5: Community Development Plan Consultation*

Nova Solar intends to implement a Community Development Programme (CDP) throughout the life of the Project. The most important objective of the Nova Solar Community Development Plan is to implement programmes that enhance and support the livelihoods of communities in the AoI, including those of PAPs and their households. To ensure that the CDP is effective in meeting community needs and addressing challenges and that it is developed in a consultative manner, a series of engagement and consultation rounds will feed into its development; ensuring beneficiaries are involved from the beginning. As the development of a CDP is an iterative process, with input from various stakeholders, the following rounds of consultation will be carried out for its development:

- Validation of the main community needs and challenges;
- Consultation and agreement on objectives and content of CDP programmes;
- Consultation, mapping and identification of appropriate implementing partners; and
- Formation of a Community Development Advisory Committee constituted by a representative and broad-based group of stakeholders to advise on aspects of its development and implementation.

It is anticipated that this engagement will commence in March 2017. Once a Project Community Liaison Officer is employed (anticipated for following financial close) he or she will lead this process.

Thereafter engagement will be undertaken with intended CDP beneficiaries on a regular basis to ensure that the CDP is having the intended impact and to resolve any issues that may arise during its implementation. The cadence of the engagement will be defined ahead of construction and will be linked to regular monitoring of the CDP.

### 7.7.4 *Stage 6: Pre-Engineering*

Stakeholder engagement leading up to construction will be of critical importance, as this is the phase when PAPs will vacate their land and need to re-establish their livelihoods elsewhere. Engagement activities will focus heavily on ensuring that PAPs are provided with timely information about the process and monitored to limit the number of grievances that arise, and if they do, that they are promptly addressed.

The impacts and aspects on which stakeholder engagement will be required in the pre-engineering phase are summarised in Table 5.5:

***Table B7.6 Stakeholder Engagement Requirements – Pre-engineering***

| Impact / Topic | Discussion |
|---|---|
| Project Progress | • Update on the Project;<br>• Progress in meeting milestones;<br>• Any approvals, licences or permits that are pending. |
| Process of vacating and clearing the land | The process by which the land will be vacated, such as:<br>• The period within which PAPs may carry out the final harvest of crops and trees;<br>• Ability to retain the timber from any trees cut down on their land; and<br>• The month in which it is expected the first on-the-ground activities will commence. |
| Traffic | • Vehicle types;<br>• Frequency and the timings of vehicle movements;<br>• Community safety on the roads, including key hazards and controls for other road users;<br>• Controls that the EPC Contractor will have in place to manage traffic-related hazards and impacts, e.g. maximum speed limits, vehicle tracking, well-trained drivers, etc., and<br>• How other impacts and nuisances, such as noise and dust, will be minimised. |
| Community health and safety | • Any activities that may have an impact non community health and safety; and<br>• Associated mitigation measures. |
| Water | • Mitigation to be put in place to avoid putting pressure on local water resources |
| Other impacts that may arise | • Explanation of the impact; and<br>• Explanation of mitigations. |
| Local content opportunities and requirements | • The number, type and duration of local jobs available;<br>• The skills and aptitudes required of local workers;<br>• How local jobs will be advertised, e.g. in a public place;<br>• How the local worker interview and selection process will work;<br>• The ‘no hiring at the gates’ policy; and<br>• Opportunities for local businesses to supply goods to the Project, e.g. agricultural produce for the construction camp. |
| EPC Contractor to be used | • Introduce the EPC Contractor;<br>• The number of workers expected for construction; and<br>• Controls in place to ensure no adverse impact from presence of external workforce, worker behaviour etc. |
| Grievance Mechanism | • The means available (to workers and the community) for reporting a grievance or complaint;<br>• What information should be provided when logging a complaint, e.g. contact details; and<br>• Timelines within which a response will be received<br>• Monitoring of Grievance Mechanism |

| Impact / Topic | Discussion |
|---|---|
| CDP progress | • CDP progress and timelines;<br>• Priority programmes;<br>• Eligibility for different programmes; and<br>• Purpose of the Community Development Advisory Committee. |

Table 5.6 provides an overview of consultation activities and their frequency during Stage 5 of pre-engineering.

### *Table B7.7 Stage 5 Engagement Activities – Pre-engineering*

| Stakeholder Group | Information Requirement | Method of Engagement and Frequency |
|---|---|---|
| Federal Government | • Project progress<br>• Project approvals pending | Ongoing as needed.<br><br>Meetings and PowerPoint presentation. |
| Katsina State Government and Kankiya Local Government Authority | • Project progress<br>• Project approvals pending<br>• Process of vacating and clearing the land<br>• Local content opportunities and requirements | Ongoing as needed.<br><br>Meetings and PowerPoint presentation/information leaflet. |
| Kankiya District Council (Customary Leadership) (District Council) | • Project progress<br>• Process of vacating and clearing the land<br>• Introduce the EPC Contractor<br>• Anticipated impacts and how these will be managed<br>• Local content opportunities and requirements<br>• CDP progress | Regularly, as needed.<br><br>Meetings and leaflets. |
| Directly affected communities | • Project progress<br>• Process of vacating and clearing the land<br>• Introduce the EPC Contractor<br>• Traffic<br>• Local content opportunities and requirements - jobs<br>• CDP progress<br>• Anticipated impacts and how these will be managed<br>• Inform about community health and safety hazards that may arise and how these should be managed<br>• Grievance mechanism – management and monitoring | Regularly, as needed.<br><br>Meetings. |
| CDP implementing partners / NGOs | • Project progress<br>• Topic specific updates as relevant to implementing partner/NGO area of interest | Regular meetings and phone calls as needed.<br><br>Meetings. |
| Local security | • Project progress<br>• Report issues related to security grievances<br>• Get an update on the local security situation, any tensions etc. | Meetings as needed. |

| Stakeholder Group | Information Requirement | Method of Engagement and Frequency |
|---|---|---|
| Local Public Services (namely health and education) | • Project progress<br>• Anticipated impacts and how these will be managed<br>• Report issues related to public service grievances | Quarterly meetings, with relevant stakeholders.<br><br>More frequent if involved in a CDP programme. |
| Local businesses | • Project progress<br>• Anticipated impacts and how these will be managed<br>• Local content opportunities and requirements – provision of goods/services | Quarterly meetings. |
| Media | Project updates | Radio updates as required by construction phase. |

### 7.7.5 *Stage 7: Construction*

During construction, the CLO will monitor the works to ensure it does not pose a hazard to the health, safety or security of the community. Nova Solar will continue to engage with stakeholders during construction to continually update them of disturbances that they may experience and associated timeframes. This will include ongoing relationship building and participation of affected communities regarding management of construction impacts and effectiveness of monitoring.

As construction comes to an end, Nova Solar will engage stakeholders regarding the impacts associated with the end of the construction Phase, including the conclusion of temporary contracts with local employees supporting construction works, as well as the process of transitioning to operation. The grievance mechanism will continue to be discussed at meetings.

The impacts and aspects on which stakeholder engagement will be required in the construction phase are summarised in Table 5.7:

### *Table B7.8 Stakeholder Engagement Requirements – Construction*

| Impact / Topic | Discussion |
|---|---|
| Project Progress | • Update on the Project;<br>• Planned activities, their start and end dates;<br>• Any significant incidents that may have occurred;<br>• Progress in meeting milestones; and<br>• Any approvals, licences or permits that are pending. |
| Traffic | • Vehicle types;<br>• Frequency and the timings of vehicle movements;<br>• Community safety on the roads, including key hazards and controls for other road users;<br>• Controls that the EPC Contractor has in place to manage traffic-related hazards and impacts, e.g. maximum speed limits; and vehicle tracking, well-trained drivers, etc. |
| Community health and safety | • Any activities that may have an impact non community health and safety; and<br>• Associated mitigation measures. |

| Impact / Topic | Discussion |
|---|---|
| Other impacts that may arise | • Explanation of the impact; and<br>• Explanation of mitigations. |
| Transition to operation | • What to expect in the transition period from construction to operation;<br>• Conclusion of temporary contracts with local employees;<br>• Conclusion of contracts with external employees;<br>• Construction camp closure and rehabilitation; and<br>• Conclusion of local goods and services procurement from local businesses. |
| Grievance Mechanism | • The means available (to workers and the community) for reporting a grievance or complaint;<br>• What information should be provided when logging a complaint, e.g. contact details; and<br>• Timelines within which a response will be received<br>• Monitoring of Grievance Mechanism |
| CDP progress | • CDP progress and timelines;<br>• Priority programmes;<br>• Eligibility for different programmes;<br>• CDP performance; and<br>• Purpose of the Community Development Advisory Committee. |

Table 5.8 provides an overview of consultation activities and their frequency during Stage 6 of construction. The list of stakeholder and directly affected communities that will be consulted will be further defined as the Project progresses.

### *Table B7.9 Stage 6 Engagement Activities – Construction*

| Stakeholder Group | Information Requirement | Method of Engagement and Frequency |
|---|---|---|
| Federal Government | • Project progress<br>• Transition to operation | Ongoing as needed<br><br>Meetings and PowerPoint presentation |
| Katsina State Government and Kankiya Local Government Authority | • Project progress<br>• Transition to operation | Ongoing as needed<br><br>Meetings and PowerPoint presentation/information leaflet |
| Kankiya District Council (Customary Leadership) (District Council) | • Project progress<br>• Impacts that will arise during the construction phase and how these will be managed<br>• Transition to operation<br>• CDP progress<br>• Concerns and how these will be addressed | Monthly meetings, as minimum |

| Stakeholder Group | Information Requirement | Method of Engagement and Frequency |
|---|---|---|
| Directly affected communities | • Project progress<br>• Ad hoc local content opportunity<br>• Traffic<br>• Anticipated impacts and how these will be managed<br>• Inform about community health and safety hazards that may arise and how these should be managed<br>• Transition to operation<br>• CDP progress<br>• Grievance mechanism – management and monitoring<br>• Community concerns and how these will be addressed | Community meetings in settlements likely to be directly affected by construction activities to take place at least two weeks prior to work starting and monthly thereafter.<br><br>Meetings and information leaflets |
| Employees/Contractors | • Project progress updates to keep staff engaged in their working environment<br>• Anticipated impacts and how these will be managed<br>• Report issues related to labour and working conditions<br>• Transition to operation<br>• Management/monitoring of staff grievances.<br>• Concerns and how these will be addressed (where relevant) | Weekly team meetings.<br><br>Emails/Letters<br><br>Notices/Posters posted around the site. |
| CDP implementing partners / NGOs | • Project progress<br>• Transition to operation<br>• Topic specific updates as relevant to implementing partner/NGO area of interest | Frequent meetings during CDP planning and preparations |
| Local security | • Project progress<br>• Transition to operation<br>• Report issues related to security grievances<br>• Get an update on the local security situation, any tensions etc. | Monthly meetings |
| Local Public Services (namely health and education) | • Project progress<br>• Anticipated impacts and how these will be managed<br>• Transition to operation<br>• Report issues related to public service grievances | Quarterly meetings, with relevant stakeholders. |
| Local businesses | • Project progress<br>• Anticipated impacts and how these will be managed<br>• Ad hoc local content opportunity<br>• Transition to operation | Quarterly meetings |
| Media | • Project progress<br>• Transition to operation | Radio updates as required by construction phase |

### 7.7.6 ***Stage 8: Operation***

In order to manage environmental and social project risks, ongoing communication between Nova Solar and stakeholders will be required throughout the operation phase of the Project.

During the transition between construction and operation, Nova Solar will review its social AoI and stakeholders list and adapt it for the operation phase of the Project. As operational impacts are likely to be less significant than construction and the bulk of permitting process will have been completed, this exercise will reduce the number of stakeholders and directly affected communities to be engaged. As a consequence, the number and frequency of meetings to be held will be reduced.

Meetings during operation will include an update on Project activities, community health and safety considerations, progress of CDP implementation and a feedback process regarding the project to date and how well the grievance mechanism is working. These operation-phase stakeholder engagement requirements are summarised in table 5.9.

***Table B7.10 Stakeholder Engagement – Operation***

| Impact / Topic | Discussion |
|---|---|
| Project Progress | • Update on the Project; and<br>• Any significant changes that may occur. |
| Community health and safety | • Any activities that may have an impact on community health and safety; and<br>• Associated mitigation measures. |
| Grievance Mechanism | • The means available (to workers and the community) for reporting a grievance or complaint;<br>• What information should be provided when logging a complaint, e.g. contact details; and<br>• Timelines within which a response will be received<br>• Monitoring of Grievance Mechanism |
| CDP progress | • CDP progress and timelines;<br>• Consideration of additional CDP programmes;<br>• Eligibility for different programmes;<br>• CDP performance; and<br>• Purpose of the Community Development Advisory Committee. |

Table 5.10 provides an overview of consultation activities and their frequency during Stage 6 of construction. The list of stakeholder and directly affected communities that will be consulted will be further defined as the Project progresses.

***Table B7.11 Stage 7 Engagement Activities – Operation***

| Stakeholder Group | Information Requirement | Method of Engagement and Frequency |
|---|---|---|
| Federal Government | • Project progress | Ongoing as needed<br><br>Meetings and PowerPoint presentation |
| Katsina State Government and Kankiya Local Government Authority | • Project progress<br>• | Ongoing as needed<br><br>Meetings and PowerPoint presentation/ information leaflet |

| Stakeholder Group | Information Requirement | Method of Engagement and Frequency |
|---|---|---|
| Kankiya District Council (Customary Leadership) (District Council) | • Project progress<br>• Community health and safety<br>• CDP progress<br>• Concerns and how these will be addressed | Monthly meetings, as minimum |
| Directly affected communities | • Project progress<br>• Community health and safety<br>• CDP progress Project progress<br>• Community concerns and how these will be addressed<br>• Grievance mechanism – management and monitoring | Community meetings in settlements likely to be directly affected by construction activities to take place at least two weeks prior to work starting and monthly thereafter.<br><br>Meetings and information leaflets |
| Employees | • Project progress updates to keep staff engaged in their working environment<br>• Report issues related to labour and working conditions<br>• Management/monitoring of staff grievances. | Weekly team meetings.<br><br>Notices/Posters posted around the site. |
| CDP implementing partners / NGOs | • Project progress<br>• Topic specific updates as relevant to implementing partner/NGO area of interest | |
| Local security | • Project progress<br>• Report issues related to security grievances<br>• Get an update on the local security situation, any tensions etc. | Monthly meetings |
| Local Public Services (namely health and education) | • Project progress<br>• Anticipated impacts and how these will be managed<br>• Report issues related to public service grievances | Quarterly meetings, with relevant stakeholders. |
| Local businesses | • Project progress<br>• Anticipated impacts and how these will be managed<br>• Ad hoc local content opportunity | Quarterly meetings |
| Media | Project progress | Radio updates as required by construction phase |

### 7.7.7 *Stage 9: Decommissioning*

Prior to decommissioning, Nova Solar will prepare a Site Closure Plan. The Project will consult with stakeholder groups, to ensure that feedback regarding the impacts of decommissioning is considered in the Plan, including:

- how long the site is expected to remain operational;

- buildings, structures, equipment and facilities which may be of sustainable benefit and could therefore be sold or left behind under agreed terms;

- land use for the rehabilitation process (e.g. crops, trees, grazing land, etc.); and

- employee redundancy and job seeker preparation and assistance.

This stage of consultation will involve reviewing and updating the stakeholder list, and will include the following activities:

- communicating with stakeholders to manage expectations and uncertainties regarding the potential impacts of closure;

- consultation on the transfer of assets and liabilities if applicable, such as project infrastructure that may remain *in situ*; and

- management of health and safety impacts that may arise from decommissioning.

## 7.8 *GRIEVANCE AND FEEDBACK MECHANISM*

### 7.8.1 *Rationale*

The Grievance and Feedback Mechanism is a process managed by Nova Solar to enable stakeholders to make a complaint or a suggestion regarding the way the Project is being managed. This includes ensuring that all grievances received are acknowledged and recorded and that the complainant knows what to expect in terms of response and when. Grievances may take the form of specific complaints for damages/injury, concerns about routine project activities, perceived incidents or impacts or requests for more information / clarity on project activities.

The primary objectives of a grievance and feedback mechanism are to:

- enhance trust and positive relationships with stakeholders;

- prevent the negative consequences of failure to adequately address grievances; and

- identify and manage stakeholder concerns and thus support effective risk management.

The grievance mechanism allows stakeholders to submit complaints and comments at no cost, without retribution and with the assurance of a timely response. The mechanism will not impede access to judicial or other remedies.

### 7.8.2 *Grievance Process*

The Grievance Mechanism shall ensure that all grievances that exist are reported and recorded, assigned to the correct person or team and resolved in a timely manner.

The Community Liaison Officer is the primary person responsible for recording and managing grievances, ensuring the grievances are fed through or escalated to the appropriate person in the Project Management Team when required. The CLO therefore has to be a person that is trusted by Project stakeholders and this is taken into account in the CLO selection process.

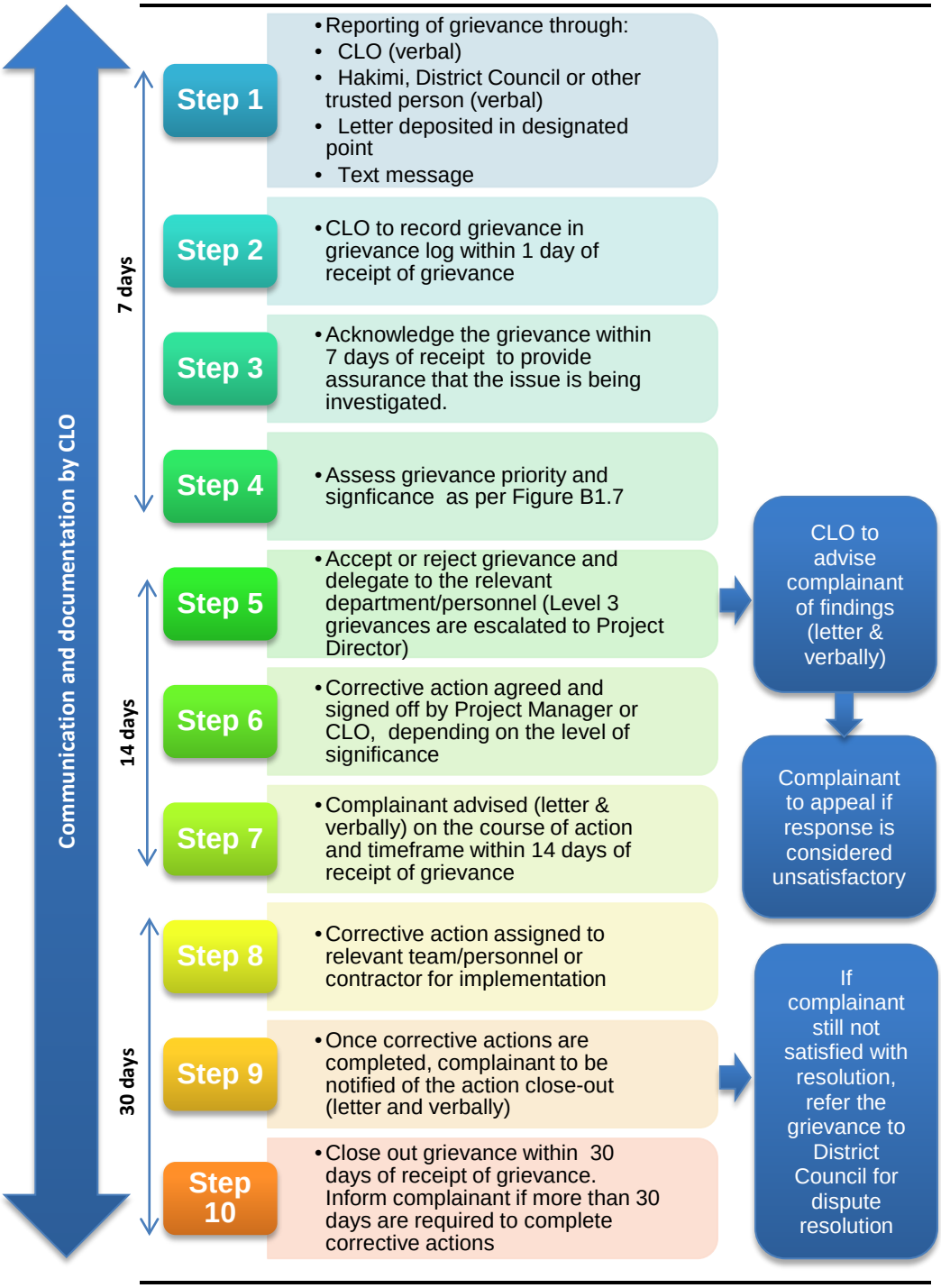
Where a stakeholder wishes to report a grievance anonymously, or through an intermediary, and not directly to the CLO, the following additional grievance reporting options are available to the complainant:

- Communicating the grievance through the Hakimi or District Council or other person trusted by the complainant;
- Submitting a confidential letter to a designated point, e.g. the Project office;
- Sending a text message to a designated phone number.

Confidentiality procedures are in place to protect the complainant.

The grievance process is staged according to the steps in Figure B7.6.

***Figure B7.6 Grievance Process***



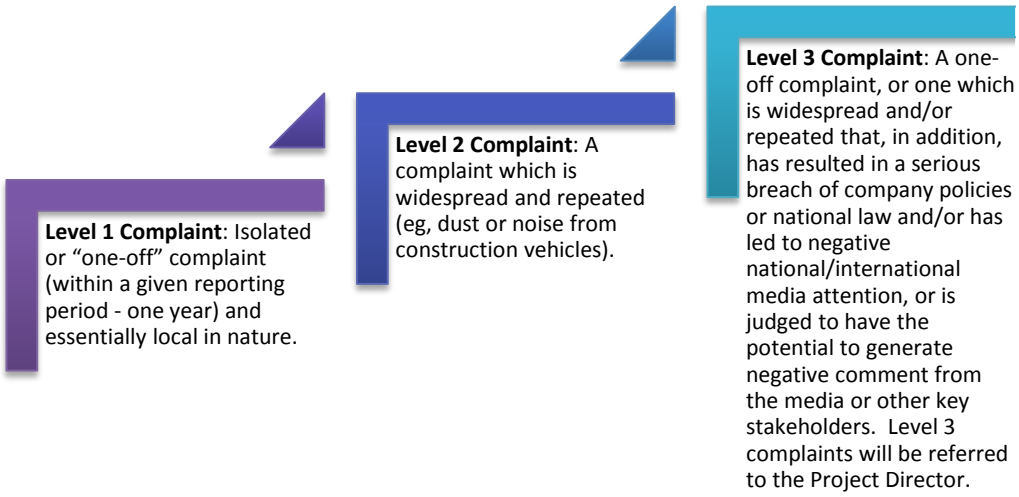

The grievance process is actively communicated to the Project's stakeholders (using the communication methods outlined in Section 7.6) so that they are aware of the process, know they have the right to submit a grievance or provide feedback to the Project, understand how the mechanism will work and how their grievance will be addressed. This process is carried out through community meetings, informal discussions and posters displayed in public places. Complaints can be submitted to the CLO directly, via telephone/text message, letter, the Project office and via email, where this is accessible.

On receipt of the grievance the CLO logs the complaint in a grievance log, reviews it and assesses the significance in order to prioritise the grievance in accordance with the significance criteria in Figure B7.7. Level 1 and 2

complaints are managed by the CLO. Level 3 complaints are escalated and managed in discussion with the Project Manager/Director.

Each grievance will be closed out within 30 days of receipt, unless the level of significance (see Figure B7.7) necessitates more time for its proper resolution, in which case the complainant will be informed of this and regularly updated in progress.

***Figure B7.7 Grievance Significance Criteria***




***Note:*** Some one-off complaints may be significant enough to be assessed as a Level 3 complaint e.g., when a national or international law is broken (see Level 3).

## 7.9 *ROLES AND RESPONSIBILITIES*

The resourcing, roles and responsibilities with regard to stakeholder engagement will vary in accordance with Project milestones and will be subject to review following any significant changes in the Project.

Prior to the Pre-engineering and construction works and following financial close, Nova Solar will employ an experienced Community Liaison Officer who has an understanding of the local context, is able to engage with stakeholders at all levels within the Project AoI and is a person that people trust or has the capacity to build trust. Care will be taken to avoid hiring any candidate who may be conflicted because of political or other ties or relationships they may have within the area.

The CLO will report to the Project Manager/Director that will ensure the CLO has the required resources and information to do their job.

Any member of the Nova Solar team and its contractors who interact with stakeholders on a regular basis need to have the ability to develop good working relationships with all stakeholder groups, from Local Government to community level, in order to maintain and build trust and cooperation.

Criteria of community liaison staff engaging with stakeholders on a daily basis include:

- good communication and listening skills;
- from the local area, fluent in the local languages e.g. Hausa, Fulani;
- gender-sensitive;
- good understanding of community/cultural dynamics specific to the area;
- open-mindedness and respect for the views of others;
- proactive mind-set and good problem solving skills;
- high level of integrity and trustworthiness; and
- commitment to the position and an understanding of Nova Solar objectives and approach to governance.

### 7.9.1 *Training*

In addition to the criteria above, it is important that the skills and capacity of community liaison officers and all those whose role includes aspects of stakeholder engagement are maintained in order to manage community relations issues for the Project.

In particular, development of communication and listening skills is important so that, throughout the life of the Project, expectations are managed effectively to avoid creating expectations that are unrealistic, especially regarding employment opportunities and shared benefits.

In sum, training will be provided to staff with frontline roles including stakeholder engagement, to ensure that communication is managed appropriately and that the CLO continues to manage grievances efficiently.

*Roles and Responsibilities*

An overview of functions responsible for stakeholder engagement and parts of the grievance management process and their associated responsibilities is provided *in Table B7.12.*

***Table B7.12 Roles and Responsibilities for Stakeholder Engagement and Grievance Management – Preparatory Works and Construction***

| Role | Responsibility |
|---|---|
| **Project Director** | • Stakeholder engagement at Federal and State Government level;<br>• Provide the resources necessary for the CLO to be able to perform his/her duties;<br>• Set the strategy and key messages for the engagement of stakeholders, to be followed by the CLO; and<br>• Decision-making and management of Level 3 complaints through the Grievance Process. |
| **Project Community Liaison Officer(s)** | Reports to the Project Director:<br>• Stakeholder engagement up to Local Government Authority level;<br>• Proactively build effective and trusting relationships with stakeholders, including customary leadership, through regular visits and communication regarding the Project;<br>• Coordination of engagement activities and reporting in line |

| Role | Responsibility |
|---|---|
| | with this SEP;<br>• Convey key messages about the Project, as set by the Project Director, in a consistent manner;<br>• Updating stakeholder lists and logging/tracking of activities;<br>• Dissemination of information regarding the grievance process to ensure that it is widely understood among stakeholders in the AoI;<br>• Maintain and log grievances; and<br>• Resolution of Level 1 and 2 grievances and other issues in a timely manner, in line with the grievance process and best practice principles. |
| TBC | |

## 7.10 *DATA MANAGEMENT AND MONITORING*

All engagement activities throughout the life of the Project have to be documented and organized to allow for tracking of delivery of commitments made to stakeholders, progress of pending grievances and to have the ability to refer to past records when required. The principle of '*if it isn't documented, it never happened*' is applied with respect to stakeholder records. The following stakeholder engagement records and documentation are therefore used and maintained by Nova Solar.

- **Stakeholder/Community record form:** Used to collect full meeting minutes to be filed with the stakeholder database.

- **Stakeholder engagement log:** Used to store, analyse and report on stakeholder engagement activities. It will be populated with details on information presented, audience questions, Nova Solar responses and commitments made and actions, when appropriate. The database will also be used to track frequency of meetings over the life of the project.

- **Stakeholder list:** Conduct on-going updates to the list, including key contacts and contact details (telephone number, email address etc.) as additional stakeholders are identified and will include (but will not be restricted to) the following:
  - Federal, state and local government authorities;
  - Customary leadership (District Council);
  - community representatives such as farmers, women, health workers and teachers;
  - local industry (Pan Africa Solar, local businesses); and
  - non-governmental organisations.

- **Grievance log:** Used to record all grievances received, management actions and whether it has satisfactorily been closed out, used to identify patterns, avoid recurrent problems and improve the company's overall social performance.

Templates for the above documents are provided in *Annexes*.

All stakeholder records and documentation are reviewed on a monthly basis in order to ensure that it is up-to-date and that required meetings are being held.

Appendix B1

# National and International Requirements for Stakeholder Engagement

# 8 APPENDIX B1: NATIONAL AND INTERNATIONAL REQUIREMENTS FOR STAKEHOLDER ENGAGEMENT

This section expands the information outlined in Section 7.4 and details the stakeholder engagement principles and processes required by national law and international lender best practice standards.

## 8.1 NATIONAL REQUIREMENTS

The only requirements for public participation or consultation in Nigerian law are as part of the ESIA process. Public participation as part of an ESIA is mandatory in accordance with the Nigerian Environmental Impact Assessment Act, 1994. Clauses that relate to public participation/engagement in the ESIA process are provided in Box B8.1.

### Box B8.1 EIA Act Sections Applicable to Public Participation/Consultation

**1. Goals and objectives of environmental impact assessment**
The objectives of any environmental impact assessment shall be:

(c) to encourage the development of procedures for information exchange, notification and consultation between organs and persons when proposed activities are likely to have significant environmental effects on boundary or trans-State or on the environment of bordering town and villages.

**7. Opportunities for comment by certain groups**
Before the Agency gives a decision on an activity to which an environmental assessment has been produced, the Agency shall give opportunity to government agencies, members of the public, experts in any relevant discipline and interested groups to make comment on the environmental impact assessment of the activity.

**9. Decision on the effect of an environmental impact assessment to be in writing**
(2) The report of the Agency shall be made available to any interested person or group.
(3) If no interested person or group requests for the report, it shall be the duty of the Agency to publish its decision in a manner by which members of the public or persons interested in the activity shall be notified.
(4) The Council may determine an appropriate method in which the decision of the Agency shall be published so as to reach interested persons or groups, in particular the originators or persons interested in the activity subject of the decision.

**24. Public notice**
(1) After receiving a mandatory study report in respect of a project, the Agency shall, in any manner it considers appropriate, publish in a notice setting out the following information-
(a) the date on which the mandatory study report shall be available to the public;
(b) the place at which copies of the report may be obtained; and
(c) the deadline and address for filing comments on the conclusions and recommendations of the report.
(2) Prior to the deadline set out in the notice published by the Agency, any person may file comments with the Agency relating to the conclusions and recommendations of the mandatory study report.

**25. Decision of Council**
Where a project is to be referred to mediation or a review panel under this Act, the Council shall, within a prescribed period, refer the project-
(a) to mediation, if the Council is satisfied that-

- the parties who are directly affected by or have a direct interest in the project have been identified and are willing to participate in the mediation through representatives;

**38. Public notice**

On receiving a report submitted by a mediator or a review panel, the Agency shall make the report available to the public in any manner the Council considers appropriate and shall advise the public that the report is available.

## 8.2 *INTERNATIONAL REQUIREMENTS*

This section details the international stakeholder engagement requirements based on the International Finance Corporation (IFC) and African Development Bank (AfDB) guidelines. International standards require that there is regular engagement throughout the Project lifecycle, as described in Box B8.2.

***Box B8.2 Key Principles and Requirements of International Stakeholder Engagement Standards***

**IFC**

***Principles:***

- Provide affected communities with opportunities to express their views on project risks, impacts and mitigation measures, and allow the client to consider and respond to them;

- Begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise;

- Stakeholder engagement should be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to affected communities - Where the project has potentially significant adverse impacts on affected communities, an "*informed consultation and participation"* (ICP) process should take place. ICP is an organized and iterative consultation that involves a more in-depth exchange of views and information including "*free, prior and informed consent."*;

- Stakeholder engagement should be inclusive of all the relevant groups within the community (including the vulnerable and marginalized), focused on those directly affected as opposed to those not directly affected, be free of external manipulation, interference, coercion, or intimidation; and

- Stakeholder engagement should be documented and include opinions and concerns as well as the measures taken to respond to them, i.e., The actions taken by the project to avoid or minimize risks to, and adverse impacts on, the affected communities.

***Requirements:***

Information disclosure is a key requirement of stakeholder engagement. Key messages and information that should be provided during engagement include:

- the purpose, nature, and scale of the project;
- the duration of proposed project activities;
- any risks to and potential impacts on such communities and relevant mitigation measures;
- the envisaged stakeholder engagement process; and
- a grievance mechanism by which community concerns are received, answered and addressed in a timely manner.

**AfDB**

***Principles:***

- Involves representative bodies and civil society organisations, as well as members from the vulnerable communities themselves;

- Ensures inclusivity in a socially and culturally appropriate manner, as well as provides sufficient time for the vulnerable groups' decision making processes;

- Facilitates the vulnerable groups' expression of their views, concerns and proposals in the language and manner of their choice, without external manipulation, interference, coercion, or intimidation; and

- Respects the culture, knowledge and practices of vulnerable communities.

***Requirements:***

- Disclosure should commence early in project preparation to allow the public, beyond the mandatory consultation process, to genuinely participate in project design and implementation. This enables communities in project areas to voice their concerns and aspirations and reap true benefits from project related developments.

- A local grievance and redress mechanism should be established to receive, facilitate and follow up on the resolution of affected people's grievances and concerns about the environmental and social performance of the project. The local grievance mechanism needs to be accessible to the stakeholders at all times during the project cycle, and all responses to grievances are recorded and included in project supervision formats and reports.

Appendix B2

# Completed Stakeholder Engagement Activities

# 9 APPENDIX B2: STAKEHOLDER ENGAGEMENT COMPLETED

## 9.1 INTRODUCTION

The following sections provide an overview of stakeholder engagement activities that have been carried for the Project to date.

## 9.2 STAGE 1: ESIA SCOPING/DRAFT ENGAGEMENT

This is the initial stage of engagement under the ESIA process for the Project. This section provides a summary of the approach and outcomes of stakeholder engagement for the ESIA scoping and baseline data collection phase, the full details of which are provided in *Section 4.11.5 in Chapter 4* of the main ESIA.

Stakeholder engagement and consultation meetings comprised the following three elements:

- *Kankiya Local Government Authority:* The purpose of these visits was to inform relevant civil and customary authorities about the proposed Project and to secure their consent and co-operation for the ESIA study and the Project.

- *Kankiya District Council and Communities:* This involved visits to the District Head, and a series of consultations and Focus-Group Discussions with groups representing farmers, hunters, women and youths from Kankiya. Key informants were also interviewed. The main issues discussed at these meetings were:

    - The proposed Nova Solar Project;
    - Scope of the ESIA study;
    - Socio-cultural resources;
    - Traditional administrative organization;
    - Land ownership, use and tenure;
    - Livelihood activities;
    - Health conditions in the household and nutrition;
    - Demographic and developmental issues;
    - Infrastructural framework;
    - Conflict management and security situation in the community; and
    - Perceptions, concerns and expectations about the proposed project.

    A summary of the scoping/baseline meetings held and their outcomes is provided in Table B9.1.

- *Community participation:* The involvement of community members was sought throughout baseline data collection process for the ESIA to ensure the relevant information was gathered and continuous communication with the Council and individual PAPs with concerns contacting Project sponsors.

***Table B9.1 Summary of Meetings Held in Kankiya District – ESIA Scoping and Baseline***

| Stakeholder Group | Date | Main Outcomes |
|---|---|---|
| Elders / Government Representatives  | 06/02/2015 | The main concerns raised by stakeholders during ESIA scoping and baseline data collection were as follows:<br><br>• Whether the Project may become abandoned;<br>• Would the Project be completed early?<br>• Improper maintenance of the facility and the likelihood of causing fatal accidents in the community;<br>• Improper education and equipping of workers on the Project which may lead to accidents;<br>• Pollution problems from gases and chemicals that will be used in the facility with potential to harm residents living near the facility, therefore, they should be relocated;<br>• Security issues due to arrival of workers and job seekers in the community;<br>• Reduction in currently available grazing land;<br>• Whether farmers will be able to harvest produce that is already planted on the land;<br>• Whether livestock are safe on the Project site;<br>• Whether women will be paid compensation or whether their compensation will be paid to their menfolk; and<br>• Whether the Project will provide with jobs and training. |
| Community Leadership (District Heads and Leaders)  | 06/02/2015 | |
| Farmers  | 07/02/2015 | |

| Stakeholder Group | Date | Main Outcomes |
|---|---|---|
| Hunters  | 07/02/2015 | |
| Women's Group  | 08/02/2015 | |
| Youth Group  | 08/02/2015 | |

| Stakeholder Group | Date | Main Outcomes |
|---|---|---|
| Elders  | 08/02/2015 | |

**Source:** Nova Solar 125 MWp Katsina Solar PV Power Plant ESIA, 2015; Nova Solar team

## 9.3 *STAGE 2: ESIA DISCLOSURE*

Findings of the Nova Solar ESIA were presented at two further disclosure meetings to collect any final considerations to be included in the report. This stage of engagement was led by Nova Solar and/or the ESIA Consultant. A summary of the disclosure meetings held, information presented and outcomes is provided in Table B9.2.

***Table B9.2 Summary of Meetings Held in Kankiya District – ESIA Disclosure***

| Meeting Type | Date | Information Presented | Main Outcomes |
|---|---|---|---|
| **Public Forum**<br><br>This large public meeting included a wide range of community members, including women<br><br>  <br><br>  <br><br>  | 03/08/2015 | • Disclosure of ESIA findings and associated mitigations<br>• Fears of stakeholders<br>• Aspirations of stakeholders<br>• Expectations of stakeholders | • Will there be adequate compensation for owners of the land acquired for the Project by Katsina State Government;<br>• Will there be regular and adequate electricity supply to Kankiya;<br>• Will there be employment opportunities for community members in the Project AoI;<br>• Will local content be promoted through awarding of contracts to local business; and<br>• The urbanization and industrial development of Kankiya. |

| Meeting Type | Date | Information Presented | Main Outcomes |
|---|---|---|---|
|  | | | |
| **Katsina State Government**<br>  | 03/08/2015 | • The nature, scale and purpose of the Project<br>• ESIA scope and stakeholder engagement process;<br>• Land compensation methodology adopted by KTSG; and<br>• Documentation to support land compensation methodology. | |

**Source:** Nova Solar 125 MWp Katsina Solar PV Power Plant ESIA, 2015.

## 9.4 *STAGE 3: FOLLOW-ON DATA COLLECTION AND STAKEHOLDER ENGAGEMENT FOR ESIA ADDENDUM AND COMMUNITY DEVELOPMENT PLAN (CDP)*

At the request of the Project lenders, additional follow-on engagement and consultation was carried out by ERM in December 2016 and January 2017. The aim of these two field visits was three-fold:

- Focus-group discussions (FGDS) were held with a sample of PAPs as a follow up to the State Government-led compensation process to gain a better understanding of how the economic displacement and compensation process might have affected their livelihoods and to what extent PAPs had managed to secure replacement land and restore their livelihood.

- FGDs were held with both PAPs and male and female community members in the wider AoI to gather more detailed information about the local livelihoods, the needs and challenges in this respect. Community-based solutions to identified challenges were elicited. The livelihoods information collected in these FGDs was used to enhance the main ESIA and provide a basis on which to develop the first draft of the CDP, ensuring it addresses the right community and livelihoods needs.

- Finally, meetings were held with key State Government bodies as well as Local Government and District Authorities to better understand local development plans in the area, land availability and obtain more detailed compensation records.

Information was centred on understanding the livelihood of the communities, livelihood challenges and communal suggestions on solutions to identified challenges. The extent of compensation received, its application and subsequent effect on the livelihood of communities since receiving compensation was also explored.

A summary of these engagement and consultation meetings held and their outcomes is found in Table B9.3.

***Table B9.3 Summary of Meetings Held in Kankiya District – Follow-on Data Collection and Engagement***

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| ***Project-Affected Persons (PAPs) – Engagement about compensation and replacement land; Livelihoods FGDs*** | | | |
| Gadun Kaya – Focus-group discussion | 11 men | 13th December 2016 | • Men are mainly farmers and livestock keepers.<br>• Crops cultivated are for household consumption.<br>• Cattle kept are mainly for sale, transportation and as source of farm power/help.<br>• Men also engage in other livelihoods like making bricks, bricklaying, carpentry, commercial motorcycling, trading, milling, welding, barbering and trading.<br>• Livelihood challenges include: seasonal unemployment for farmers after the farming season due to the erratic rainfall pattern, inadequate farm inputs and extension support. |
| Gadun Kaya – Focus-group discussion | 7 women | 13th December 2016 | • Women did not receive compensation as they did not own lands. Lands are mostly owned by the men and their son(s).<br>• Some husbands used the compensation received to send their wives for the pilgrimage to mecca (Hajj).<br>• Livelihood activities carried out by the women are mainly small livestock keeping and food processing.<br>• Farming is carried out by the men in the community. |
| Kauyen Maina - Focus-group discussion | 12 men | 15th December 2016 | • Compensation received was a one-time payment which was spent on Hajj (pilgrimage), buying motorcycles, getting married, or getting their daughters.<br>• Others bought livestock with the compensation monies received.<br>• No notice has been given to them yet on when to stop using the lands.<br>• Livelihood activities that men engage in are mainly farming and livestock keeping.<br>• Some of the challenges associated with these livelihood activities include inadequate grazing lands, inadequate water supply, lack of agricultural extension support and lack of basic farming techniques and inputs. |
| Kauyen Maina - Focus-group discussion | 7 women | 15th December 2016 | • Compensation received was obtained through their sons, who collected the money on their behalf.<br>• It was noted that because the compensation rates were not disclosed, there were women who felt they received less compensation than others, despite having tree crops on lands eligible for compensation.<br>• Replacement lands were not purchased, rather, compensation was used to go for the Hajj pilgrimage.<br>• Predominant livelihood activities are farming for household consumption and livestock keeping for sale.<br>• Livelihood challenges include inadequate medical equipment and poor road access for the community. |

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| Daurawa - Focus-group discussion | 32 men | 15th December 2016 | • Notice to vacate the already compensated lands was only served to the PAPs with physical / residential structure on the Project footprint, not economically impacted persons.<br>• They added that those affected by physical displacement were given three months' notice to vacate the land.<br>• Compensation received was spent on Hajj with a few PAPs buying small parcels of replacement lands from neighbouring farmers.<br>• Main livelihood activities engaged in by men are farming and livestock keeping.<br>• Farming activities from land preparation, cultivation, planting, application of fertiliser, weeding to harvesting are carried out by men.<br>• Challenges faced include seasonal unemployment after the farming season, inadequate modern farm inputs and inadequate source of water. |
| Daurawa - Focus-group discussion | 24 women | 15th December 2016 | • Compensation received by the women was collected by their husbands and sons, as such, some women felt cheated as the actual sum of compensation was not disclosed to them.<br>• Farming work is still being carried out on compensated lands as there was no formal notification to vacate the land.<br>• Compensation cash received was used for household upkeep and purchase of smaller replacement lands.<br>• Farming and livestock keeping are the dominant livelihood activity among the women.<br>• A few women engage in knitting which was learnt from their parents.<br>• Challenges reported by women include that there is no source of water in the community and no health centres or schools. |
| Fanga - Focus-group discussion | men | 14th December 2016 | • Compensation was paid in one instalment.<br>• Compensation money was used to solve pressing personal and family issues listed by the men as purchase of foodstuffs, buying motorcycles, taking a new wife, financing their children's wedding and buying livestock.<br>• Livelihood activities are predominantly farming and livestock keeping.<br>• Land preparation activities are carried out by men.<br>• Other livelihood activities done by men include brick making by men and young boys in the community.<br>• Livelihood challenges were listed as poor extension support from the government, inadequate farming inputs, and depleting grazing lands. |

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| Fanga - Focus-group discussion | 36 women | 14th December 2016 | • Livelihood activities among the women in Fanga involve mainly farming and livestock keeping.<br>• Other livelihood activities include food processing and trading.<br>• Two women present who received compensation for their land received their cash compensation through their children.<br>• One of the women said she used her compensation to buy two cows, while the other stated that she shared hers as an inheritance for her sons.<br>• Challenges associated with livelihood activities include: the use of primitive tools in farming, distance to local mills for food processing, lack of health and educational infrastructure and inadequate water sources for household and livelihood activities. |
| Buddai - Focus-group discussion | 18 men | 14th December 2016 | • Compensated individuals included both physically and economically displaced people.<br>• Physically displaced individuals have not been given any compensation so far.<br>• Notice to vacate the compensated land has only been given to the PAPs affected by physical displacement.<br>• Compensation received was spent on the pilgrimage to Mecca, buying motorcycles, getting married and buying livestock.<br>• Individuals who bought replacement lands purchased fractions of existing farmlands from neighbouring farmers. Some bought land from their parents and grandparents.<br>• Livelihood activities carried out by men are mainly farming and livestock keeping.<br>• Livelihood challenges include deforestation and inadequate farming inputs. |
| Buddai - Focus-group discussion | 21 women | 14th December 2016 | • The women in Buddai do not farm. This livelihood activity is reserved for the men.<br>• Buddai women depend on their husbands for household needs. They are however small scale livestock keepers, while a few carry out food processing using local mills.<br>• No woman in the community received compensation.<br>• Livelihood challenges experienced were listed as lack of health and educational infrastructure, inadequate water source, inadequate training in lifelong skills, such as knitting and sewing for financial independence. |
| ***Community Members in the Project social area of influence (AoI) – Engagement and Livelihoods FGDs*** | | | |
| Gachi Village – Community Congress | | 16th December 2016 | • Livelihood activities in this community are mainly farming and artisanal services/work.<br>• Concerns were raised about the negative effects of the solar power project which they considered to be gradual depletion of groundwater, radiation, what happens to the solar panels after the project life has been exhausted, land restrictions for grazing and access to the Katsina-Kano road. |

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| Dandoro Village – Community Congress | | 17th December 2016 | • The main livelihoods of the community are farming, livestock keeping and trading.<br>• Other livelihoods mentioned include artisanal services/works (builders, brick layers, and welders), beverage and provision sellers, carpenters, motorcycle riders.<br>• Craftsmen in the community learnt their skills at home from their parents.<br>• Traded items are mainly farm produce bought from other community markets, as it was explained that food crops cultivated in their farms are for household consumption.<br>• Livelihood challenges include inadequate water source, lack of veterinary and extension support, inadequate health and school infrastructure. |
| ***State Government and Local Government Authorities*** | | | |
| Ministry of Land, Surveyor General's Office | 8 | 25th January 2017 | • Field verification exercise or Fanga community to locations of recorded replacement land. Field exercise was taken to ascertain the average size of replacement land purchased as recorded by the Land Officers and Surveyor.<br>• Collection of detailed maps showing the Project footprint, the Forest reserve and grazing route.<br>• According to the Surveyor & Land Officer, some PAPs in Fanga community purchased replacement lands in Buddai community which is approximately 1.5km away.<br>• Replacement lands verified were existing farmlands which were fractionalised and sold by the land-owning farmers in Buddai community.<br>• Replacement lands were bought from parents and grand-parents of PAPs in Fanga who now reside in Buddai community.<br>• The size of replacement lands bought range from 0.36 hectares (smallest piece land) to 0.75 hectares (biggest piece of land). This does not meet the generally accepted size of a plot of land (2Ha) required by a farming family to cultivate in a farming season.<br>• No maps were available to show the Project footprint, the Forest reserve and the grazing routes. |
| Ministry of Land, Valuations Department | 7 | 24th January 2017 | • Understanding the Land Valuation process, the compensation process and its matrix as well as the availability of replacement lands.<br>• According to the Valuation Officer, land in Katsina State is valued according to its location.<br>• Within the State Capital, land is valued at N300 per metre square, while in other local areas it is valued at N100 per metre square.<br>• The Gazetted rates guiding the establishment of the valuation and compensation rates provided for the Nova Solar Project (Katsina State of Nigeria Gazette No.15 Vol.13) were published on the 1st of August 2002<br>• The Valuation Officer also stated that it is impossible to give out lands as replacement lands after compensation in cash has been paid.<br>• The Valuations Officer, in collaboration with the Surveyor, conducted a sample survey to record the number of PAPs who had purchased alternative lands. |

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| Ministry of Agriculture, Livestock/Veterinary Department | 5 | 27th January 2017 | • From the map presented by the Director of the Livestock Department, the Project footprint was not within the primary grazing routes.<br>• He stated that there were possibilities of the Project footprint falling within secondary grazing routes which link up to the primary grazing route. This needs to be ascertained on provision of a detailed map.<br>• There were no updated data on the number of livestock in Kankiya as the last livestock population census was carried out in 1990.<br>• The grazing practices include: settled grazers, semi-nomadic and nomadic grazers.<br>• Should a grazing route be blocked by a project, there is important need for a re-routing approved by the State Government, the Ministry of Land & Survey, as well as the Ministry of Agriculture.<br>• It was stated by the Director that, it is in the Project's best interests to pursue such re-routing as this could prevent any misunderstanding or clashes between herdsmen and the Project. |
| Ministry of Agriculture, Water and Irrigation Infrastructure Department | 6 | 27th January 2017 | Understanding water supply and management within Katsina and Kankiya and the various irrigation support schemes and their potentials.<br><br>According to the director for irrigation, there is no formal water supply in Kankiya. Informal water supply is gotten from water tankers whose sources are nearby dams within Katsina and Kano States. Hand pumped bore holes are constructed by local government administrators. there are no irrigational intervention schemes. He further stated that the federal and state government is majorly concerned with dam renovations and farming input programmes. The only source of natural water in Kankiya local government is the "Champale Stream" which is currently the size of a gully. |

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| Ministry of Agriculture, Project Management and Extension Service Department | 5 | 24th January 2017 | • According to the Director for Project Management, land in Katsina State is mainly privately owned land holdings, the majority of which are acquired through inheritance.<br>• The minimum land holding per household in the state is 0.5 hectares, which is the basis for classifying farmers in Katsina.<br>• Kankiya people are mostly small scale farmers. Land is mainly used for farming and grazing activities.<br>• Lands given out as inheritance are not equally divided among male and female children. The females in the family get half of whatever size of land the males gets.<br>• An average family (household) in Katsina state is comprised of 6 members and will require a minimum of 2hectares of land to cultivate food crops year round.<br>• The widely practiced cropping system is mixed cropping.<br>• Forest reserves and grazing lands have been encroached on and converted to illegal farmlands and as such, the possibility of getting an alternative land is near impossible.<br>• He stated that traditional leaders who sell off parts of grazing lands as alternative lands do so illegally.<br>• The only way to obtain replacement lands is by buying off farmlands from farmers who are willing to sell or who have decided to give up farming for another source of livelihood e.g. trading.<br>• The fraction of the Forest reserve surrounding the Project footprint was de-gazetted solely to accommodate the Project footprint. Further de-gazettement of the Forest reserve to serve as a replacement land option cannot be done. |
| Kankiya Local Government, Forestry Department | 5 | 25th January 2017 | • De-gazettement of Forest reserves in Katsina State is only permitted on grounds of industrialisation and not for agricultural purposes.<br>• De-gazettement cannot be approved for agricultural purposes or resettlement purposes.<br>• The forest reserve located in Kankiya is already de-gazetted to accommodate an industrial layout, a metal fabrication industry and the Nova Solar project with the remaining part of the Forest reserve being encroached on by settlements.<br>• The de-gazettement process passes through the Land Office, then the Commissioner of Land, and finally, the office of the governor. |
| Kankiya Local Government, Lands Department | 4 | 26th January 2017 | • The metal works site layout, which is estimated to be 90Ha was part of the Forest reserve which was de-gazetted.<br>• Approximately 320 hectares of land has been excised from the Forest reserve for the light industrial layout which has been allocated for the construction of various industries. From the map presented by the Zonal Land Officer, the solar project footprint does not cut across the industrial layout as earlier suggested; rather, it cuts across the metal works industry layout and parts of the gazetted Forest reserve.<br>• He stated that there are no free lands around the Forest reserve to be allocated as replacement land. |
| ***District Authorities*** | | | |

| Meeting Details | Number (Attendance) | Date | Main Outcomes |
|---|---|---|---|
| Kankiya District – District Head, Hakimi of Kankiya | 5 | 24th January 2017 | • Community members are primarily farmers and livestock keepers.<br>• Cash compensation received was spent on Hajj pilgrimage, purchasing motorbikes and taking a new wife.<br>• Only a few PAPs would have purchased replacement lands.<br>• Land is individually owned through inheritance.<br>• There are no replacement lands fit for agricultural purpose.<br>• Any land needed would have to be bought from farmers with existing farmlands.<br>• Purchase of a block of replacement land to allocated among PAPs was strongly discouraged as compensation in cash has already been given for lands lost. Further compensation would only cause discord among PAPs who purchased replacement lands and those who did not. |
| Kankiya District - Directly Impacted Village and Ward Heads | 7 | 13th December 2016 | • Main livelihood sources are farming and livestock keeping.<br>• Compensation was a one-time payment.<br>• Concerns were raised regarding radiation from the solar project and restricted access to the Katsina-Kano road through the communities. |

Appendix B3

# Project Standard Questions and Answers

# *10 APPENDIX B3: PROJECT STANDARD QUESTIONS AND ANSWERS*

## 10.1 *INTRODUCTION*

Please note that this document is for internal information purposes only, it is not for public dissemination or distribution in external meetings.

This question and answer list supports the consistent communication of key messages across the stakeholders of the Nova Solar Power Katsina Project. The standard questions and answers should be reviewed and updated in accordance with the outcomes of engagement meetings and changes that happen throughout the Project lifecycle.

## 10.2 *THE COMPANY*

- **What/Who is Nova Solar?**

- Nova Solar Power Nigeria (Nova Power) develops solar energy projects in Nigeria.
- Nova Solar Power Nigeria is part of Nova Power, a group of companies with offices in Morocco, Germany and the US whose mission is to construct environmentally friendly power projects. Nova Solar Power ("Nova") is proposing to construct a solar farm in Kankiya, Katsina State.

## 10.3 *THE ESIA PROCESS*

- **What is an ESIA?**

- ESIA stands for Environmental and Social Impact Assessment.
- An ESIA is mandated by Nigerian law for seeking approval to develop an infrastructure project of a certain type, impact or size.
- The ESIA for the Nova Solar Katsina Project was disclosed publically and submitted in late 2015.
- The ESIA for the Nova Solar Project has been approved.
- An ESIA normally includes:
    - Looking at options for locating the project
    - Understanding the prevailing social and environmental conditions in the area so as to understand the potential benefits and impacts
    - Assessing potential negative and positive impacts of the Project on the local communities and environment
    - Developing plans to manage those impacts
- The ESIA process also involves consultation of affected communities and seeking feedback from them to feed into the development of the Project.

## 10.4 *THE PROJECT*

- **When is the work going to start?**

- At this point in time, it is not possible to say for certain when exactly the work will start but we expect activities will commence in 2017.

- Nova Power will advise the community before starting work.
- Nova Power will keep the community updated about the progress of the project.

- **What is the Project duration?**

- It is not possible to provide exact durations for phases of the Project.
- Currently we estimate that:
    - Construction will take 1 year
    - Operation will last 20 years or more
    - Decommissioning will take less than one year
- If there are any changes we will inform the community

- **Will the construction workforce cause problems or behave badly?**

    - Nova Solar will select a company ("contractor") to build and operate the solar Project.
    - The contractor chosen to do this work will be selected on the basis of its previous performance and track record in other projects.
    - Nova will supervise the contractor and ensure that it trains its workforce so that they have the correct behaviours when interacting with (or driving through) the community.

- **Will there be any negative impacts from this project? What are they?**

*During construction*

- The construction of the Katsina Solar Project will entail some impacts. These impacts will be associated with construction activities, such as arrival of some workers, some traffic of heavy vehicles on the roads.
- Nova Solar will work with the company contracted to do the work to make a plan to manage these impacts.

*Displacement and compensation*

- The main long-term impact of the Project development is the loss of land.
- Some of the land is part of the Forest reserve and some covers farm plots with mostly economic trees.
- The Government led and provided compensation to those whose land will be used, so that they can use the compensation to buy replacement land, or start a new livelihood.

*During operation*

- Solar power projects are among the safest and cleanest ways of making electricity.
- So the operation of a solar farm in itself is not predicted to have negative consequences on people or on the environment.

- If you have a suggestion to make to Nova Solar, you can get in touch with a representative of Nova Solar. See question 12 for contact details.

- **What is solar energy?**

    - Solar energy relies on special panels that capture energy from sunlight.
    - The panels are normally angled to capture as much sunlight as possible, depending on the position of the sun.

- As light hits the solar panels, the solar radiation is converted into electricity.
- The electricity current flows from the panels and is converted into a type of current that can be used by the local electric utilities (the national grid).
- Finally, the electricity is delivered onto the transmission lines and can be distributed to homes and businesses.

- **Will the solar panels cause bad things? Wil they pollute or cause damage?**

  - Solar energy (derived from radiation captured by the panels) is used in place of other sources of electricity (oil, gas) which cause environmental pollution.
  - Solar power generation is one of the safest and cleanest ways of producing electricity.
  - The solar panels do not emit gases or fumes that pollute the environment.
  - They are made of stable materials designed to last several decades.
  - We understand that water is very precious here and that it needs to be used sparingly. The soil quality is important for farming and growing of grass for your livestock. This type of project uses little water and does not cause soil or water pollution. Where there is a risk of water pollution, Nova Solar will put in place measure to prevent this from happening.
  - This is why Nova Solar Power chose to develop a solar farm, because it is a form of clean energy.

- **When will the solar farm be decommissioned? When it is decommissioned, will the equipment be left there?**

  - Decommissioning happens when the equipment has reached the end of its productive life and no longer produces at the same rate it was intended to.
  - It is not possible to say at this point when decommissioning of the solar project will happen. It will however take place many years (decades) from now.
  - Decommissioning will depend on the condition of the equipment, the maintenance and on the wear and tear during the operation of the solar farm.
  - A decommissioning plan to remove the equipment from the site would be developed closer to the time. But again, this is several years (decades) from now.

## 10.5 *BENEFITS SHARING*

- **What jobs will be available?**

  - Plans for workforce requirements have not been finalised yet.
  - The number and type of workers needed for the construction and operation phases have therefore not been decided.
  - Job numbers will fluctuate up and down throughout construction.
  - Because of the technical nature of the work to be done, many of the jobs will be skilled and semi-skilled.
  - Some jobs will be manual type.

- **Will there be jobs for our community during *construction*?**

    - The number and type of workers needed for the construction and operation phases have not been decided. So we cannot say what jobs will be available.
    - Many of the construction jobs will be technical and require specialist skills.
    - Jobs will be advertised nearer the time when more information is available.
    - Jobs will be advertised in a public place for all to be able to apply.
    - Jobs will be awarded based on ability to do the job, regardless of age, origin or gender.
    - No informal hiring will take place at the gate.
    - Nova Solar will seek out opportunities to make jobs available to local people and will work in consultation with the local leaders to make sure this is done in a fair and transparent manner. We cannot however make commitments on construction job numbers at this point.

- **Will there be jobs for our community during *operation*?**

    - The number and type of workers needed for the construction and operation phases have not been decided. So we cannot say what jobs will be available.
    - Fewer workers are required for operation, much less than for construction.
    - Jobs will therefore decrease when moving from construction to operation.
    - Many of the operation jobs will be technical and require specialist skills.
    - Jobs will be advertised in a public place for all to be able to apply.
    - Jobs will be awarded based on ability to do the job, regardless of age, origin or gender.
    - No informal hiring will take place at the gate.
    - Nova Solar will seek out opportunities where jobs can be made available to local people and will work in consultation with the local leaders to make sure this is done in a fair and transparent manner. We cannot however make commitments on operation job numbers at this point

- **What other benefits are expected?**

    - During construction, benefits expected include the creation of a small number of jobs as well as some trade for the local businesses due to the presence of the construction workforce.
    - At the national level, there will be generation of additional electricity to feed into the national grid to supply more power needed by households and businesses across the country.

- **Will there be electricity supplied to Kankiya?**

    - The Project will improve the availability and supply of electricity to Kankiya.
    - The distribution company is responsible for connecting people's homes and businesses to the grid to get electricity into the home.

- By law we are not allowed to distribute electricity directly to homes and we are contracted to NBET to supply electricity through the government (TCN) to the electricity distribution companies.

## 10.6 *FEEDBACK AND PARTICIPATION*

- **How will we hear more about the Nova Solar project?**

  - Nova Solar will provide updates about the Project on a regular basis, every [***xx weeks/months – depending on the stakeholder***].
  - If there are any changes in the Project, information about these will be shared as soon as possible.
  - Information will mostly be shared verbally through face-to-face meetings.

- **How do we get in touch with someone from Nova Solar in future?**

  - Nova Solar is open to receive questions or comments that the community might have about its Katsina solar project.
  - You can get in touch with Nova Solar Power by contacting their representative Najim Animashaun.

Appendix B4

# COMMUNITY / STAKEHOLDER RECORD TEMPLATE

# Form – Stakeholder / Community record

Document version: 1.0
Document date: 31/03/2017

| | |
|---|---|
| Date and time of meeting | DD / MM / YYYY 00:00 |
| Location of meeting | |

| | | | | | |
|---|---|---|---|---|---|
| Meeting | ☐ | Informal conversation | ☐ | Other: _____ | ☐ |

| Meeting Agenda / Key Discussion Points | |
|---|---|
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |
| 6. | |

| Name *(including Nova Solar representative/contractor)* | Title and position | Village / Organisation / Ministry represented | Contact details | Fingerprint / Signature |
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Form – Stakeholder / Community record

| Name *(including Nova Solar representative/contractor)* | Title and position | Village / Organisation / Ministry represented | Contact details | Fingerprint / Signature |
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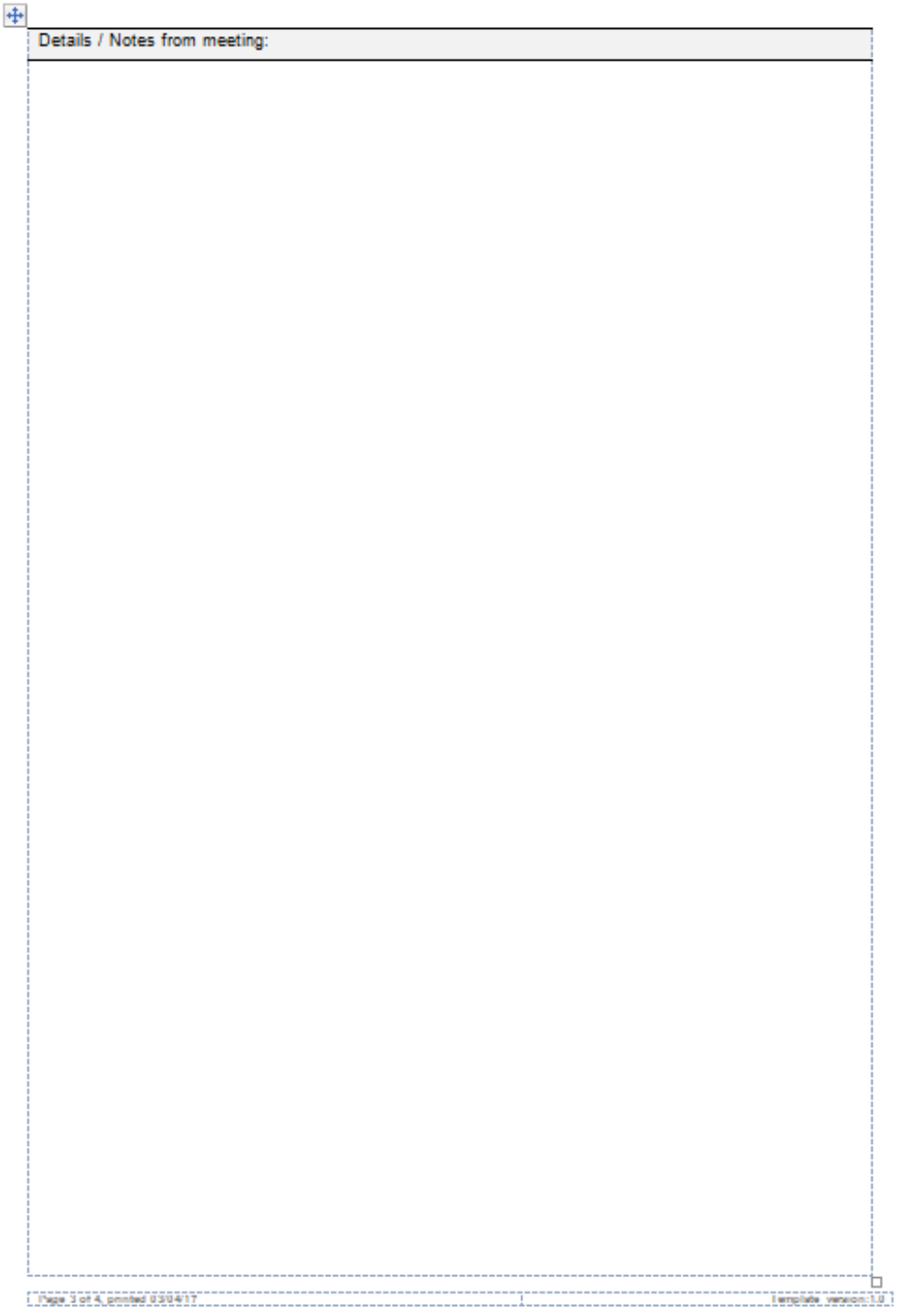
Form – Stakeholder / Community record



| Supporting photograph: |
|---|
| |

***Follow-up actions (include any commitments made to the community, no matter how small.)***

| Description of action | Priority | Responsible person | Completion date |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

Appendix B5

# Example Stakeholder Engagement Log

| Meeting details | | | | | Project staff in attendance | | Stakeholder Details | | Meeting Details | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Record type<br>*pick from drop-down* | Date<br>*dd/mm/yyyy* | Time<br>*hh:mm* | Location<br>*free text* | Nova Solar<br>*free text* | Contractor<br>*free text* | Key Stakeholder Name<br>*pick from drop-down list; drop-down list is linked to the Stakeholder Log tab* | Other attendees<br>*(multiple names) free text* | Meeting mood<br>*pick from drop-down* | Meeting summary / Key issues raised<br>*free text* |
| 1 | Meeting | 25/01/2017 | | | | | e.g. Magajin Gari | | positive | |
| 2 | Informal conversation | | | | | | | | negative | |
| 3 | Request | | | | | | | | neutral | |
| 4 | | | | | | | | | | |

| Meeting Details | | Follow-up actions | | | | |
|---|---|---|---|---|---|---|
| Meeting mood<br>*pick from drop-down* | Meeting summary / Key issues raised<br>*free text* | Action<br>*free text* | Person reponsible<br>*dop-down list; free text* | Date<br>*free text* | Status<br>*free text* | Comments<br>*free text* |
| positive | | | | | done | |
| negative | | | | | in process - 25% | |
| neutral | | | | | in process - 50% | |
| | | | | | in process - 75% | |

Appendix B6

# STAKEHOLDER DATABASE

| Stakeholder Details | | | | | |
|---|---|---|---|---|---|
| No. | Name | Title | Organisation | Stakeholde Type / Organisation | Attitude towards project |
| | *Last name, first names free text* | *free text* | *free text* | *pick from drop-down; free text allowed* | *pick from drop-down* |
| 1 | e.g. Magajin Gari | | | | |
| 2 | Stakeholder 2 | | Ministry of Land and Surveys | Govmt - Katsina State | |
| 3 | Stakeholder 3 | | Ministry of Establishment | Govmt - Katsina State | |
| 4 | Stakeholder 4 | | Ministry of Agriculture | Govmt - Katsina State | |
| 5 | Stakeholder 5 | | Kankiya District | Govmt - Kankiya District | |
| 6 | Stakeholder 6 | | Katsina State Government | Govmt - Katsina State | |
| 7 | Stakeholder 7 | | Pan Africa Solar | Business | |
| 8 | Stakeholder 8 | | | Customary leader - Village Head | |
| 9 | Stakeholder 9 | | | Customary leader - Hamlet Head | |
| 10 | Stakeholder 10 | | | | |

| Stakeholder Management | | Contact details | | | Coordinates | | |
|---|---|---|---|---|---|---|---|
| Key relationship manager | Frequency of engagement | Phone | Email | Address / Location | Northing | Easting | Additional information |
| *pick from drop-down* | *pick from drop-down* | *free text* | *free text* | *free text* | *free text* | *free text* | *free text* |
| | | | | | | | |
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Appendix B7

# GRIEVANCE FORM

# Form – Grievance record

Document version: 1.0
Document date: 31/03/2017

| Grievance Record | | | |
|---|---|---|---|
| Grievance Number: | Date Submitted: | Target Date for Resolution: | |
| Name of Complainant: | | | |
| Address and Contact Details of Complainant | | | |
| Grievance Received By: | | | |
| Team Member Responsible for Handling the Grievance: | *(may not always be appropriate for it to be the CLO, depends on grievance)* | | |
| Description of Grievance: | | | |
| Assessment of Grievance Significance Level (1, 2 or 3): | *(Never 3 escalate to Project Manager/Director)* | Signature and Role: | |

| Actions to Resolve Grievance | | | |
|---|---|---|---|
| Delegation to: | | | |
| Action | Who | When | Completed Y/N/Date |
| | | | |
| | | | |
| | | | |
| Response/Resolution: | | | |
| Strategy to Communicate Response: | | | |
| Sign-Off: | | | |
| Date: | | | |

| Conclusion | | | |
|---|---|---|---|
| Is complainant satisfied? | Y/N | Comments from Community Liaison Officer: | |
| Complainant comments regarding resolution: | | | |
| Grievance Closed? | Y/N | Grievance Resubmitted? | Y/N |
| Signature and Role: | | Date: | |
| Date: | | New Grievance Number: | |

Annex C

# Community Development Plan

# *11 ANNEX C: COMMUNITY DEVELOPMENT PLAN*

## 11.1 *INTRODUCTION*

Nova Solar is at the preliminary stages of developing a 100MW solar power project (hereafter the 'Project') in Kankiya District, in the Katsina State of Nigeria. Electricity generation to support business productivity and household wellbeing remains a challenge in Nigeria. This development will contribute towards closing the energy gap with a clean energy source, helping to diversify Nigeria's oil-dominated energy base. In order to develop the Project, Nova Solar has been allocated circa 200 hectares of land from the Katsina State Government (KTSG) which led the compensation process for it. Those whose land was acquired by the KTSG (Project-Affected Persons or 'PAPs') inhabit the communities of Gandun Kaya, Kauyen Maina, Fanga, Buddai and Daurawa (collectively 'directly affected communities'). These directly affected communities are characterised by reliance on land based agricultural livelihoods, poor health outcomes, lack of access to education and scarcity of key resources and inputs including water, land, farming inputs and credit/capital.

The assumptions and limitations that underpin this CDP are found in Appendix C1.

It should be noted that in advance of the CDP implementation during the course of construction and then operations, further fieldwork and engagement will be carried out to:

- Gather further baseline data to support effective livelihood restoration amongst PAPs;
- Assess potential implementing partners;
- Set up a Community Development Advisory Committee; and
- Make adjustments where appropriate based on feedback received.

As such, this CDP is under development and subject to changes.

### 11.1.1 *Policy Statement*

Nova Solar acknowledges that the development of the Project will have an impact on the economy and livelihoods of local communities and that these communities in turn have expectations to benefit from the Project. Nova Solar believes there is opportunity to address negative impacts to livelihoods as a result of land acquisition for the Project (through livelihoods restoration for PAPs) and create shared value through sustained community investment and collaboration programmes with interested parties throughout the life of the Project.

Given the Project-related land-take and economic displacement, the CDP includes a discrete livelihoods restoration component targeted specifically at PAPs (see Section 11.6).

PAPs, directly affected communities as well as those in the wider social area of influence (AoI) of the Project have been engaged to explore opportunities where Nova Solar's presence can add socio-economic value and benefit through addressing local challenges and bottlenecks to socio-economic development.

This Community Development Plan (CDP) has therefore been developed to both mitigate the socio-economic impacts of the Project (specifically economic displacement) and to enhance the benefits of Nova Solar's presence in the area, focusing where needs have been identified in the areas of **water security, farming and livestock, primary health and support to local business** (these areas of focus are detailed in *Section 11.7 Community Development Needs*).

Underpinning the CDP is Nova Solar's commitment to support the local economy, act as a responsible neighbour and employer, and comply with all relevant national and international regulations and guidance on community development.

Nova Solar's *Stakeholder Engagement Plan (SEP)* describes its commitment to proactive and ongoing dialogue with all agencies, organisations and communities with an interest in the Project and the community development benefits it will bring. Engagement on the CDP will be undertaken pre-construction and throughout the life of the Project, both to seek acceptance of the CDP and to monitor its effectiveness and address any CDP-related issues that arise.

### 11.1.2 *CDP Objectives and Principles*

The CDP seeks to bring together community and Nova Solar objectives in support of a unified/overarching set of Community Development objectives. The community objectives have been developed on the basis of work carried out to assess community needs, summarised in *Section* 11.3 Methodology*.* Having a unified set of company-community objectives, where there are shared interests, helps to ensure greater buy-in to contribute to the success of the community development programmes to be implemented.

*Community Objectives*

Existing studies and primary social baseline data collection have been used to identify and analyse community needs within the Project social area of influence (AoI). This analysis has informed the development of the CDP and

the initial (1) portfolio of proposed projects. The main concerns and hence key development and support objectives for communities engaged were identified to be:

- to improve water security and access (potable and irrigation);
- to enhance existing agricultural livelihoods with improvements in crop cultivation and livestock rearing;
- to improve local health provision;
- to provide support for small businesses;
- acquisition of new technical and vocational skills; and
- to improve existing education infrastructure, namely potable water and sanitation access.

*Nova Solar Objectives*

Nova Solar's overarching philosophy for the CDP is to create shared value for its host communities (in the social area of influence) through sustainable socio-economic development initiatives throughout the life of the Project.

In keeping with this philosophy, Nova Solar's business objectives with regards the CDP are to:

- **Restore livelihoods:** Fulfil the commitment to restore and improve the livelihoods of people and households who are economically displaced by the Project; and

- **Enhance livelihoods:** Enhance and support the livelihoods of directly and indirectly impacted communities through sharing of benefits in an inclusive manner.

*CDP Objectives*

The objectives of the CDP align the interests of Nova Solar with the needs of the community. The overarching objectives of the CDP are therefore to:

- Mindful of the local socio-economic context, support land-based livelihood restoration and enhancement of those who are economically displaced by the Project;

- Through a 'Project lifecycle' approach, provide long term sustainable development benefits to directly and indirectly affected communities in the Project social area of influence, aligned with their needs and priorities;

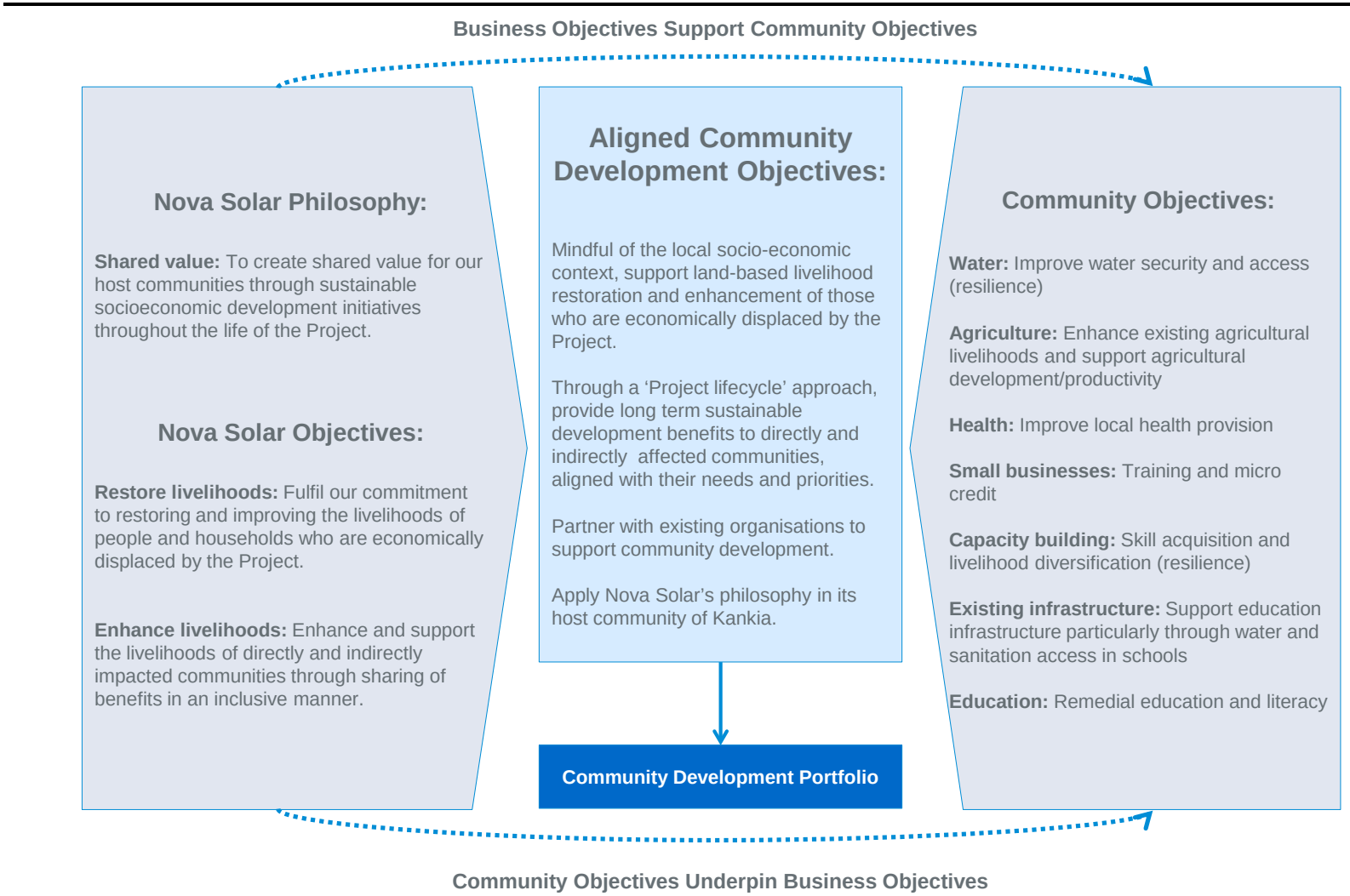
- Partner with existing organisations to support community development; and

(1) As per Section 11.8.2 the range of community projects proposed is yet to be prioritised through a second round of community consultation and final decision making by the Nova Solar team.

- Apply Nova Solar's philosophy of creating shared value through sustainable socioeconomic development initiatives in its host community of Kankiya, throughout the life of the Project.

Figure C11.1 provides a unified summary of the aforementioned CDP objectives that underpin the CDP.

***Figure C11.1 Community Development Plan Objectives***



*Community Development Good Practice Principles*

Nova Solar is committed to community development programmes that adhere to the following values and good practice principles:

- Livelihoods restoration for PAPs;
- Livelihoods enhancement and support for communities in the wider AoI;
- Evidence based;
- Extension based;
- Future-proofing;
- Sustainable;
- Gender-sensitive;
- Inclusive of vulnerable persons; and
- Participative.

These good practice principles are described further in Figure C11.2.

***Figure C11.2 Community Development Good Practice Principles***

**Livelihoods enhancement and support**
Based on the understanding of the socio-economic conditions in the Project footprint and wider social area of influence, the CDP will focus on supporting the existing livelihoods and enhancing them to make them more viable.

**Evidence based**
The proposed programmes have demonstrated success elsewhere, in similar contexts.

**Extension based**
Rather than being demonstration based, it extends the existing knowledge base of local farming communities.

**Future-proofing**
Help people adapt to changes in livelihoods and prepare for the future where technology and education are key.

**Sustainable**
The majority of impacts/benefits are long-lasting and sustainable, avoid creating dependency on Nova Solar for their continued functioning.

**Gender-sensitive**
Special consideration will be given to the needs of women and girls through design of appropriate projects.

**Inclusive of vulnerable persons**
Vulnerable groups will be included and given special consideration (including but not limited to women and girls, as above). Community development programmes will cater for their needs.

**Participative**
Community development programmes informed by community consultation that is fed into their establishment and implementation over time.

## 11.2 *PROJECT CONTEXT*

The proposed Nova Solar Farm (the 'Project') is a photovoltaic solar farm installation that is expected to generate 100 $MW_{AC}$ of electricity which would supply the national grid. The Project site is located approximately 3 km northwest of Kankiya, in Katsina State, Nigeria. The solar panels will be installed using aluminium or galvanized steel poles, part of which will be buried beneath the ground surface. The Project will require circa 200 ha of land.

The Project will be implemented in phases:

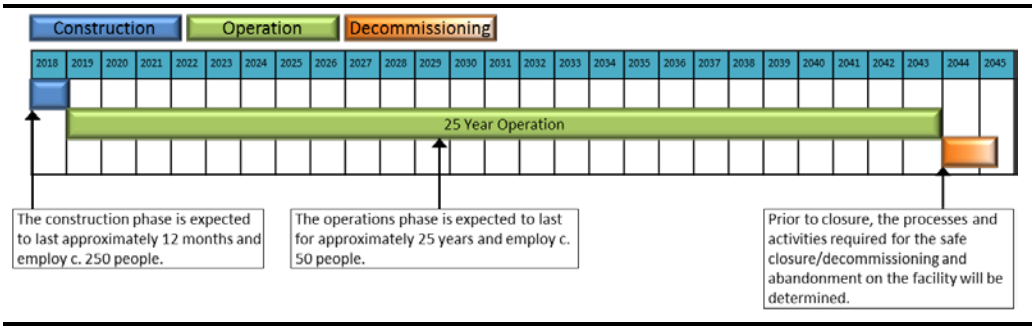
- pre-engineering (design and site preparation);
- construction and installation;
- operation; and
- decommissioning.

The Project will be located in Kankiya Local Government Area (LGA), which was chosen due to its terrain, accessibility (utilising the Kankiya-Katsina A9 highway), favourable climate and the high average annual Global Horizontal Irradiation index for the area, making it ideal for generation of solar power. It is also a strategic location in which to place a generation asset to power an area typically underserved by the national electricity grid.

The Project will incorporate a switchyard, which will connect plant step up transformers to 132 kV transmission lines. Infrastructure on site will also include an office, a medium voltage/high voltage (MV/HV) station and communications infrastructure.

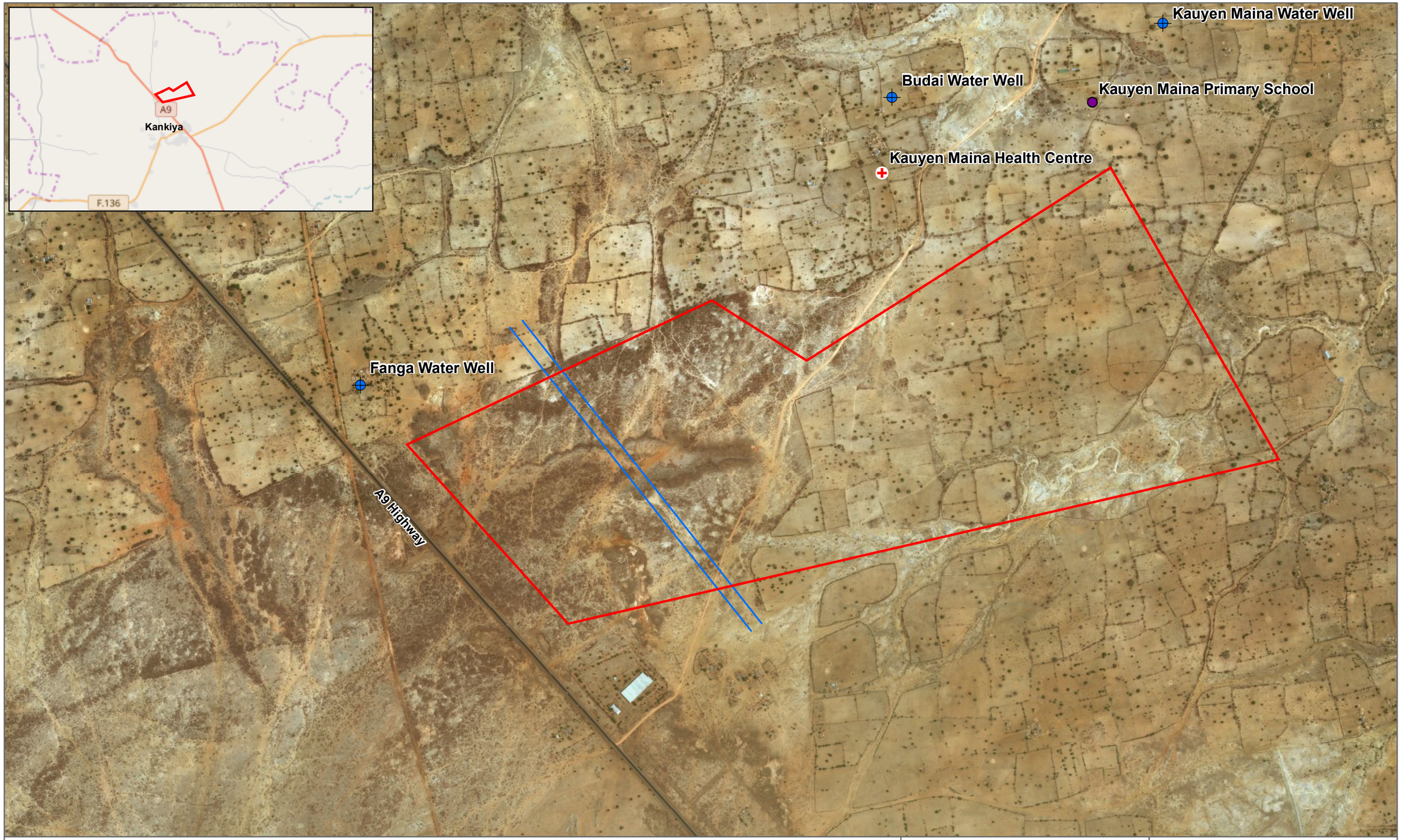
Figure C11.3 presents an overview of the planned Project timeframe for the phases of implementation. A map of the Project site, showing the presence of farm plots in a portion of the area is shown in Figure C11.4.

***Figure C11.3 Indicative Project Timeframe***




Although there is potential for variation, it is currently estimated that the peak workforce numbers will be 250 (mostly contractors) in the pre-engineering and construction phase, reducing to 50 (mostly permanent workers) when the Project enters production. The Nova Solar *Worker Management Plan* and *Local Content Management Plan* provide further details on how the workforce will be managed and how local content in the workforce will be maximised, respectively.

Further details around the Project design can be found in *Chapter 3: Project Description*, of the full ESIA, *125 MWp Katsina Solar PV Power Plant – ESIA.*




Site Boundary
Right of Way
Kauyen-maina Health Centre
Kauyen-maina Primary School
Well

0 100 200 300 400
Meters

N

**Figure C11.4**
**Project Site**

| | |
|---|---|
| SCALE: 1:11,000 | VERSION: A01 |
| SIZE: A4 | DRAWN: RC |
| PROJECT: 0381947 | CHECKED: SF |
| DATE: 18/04/2017 | APPROVED: SF |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: © OpenStreetMap (and) contributors, CC-BY-SA

Path: \\uklonsv01\DATA\London\Confidential Projects\0381947 Azura Solar RAP & ESIA.SF\GIS\Maps\Figure1.2_0381947_NovaSolar_ProjectSite.mxd

### 11.2.1 ***Project Land Acquisition***

This section summarises the land acquisition and compensation process applied by the KTSG prior to Nova Solar taking ownership of the Project. It also outlines actions Nova Solar will take to achieve compliance with IFC PS5.

*The Project Footprint*

The Project footprint covers an area of circa 200 hectares of land. Over half of this area is used privately for farming and livestock grazing. The remainder is part of a forest reserve understood to have a total area of 1,100ha.

The  portion of the Project footprint (approximately 78 hectares including the area already covered by the Transmission Lines) overlapping with a small part of the forest reserve  awaits de-gazettement and land use reallocation by the KTSG.

In the context of the AoI, the forest reserve is typically used by the local community for grazing of livestock and forms part of a transit route for taking livestock to water at the Kankiya Dam. Parts of the forest reserve have been encroached upon by the local community for crop farming, driven by population growth pressure on land. Stakeholders in the Katsina State Government have indicated that, despite the forest reserve in the AoI being almost entirely depleted of its forest cover (including the small portion that overlaps with the Project's footprint), its land cannot be de-gazetted for agricultural use. It can however be de-gazetted for the development of light industrial activity. It is understood that the Katsina State Government (KTSG) is in the process of publishing an official Gazette to re-allocate land use in this part of the forest reserve to renewable power generation and other light industrial activities. The intention of this approach being to promote economic diversification/development in the area.

Approximately 122 hectares of the Project footprint (or 61% of the 200 hectare concession) is located outside of the forest reserve.  This comprises land holdings used for farming, with areas that are not used for arable production being used for informal grazing.

In sum, approximately 39% of the 200ha of the Project footprint falls within the forest reserve. This is understood to require approximately 7% of the forest reserve to be re-allocated for the Project's development. The remainder (61%) of the Project footprint is privately held, for which the KTSG has conducted a compensation process (see Section below).

*Government-led Land Acquisition*

Prior to Nova Solar taking ownership of the site, a government-led land acquisition and compensation process was undertaken by the KTSG. In line with the Nigerian legal requirements for compulsory land acquisition, cash compensation was provided in lieu of replacement land.

The government-led land acquisition process resulted in 212 payments of compensation to PAPs for loss of land, crops, economic trees and physical structures[1] within the Project footprint.

The records of the land holders/owners (the PAPs), their assets list and the cash compensation they received can be found in the KTSG documents entitled *Schedule for Payment of Compensation for Land, Economic Trees, Cash Crops and Structures* as well as their individual compensation receipt records and the KTSG compensation calculations Excel spreadsheet.

Based on the information received, it is understood that compensation provided to PAPs used the State's compensation Gazetted rates list from 2002 as a basis however updated the compensation rate provided for land from N 25,000 per hectare in 2002 to N1,000,000 per hectare or N100 per $m^2$ in 2015[2].

*Exclusion of Residential Structures*

The compensation records provided by the KTSG indicated that compensation had also been provided for eight physical structures. At the time of a site visit carried out in December 2016, affected households identified in Buddai reported that they had not received compensation for the physical structures from the State Government. The KTSG acknowledged this and committed to rectify this in February 2017.

In an effort to eliminate the need for physical displacement and resettlement, Nova Solar surveyed the Project footprint and identified six primary residential structures (or 'homesteads') within the Project footprint housing eleven households (three households in Fanga and eight in Buddai). Mindful that this was a key issue for the Project and in line with IFC PS5, Nova Solar worked with its potential EPC Contractors during the contract tender process to reconfigure the technical designs. This resulted in successful modification of the northern boundary to exclude these structures, thus eliminating the need to cause physical displacement and having to resettle these households.

As a result, the Project land-take will result in economic displacement only, comprising loss of land containing economic trees, crops and livestock grazing areas.

*Replacement Land*

At the recommendation of prospective lenders, follow-up field enquiries that included Focus-Group Discussions (FGDs) with a sample of PAPs led to the understanding that several PAPs have used their cash compensation to secure replacement plots of land by purchasing or renting it from others. Due to the qualitative nature of FGDs and the fact that the acquisition of land by PAPs is ongoing, it has not been possible to quantify in exact terms the

[1] According to the Project team, in Kauyen Maina and Daurawa 156 payments out of 212 were made to 118 Project affected Persons (PAPs). Twenty-five (25) individuals therefore received multiple payments each.
(2) Katsina State of Nigeria Gazette No. 15, Vol. 13 Supplement: Notice of Revision of Rates Payable as: KT.S.L.N. No. 1 of 2002 Land Use Act CAP 202 Section 29, Sub-Section (1) Paragraph (c)-Compensation for farm Lands and Economic Trees.

proportion of PAPs who have secured replacement plots of land to enable restoration of their livelihoods, nor to verify the size or security of tenure of these replacement land acquisitions.

As part of ongoing monitoring of PAPs post payment of compensation, the KTSG, through the Surveyor General's Office, has also been conducting surveys to identify and map out alternative plots of land held by PAPs. This includes both additional replacement land that has been purchased with compensation and any other land plots that were already held by the PAPs. Reportedly, of the nearly 60% of PAPs surveyed so far, GPS locations have been recorded for land plots for 73% of these, with 11 PAPs owning or farming on multiple alternative plots in the area.

It should be noted that this work was ongoing at the time of writing and it was not ascertained whether (and what proportion of) the alternative plots identified were already previously owned by PAPs, or whether they were new acquisitions made using the compensation that PAPs received from the KTSG. It is anticipated that this information will be mapped and available in due course, once the Surveyor General's Office has been able to collate and map the data.

During the field visit conducted in December 2016 some PAPs stated that they had not acquired replacement land(1). Some PAPs in this group also stated that they had allocated it to other expenditures, including taking another wife, taking part in the Hajj, or opting for another livelihood. A summary of the key points from FGDs with PAPs can be found in *Appendix B* of the Nova Solar *Stakeholder Engagement Plan (Annex B)*.

In the Project context it is common practice to acquire land as an investment to be sold at a later date to meet expenses for major events such as marriage, college fees, hajj, medical expenses, and funerals. This may account for why some PAPs chose to reportedly acquire building plots near the A9 road as opposed to plots of farm land.

Current understanding is that the availability of land suitable for farming or livestock grazing within the AoI has become scarce due to population growth/pressure. Although a portion of the forest reserve land is being re-allocated (pending de-gazettement) to light industrial development, it is understood that it cannot be de-gazetted and re-allocated for arable farming activities. This indicates that securing large amounts of land for providing a farming-related livelihood restoration option for PAPs is therefore unlikely to be feasible.

The Project understands from Local Government functionaries however that portions of the forest reserve land can potentially be de-gazetted and re-allocated to primary agricultural processing as it may qualify as a light industry (as does solar power generation).

(1) Several PAPs compensated for land already own alternative plots and used their compensation for other purposes. Others, notably one elderly woman shared her compensation with her children as inheritance.

Under current circumstances, and given that the PAPs are still farming on the land (see following Section), it is likely that some PAPs have not secured replacement land yet despite having the cash compensation to do so, although they may do so at a later stage.

*Current Land Use*

Pending land clearance for Project start-up PAPs continue to retain possession and seek permission from the traditional leadership (the District Council)(1) to continue farming and grazing cattle on the land allocated for Project development (see additional detail in previous Section above). It is also understood that PAPs are paying a token rent(2) to the District Council for its continued use.

Under current Project timelines, it is unlikely that construction will commence much before the year end. This coincides with the harvest season in the Project AoI. Following ongoing engagement and maintenance of open channels of communication between the Nova Solar team and PAPs, it has been agreed that the PAPs can take advantage of the annual farm preparation and planting window in April 2017, allowing them to grow their crops and then harvest them in September to November 2017.

### 11.2.2 ***CDP Value Proposition***

Given that:

- PAPs received cash-based compensation;
- Local livelihoods in the AoI are predominantly land-based; and
- There are limits to the amount of suitable farm land available in the AoI,

The key development and support packages contained in the CDP are to be focused on achieving two key objectives:

- Objective 1: Restoring and enhancing the livelihoods of project affect peoples (PAPs); and
- Objective 2: Once objective 1 has been achieved, long-term sustainable community development.

These two objectives will be achieved in sequence, although there may be some overlap where livelihood development initiatives have a broader community benefit.

Restoration of agriculture-based livelihoods of PAPs (objective 1), will emphasise increasing the productivity of the plots of land currently used/owned.

(1) The District Council at the start of each farming season asks Nova if they have any objections to the farmers planting on the land.

Mindful that prevailing constraints on land for agricultural purposes will also persist into the future, the CDP will focus on future-proofing livelihoods in the long term through diversification and skills development.

The CDP will be implemented throughout the Project lifecycle. It represents a key mitigation for the main socio-economic impacts of the Project and is intended to deliver additional long term socio-economic benefits to the population in the AoI.

### 11.2.3 *Summary Baseline Conditions*

This section provides an overview of the socio-economic conditions of the Project AoI, which have been taken into consideration in the design of the CDP. Information has been summarised form the main ESIA *Chapter 4: Description of Existing Environment* and then supplemented with additional information by the Project team. Specific livelihood challenges and needs are discussed in more detail in Section 6.1.

***Table C11.1 Environmental and Social Context - Key Sensitivities***

| Aspect | Key Information |
|---|---|
| Water | |
| | **Water and sanitation:** The Project is located in an area where there is water scarcity and has been prone to drought. Rainfall is limited, occurring seasonally in the months of April to October, with peak rainfall occurring in August. Kankiya dam is the dam closest to the Project and is a small man-made earth dam that collects water from Kwartalle and Incimamu streams (secondary tributaries to the main river feeding Zobe dam). It provides a store of water for the dry season to provide water for irrigation and livestock. There is a Kankiya Irrigation Farmers Association that was set up to manage the Dam, including repairs. Reportedly, only three of the 40+ members are from the Nova Solar Project Affected Communities.<br><br>People living around the Project area dig shallow wells that are refilled by infiltration from the shallow groundwater during the dry season. They use this water for domestic and farming purposes. Water is also drawn from a number of hand dug wells and boreholes in the area. Water consumed is not treated. The groundwater from these was found not to comply with WHO drinking water standards.<br><br>There is a piped water supply in Kankiya town from large overhead tanks that provide pipe borne water to the population there. The water in Kankiya town is treated, but there may be issues as to maintenance of the system, including reliability of supply due to power outages and non-payment of electricity bills.<br><br>There is also an incomplete Federal Government of Nigeria water reticulation project designed to pump water nearly 100 Km from Zobe Dam to Katsina via various reservoirs, storage and treatment centres at Charanchi- Kankiya- Kafin-Soli- Dutsin-Ma- and Zobe, the source. Four structures at various stages of completion are located at Tafashi (3Km from Kankiya town centre), Kafin Soli (a reservoir and treatment plant with water tower) and Rimawi/Dutsin-Ma. |
| Social | |
| | **Traditional governance structure:** The traditional leadership in Kankiya is composed of a District Council with the District Head (Hakimi Kankiya) as leader, representing Kankiya on the Katsina Emirate Council. The District Head is nominated by the District Council to the Emir of Katsina, who appoints him. The District Head sits on the Katsina Emirate Council. The primary criteria for nomination as Hakimi are education, experience, temperament and lineage.<br><br>At the Kankiya District level, the District Council is the most important decision-making authority. It is composed of the District Head (Hakimi Kankiya), the Magaji Ngari and Kankiya village and ward heads. Village heads are responsible for managing village affairs and resolving disputes, which are typically brought before the Village heads and |

escalated to the District Head.

The Local Government Area defers to the District Council and District Head on issues. The Hakimi is assisted by the Magajin Gari – (a functionary that combines the roles of Prime Minister and Chief Whip among Village and Ward Heads who make up the council).Village heads are responsible for Village governance and community harmony.

**Dispute resolution:** Individual civil and domestic disputes are usually resolved through the District Council, and at the local Sharia or Magistrates courts. Criminal cases typically arising in the villages may be escalated to the police. Police records indicate seasonal fluctuations in property related offenses related to criminal damage (Charged as "Criminal Mischief") and livestock theft or injury, most commonly occurring during raining and harvesting seasons. Community related grievances are resolved through Village councils or are escalated to the District Council if needed.

**Land tenure:** As per the Land Use Act, land is controlled by the State (at state and local government level), which has authority to allocate land for commercial, agricultural and other purposes. Overlain on this is the system of customary land tenure, whereby land belonging to a family is handed from one generation to the next, as well as land that is communally owned and managed. Residents were conscious of a gradual decrease in communal lands over the years.

**Population and household composition:** According to the National Population Commission of Nigeria's 2006 Census (NPC 2006), the population of Kankiya Local Government Area numbered 151,395, with an annual growth rate of 3.2% per year. Provided that this annual growth rate has remained relatively stable, the current population for Kankiya Local Government Area (LGA) is estimated to be 214,073, consisting of 104 males for every 100 females.

The population of Kankiya LGA is projected to reach 235,268 by 2020. Assuming that the rate of population growth remains at 3.2% per year, this represents a population doubling time of roughly 22 years. Average household size in Kankiya LGA was 5.1 in 2006. Children aged 0 to 14 years in Kankiya made up 48% of the population and 67% of the population were aged below 25 years. There is therefore a large cohort that will be entering its 'economically active phase' in the coming year. ESIA respondents indicated that 29% of households have lived in Kankiya for less than ten years, indicating a high proportion of migrants. Anecdotal evidence suggests out-migration of economically active men from Kankiya.

**Ethno-linguistic groups, religion and marriage:** Hausa is the main ethno-linguistic group in Kankiya, followed by Fulani. Minority ethno-linguistic groups in the area are Yoruba, Birom, Zaria, Igbo and Idoma. Islam is the dominant religion in Kankiya town and LGA. The marital system is a mixture of polygynous and monogamous. A notice may be placed at the entrance to restrict men from entering into houses where there are married women. The PAPs in the project area are primarily Fulani.

Livelihoods

**Crop cultivation:** Farming is the primary livelihood activity in the area, accounting for over 50% of the main livelihood of houses in Kankiya. Inhabitants practice mainly subsistence farming with the sale of surplus or processed produce in the local markets. Farming practice is typically shifting cultivation. Farming equipment is highly manual with limited access to farming inputs such as fertilisers although simple cattle-drawn ploughs are also used. Cultivated crops include millet, maize and cashew.

**Economic trees:** The Project is located in an area with economic trees including mango, neem, date palm, gum Arabic, African fan palm, Shea and African rosewood.

**Crafts and vocational skills:** There are a number of small craft businesses in Kankiya that include tailor shops, auto mechanic workshops, welding workshops, furniture/cabinet maker, masons and block makers. Women crafts include pottery cookware (for local products such as massa, wara (local cottage cheese).

**Trading and market access:** There is a daily market in Kankiya Town Centre near the Police Station, the local electricity utility and bank, where trading of agricultural produce, inputs and other commodities such as clothing, beauty products and implements takes place. Women in particular, sell food, handicrafts, pottery cookware and surplus farm produce. This is typically done from their homes as they normally do not have access to selling in the open markets if they are unaccompanied by a male relative.

Livestock

| | |
|---|---|
| | **Livestock:** Livestock herding is also a main livelihood in the area, traditionally a livelihood activity of the Fulani. The main livestock species identified are guinea fowl, cattle, camels, donkeys, goat and sheep. Some residents have started semi-intensive breeding of rabbits. Seasonal grasslands in the areas surrounding Kankiya are often used for grazing livestock. Both nomadic and sedentary herding is practiced in the area.<br><br>**Fulani herdsmen:** Fulani tribesmen inhabit the Project area, living mostly in temporary houses in close proximity to their animals and grazing. Grazing is supplemented in the dry season with dried corn husks and wheat bran. |
| Health | **Health:** There is a General Hospital, a Comprehensive Health Centre and three private clinics in Kankiya. The public facilities provide outreach services in the wider community, including health promotion and ante-natal care. Endemic disease vectors include malarial mosquitoes, Tsetse fly (vector for African Trypanosomiasis or sleeping sickness) and rodents. Health conditions most commonly reported by health facilities are malaria, respiratory tract infections and diarrhoeal disease. Traditional plant-based medicine is also used, including bark and roots.<br><br>**Nutrition:** Food constituted the largest single household expenditure (35%) in the baseline survey. Meals consist mainly of carbohydrates, the main sources of protein being beef, milk/dairy products and poultry. Fruit is not consumed regularly. The baseline reported that nutritional status in the North-West of Nigeria is below the national average. |
| Education | **Education:** The (English language) adult literacy rates in Kankiya LGA are lower than both the national and North West averages. A large proportion of the population (>50%) has not attended school and more females than men fall within this group. The education infrastructure includes both public and private primary schools and public secondary schools. The public education infrastructure in the Project area in particular is in poor condition. Even though some schools have basic amenities such as toilets and water supply, others lack adequate facilities. There is also a technical school (Business and Apprenticeship Training Centre), and a tertiary institution (Katsina School of Health Technology). There is also a technical school (Business and Apprenticeship Training Centre), and a tertiary institution (Katsina School of Health Technology). |

**Source:** Nova Solar ESIA, *Chapter 4: Description of Existing Environment*

Vulnerable groups are defined as those less able or resilient in coping or adapting to changes brought about by the Project land take. Although the main ESIA did not characterise and define what constitutes vulnerability or vulnerable groups in relation to the Project, it is possible to identify a number of vulnerable groups that would potentially be less able to adapt and derive benefit from Nova Solar's presence in the area. These are described in Box 3.1.

***Box 3.1 Vulnerable Groups***

- **Females and female-headed households:** Unable to access as wide a range of income-generating opportunities as men on account of social norms and their economic dependence on men. The main ESIA baseline states that young married women keep within the household and restrict their movement outside, making them unable to sell goods in the open markets, unlike men. Women are less able to access formal employment on account of their inferior educational and literacy achievement, itself a product of social norms. Having fewer economic means makes them less able to access replacement land of their own, especially if compensation provided is insufficient; or they are highly dependent on the income that they generate from the processing of produce grown on the land for which they were compensated.

- **Project-affected households without alternative/multiple plots:** It is common in the Project AoI for households to practice shifting cultivation, meaning they rotate cultivation across several plots every few years, allowing the soils to recover. This provides a degree of resilience to losing land within the Project footprint, especially if the CDP is able to support the intensification of production on the same land. The most vulnerable households will be those which do not have alternative land across which they can rotate cultivation. Although this is thought to be unlikely, the vulnerability exists where a) PAPs do not use their compensation to purchase replacement land, either because the compensation was insufficient or compensation was allocated towards other costs; and/or b) they are unable to secure access to a plot of land of equal size and quality, either due to land scarcity or insufficient compensation.

- **Disabled and elderly:** who are less able to support themselves through land-based livelihoods requiring physical ability and less able to adapt to the changes brought about by economic displacement.

**Additional work to comply with IFC PS5:** Nova Solar is committed to fully understanding and responding to vulnerability in the Project context and will seek to identify whether there are project-affected persons or households who additional livelihoods may need support. Nova Solar is to undertake a baseline socio-economic survey at the earliest opportunity (following the Ramadan period) that will include questions that help to assess vulnerability. Data will be collected from all PAPs before any Project on-the-ground activities.

These baseline data will form the point of comparison against which to monitor the socio-economic status, including vulnerability, of PAPs over time through subsequent survey rounds. This will enable assessment of whether the livelihoods of vulnerable PAPs are stable or improved in relation to the baseline, or whether they need additional support. If subsequent surveys find that vulnerable PAPs are worse off, this will trigger additional measures by Nova Solar to specifically support these individuals.

## 11.3 *METHODOLOGY*

*Figure 3.1* outlines the process followed to obtain information on community needs and challenges with which to develop the present draft of the CDP.

**Figure C11.5 Methodology for understanding community needs and developing the CDP**

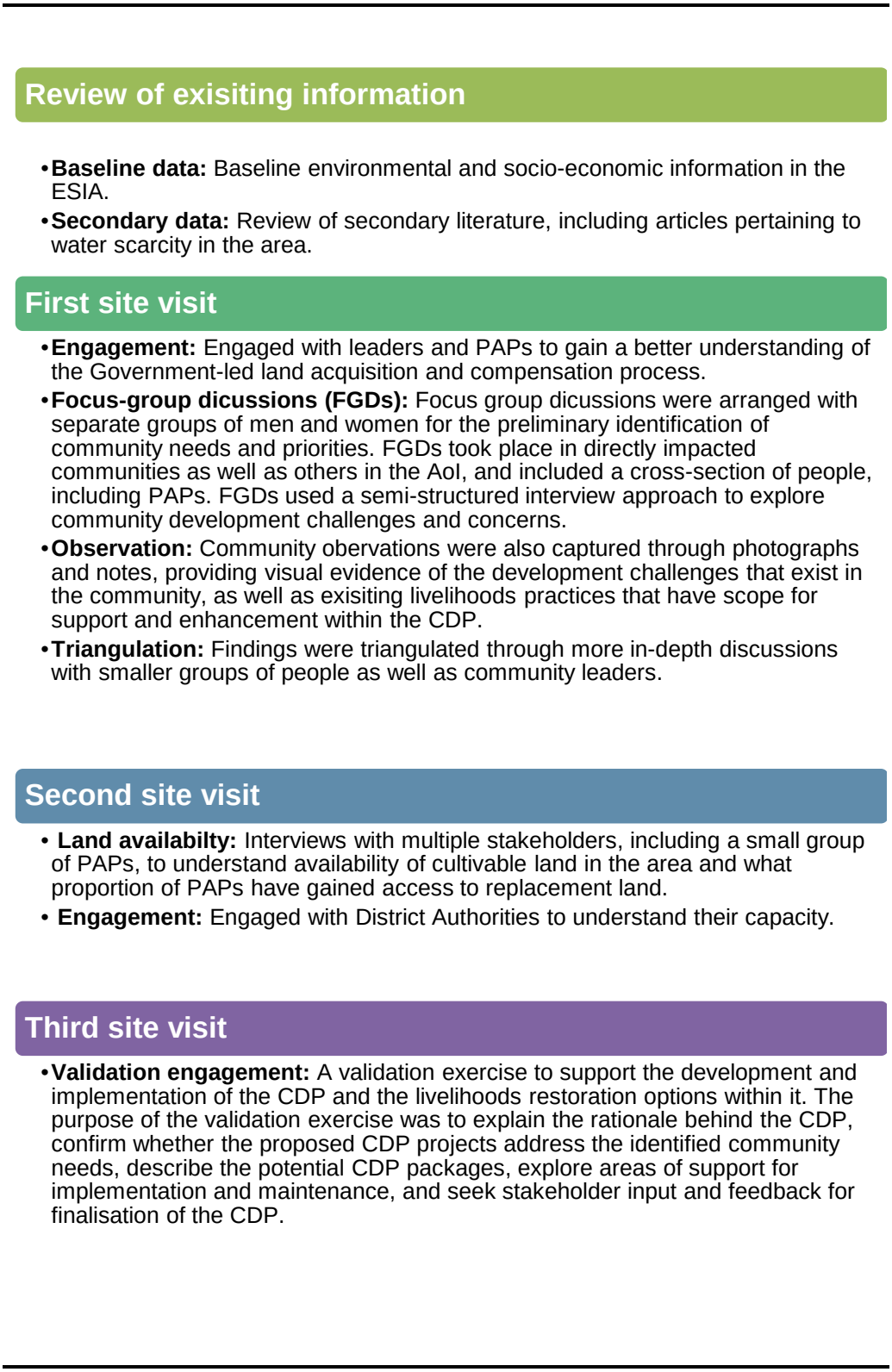


***Figure C11.6 Focus-group discussions in the community – Male and female participants in Fanga***

## 11.4 *GOVERNANCE AND ACCOUNTABILITY*

Oversight of the CDP will be provided by the ESG Committee of Azura Power Holdings Limited; a board sub-committee of the holding company of Nova Solar. Accountability and responsibility for the development and implementation of the CDP resides with the Nova Solar Project Management Team and the Project Community Liaison Officer whose main responsibility it will be to coordinate and enable CDP implementation. The Community Liaison Officer (CLO) will receive support and input from a Community Development Advisory Committee (CDAC) that will be made up of a representative group of stakeholders, and will coordinate the activities of the CDP implementing partners.

The objectives of the CDAC include to:

- provide local input and advice on community development projects;
- support Nova Solar in undertaking community consultation to identify development needs prioritised by communities and vulnerable groups;
- support Nova Solar in monitoring and evaluating the effectiveness of the CDP through a 'participatory monitoring and evaluation' process; and
- ensure that beneficiaries and implementing partners are directly involved in planning the projects, including the principles, agreements and key performance indicators.

The CDAC will be a broad-based group, representative of the population in the AoI. As an indication, members of the group may include:

- PAPs – a representative selection, including women and vulnerable persons;
- Indirectly affected community members (from the tertiary AoI) – a representative selection, including women and vulnerable persons;
- Local leadership (traditional and/or religious leaders);
- Teachers, health professionals etc.; and
- Representatives of local community based organisation.

It is expected that the composition / membership of the CDAC will change over time depending on the timing of the implementation of the different CDP component programmes. Change in CDAC composition periodically will also

support accountability of this group. Terms of Reference will be drawn up for the CDAC by the Project Management Team, which will specify the membership, set out the respective roles and responsibilities.

The governance structure for the CDP is outlined in Figure C11.7 and the detail of roles and responsibilities is provided in Table C11.2.

***Figure C11.7 CDP Governance Structure***

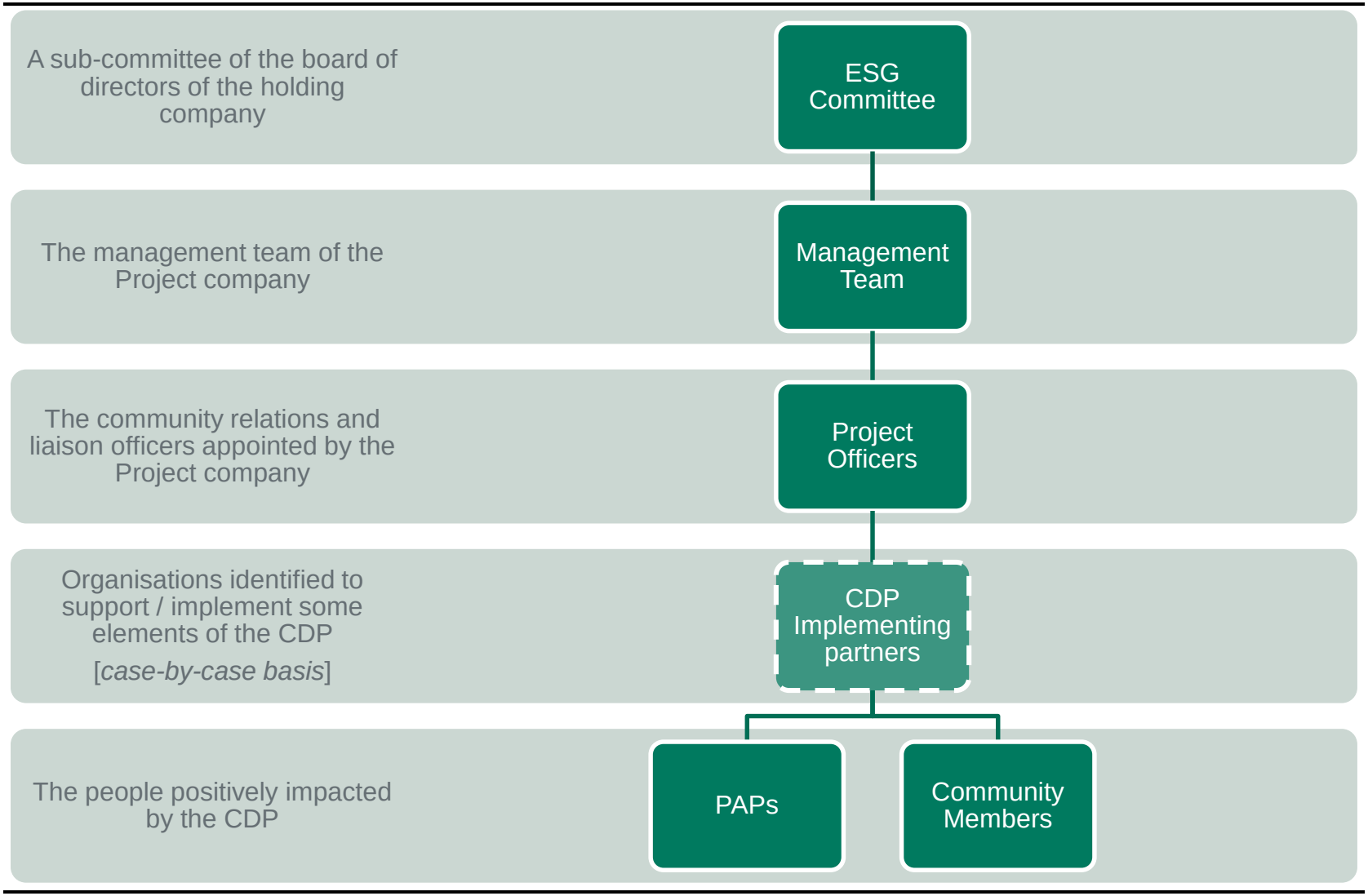


***Table C11.2 Roles and Responsibilities of CDP team***

| Role | Responsibility | ESG Capacity |
|---|---|---|
| **ESG Committee (Holding Company)** | • Establish the philosophy that underpins the CDP<br>• Approve the CDP strategy proposed by the Project Management Team<br>• Approve the CDP budget proposed by the Project Management Team<br>• Periodic review of CDP implementation and outcomes | Shareholder ESG specialists actively involved |
| **Project Management Team** | • Develop the strategy and key principles that guide the CDP<br>• Prepare CDP budget and present to ESG Committee<br>• Agree Terms of Reference/Scope of Work with implementing partners<br>• Oversee and supervise CDP implementation<br>• Report on CDP implementation, progress and performance information to the ESG Committee for their review and consideration<br>• Provide guidance to Project Officers on CDP implementation | Management ESG specialists actively involved |
| **Project Officers** | • Interface with the community and Project Management Team; provide feedback in both directions<br>• Set up and manage the CDAC<br>• Co-ordinate implementation of the CDP<br>• Take into account advice of the CDAC and incorporate in Community Development Planning where the objectives align<br>• Monitor financial management and project progress and performance of CDP implementing partners<br>• Report on CDP implementation, progress and performance information to the Project Management Team | Experienced CLO to be appointed at financial close |
| **Community Development Advisory Committee (CDAC)** | • Advisory role with regards content and structure of CDP<br>• Liaison and interface between CDP beneficiaries and the Project Officers/Implementing Partners<br>• Participatory monitoring of community development projects<br><br>This group will be selected carefully with clear 'rules of engagement' documented in Terms of Reference to prevent elite capture. | None |
| **CDP Implementing Partners (e.g. non-governmental organisations, community-based organisations)** | • Implement assigned community development projects in accordance with Scope of Work<br>• Provision of periodic monitoring reports on project progress and performance to Project Officers and Project Management Team<br>• Liaise with Community Development Advisory Committee to capture feedback from beneficiaries | TBC |

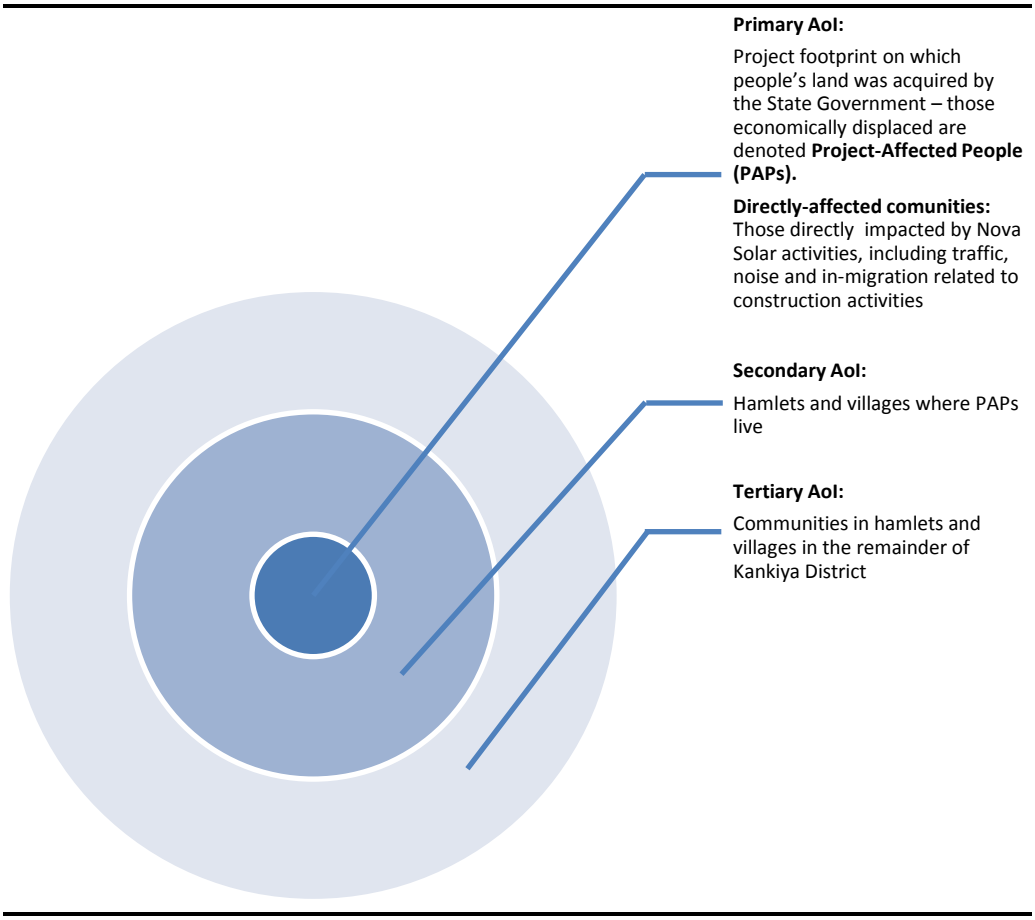
## 11.5 *TARGET/ BENEFICIARY COMMUNITIES / POPULATION*

### 11.5.1 *Project Social Area of Influence*

Given the importance of livelihood restoration for PAPs through the CDP, the PAPs group and the settlements where they live (Secondary AoI) will be prioritised for implementation. The livelihoods restoration projects targeted at PAPs (initially) will be prioritised for implementation in the short-term. Once underway, consideration may be given to extending these programmes to other beneficiaries in the AoI if there is interest.

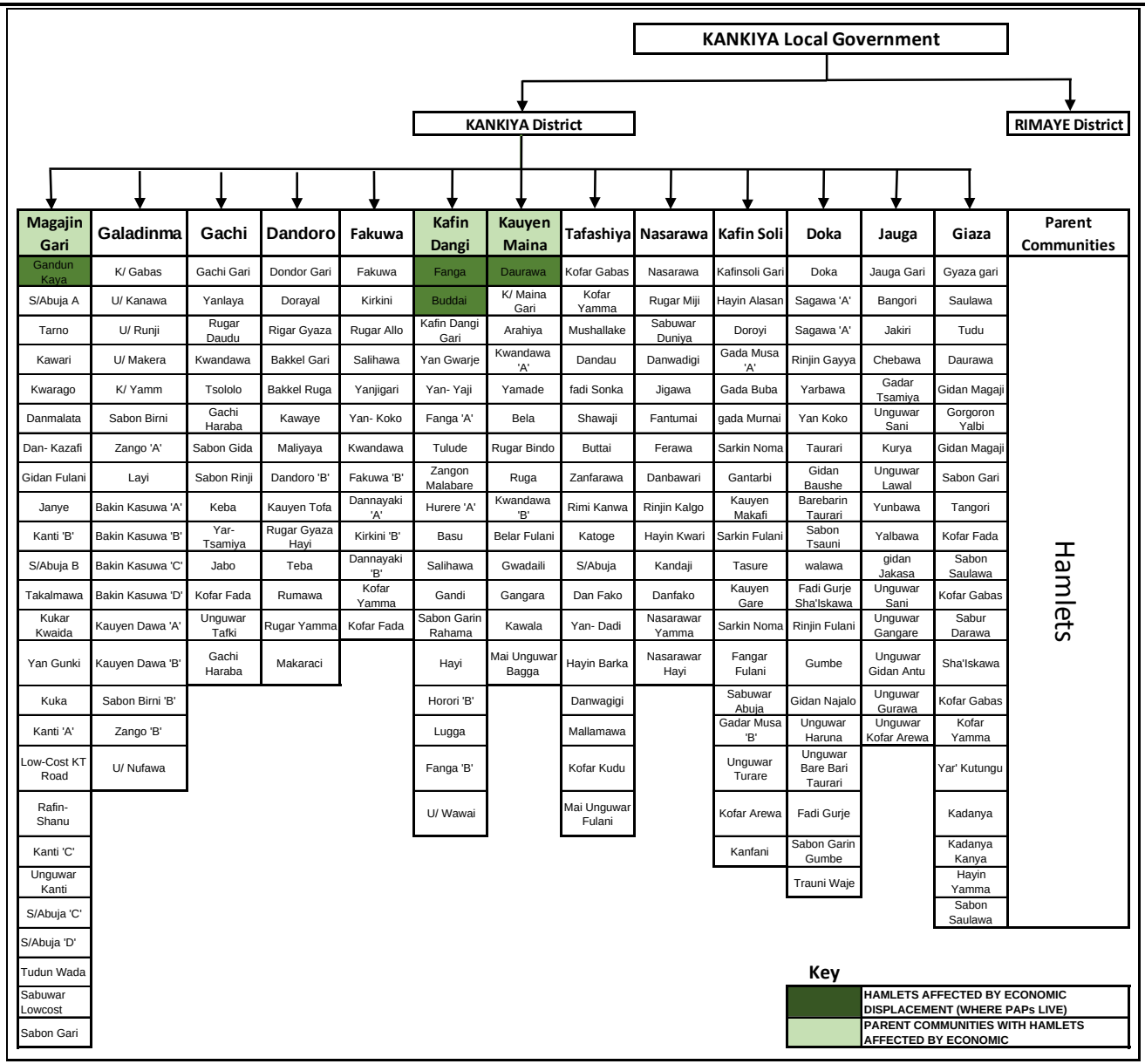
The CDP will be targeted at beneficiaries within the social AoI, that is, at the level of Kankiya District. Eligibility for accessing and participating in the Nova Solar CDP Programmes will be defined as part of the implementation plan to ensure that the 'net' is not cast too widely to be effective, but at the same time the CDP does not focus on an overly narrow group of people, as this can cause discontent.

***Figure C11.8 Project Social Area of Influence (AoI)***




For clarity, the settlement structure in Kankiya is mapped out in Figure 1.6.

***Figure C11.9 Community Organisation Structure***



### 11.5.2 *CDP Target Groups*

Within these target settlements, certain groups in particular will be targeted / prioritised for access to CDP projects, including:

- PAPs;
- Farmers;
- Livestock keepers;
- Women traders;
- Scalable business; and
- Vulnerable groups(1).

### 11.5.3 *Eligibility to participate in certain programmes*

PAPs are a group that is known to the Project team and they will be automatically eligible to access the agricultural livelihoods restoration elements of the CDP. Nova Solar does not however have detailed individual-level information about the wider population in the Project AoI to be able to determine eligibility and access to the different CDP programmes, ensuring that those most in need, or with the greatest potential to benefit, are prioritised, as well as to avoid oversubscribing the CDP programmes.

Nova Solar will develop high-level criteria for eligibility and access to CDP programmes (potentially in consultation with the CDAC and implementing partners) to manage the demand to participate in them, as well as to manage the size of the programme in terms of how many people it is able to accommodate.

In the absence of information about every household to allow determination of eligibility, and given that the CDP is targeting a wider population than solely the PAPs, a pragmatic approach would be a 'quota system' whereby each village is given a number of places in a programme. This is contingent on agreement between the communities and so would require consultation with the CDAC and the District Council to ensure that it is done in a culturally appropriate manner, and inclusive of women and vulnerable persons in the community.

The inclusion and access of vulnerable persons in community development projects will be assessed on the basis of the criteria in Box B7.2; done by the implementing partner in consultation with the CDAC.

Finally, it is anticipated that eligibility will vary by programme depending on whether a programme lends itself to a specific group (e.g. farming extension services prioritised for PAPs in the short term; food processing support for women's associations in the medium term) or to a wider population (e.g. hygiene and sanitation awareness).

(1) Note that in the absence of individual-level quantitative data to better define vulnerability, vulnerable groups are defined based upon the information available and summarised in Box 3.2.

*Gender Sensitivity*

As stated in Section 1.2.4 projects will be gender sensitive and be designed so as not to exclude women from accessing CDP benefits. This needs to be taken into account at the detailed project design and planning phase, ensuring that some projects are tailored for their specific needs in accordance with their particular livelihood activities, such as food processing and selling goods from home.

## 11.6 *LIVELIHOODS RESTORATION FOR PAPS*

The Nova Solar team, in discussion with Prospective Lenders, have taken the decision to incorporate livelihoods restoration for PAPs within the wider CDP. In order to achieve full compliance with IFC PS5, this section deals specifically with the measures that Nova Solar will take to restore PAP livelihoods.

Nova Solar will prioritise the implementation of a livelihoods restoration programme initially. Once this is has reached a 'steady state', Nova Solar will then look to implement the other projects proposed within the CDP portfolio for the benefit of the wider AoI communities. Details of this are shown in Table C11.3. Next steps for bridging the gaps with IFC PS5 are as follows:

**1. Market rates survey:** To confirm whether compensation rates paid reflected the market rates at the time, Nova Solar will be carrying out a market valuation survey to determinecurrent market values for land and economic trees and to estimate whether these differ significantly from market rates at the time compensation was provided in 2015. This in turn will help to determine whether there was a difference between the market rates in 2015 and the rates of compensation paid by the KTSG at the time.

It will consist of the following steps:

- Nova Solar will obtain the full calculation spreadsheet and compensation documents for all payments to PAPs from relevant KTSG officials;
- Based on the figures received from the KTSG, Nova Solar will produce a table summarising the rates applied to calculate the compensation for the Nova Solar project, in comparison to 2002 gazetted rates;
- Nova Solar will review available records for land sale transactions in Kankiya to determine market rates for land (ideally from 2014/15 when compensation was paid, if available; and
- A market valuation survey will be carried out to calculate the current market rates for crops. Discussions with market traders and collection of information from other sources will enable calculation of whether rates have changed significantly in recent years (to determine whether 2017 market rates are comparable to those from 2015).

These data will be fed into a PAPs database that will also include baseline data (see task 2.).

**2. Baseline survey:** It is necessary to establish a baseline of PAPs prior to any on-the-ground activity as a point of comparison for monitoring livelihoods restoration over time. Nova Solar is to undertake a baseline survey at the earliest opportunity (following the Ramadan period) to collect these data.

The baseline survey will collect the following from PAPs:

- Household-level socio-economic information;
- Information about vulnerability based on key indicators (see task 3.);
- Information about PAPs' livelihoods post-compensation; and
- PAPs' prioritisation of livelihoods restoration options (e.g. agriculture, livestock, value-chain addition, alternative livelihood).

This will involve the following steps:

- Development of a tailored survey form;
- In-field data collection from all PAPs;
- Entry of data into a database; and
- Analysis of the data at the individual level (on a case-by-case basis).

As the compensation process has already occurred and monitoring has not yet commenced there will need to be some explanation provided around how the current status differs compared to status prior to award of compensation, which will be extrapolated to the extent possible.

**3. Identify vulnerable PAPs (individual/households-level):** It is necessary to better understand vulnerability in the Project context and identify whether there are project-affected persons or households who may need additional livelihoods support. Nova Solar is to undertake a baseline socio-economic survey at the earliest opportunity (following the Ramadan period) that will include questions that help to assess vulnerability. Data will be collected from all PAPs before any Project on-the-ground activities.

4. **Gain an understanding of the PAPs' livelihoods post-compensation:** In the absence of provision of replacement land through the land acquisition process, and mindful of dependence on land-based livelihoods in the AoI, Prospective Lenders identified a need to understand the following:

- What PAPs used their compensation for;
- Current status of the PAP (what livelihood activities they are currently doing - Current status of the PAP (what livelihood activities they are currently doing – this is currently the best 'baseline' achievable on the basis that it is not possible to collect a retrospective baseline for PAPs status before compensation in 2015, owing to issues with recall bias);
- On the basis of the above, identify the gaps against IFC PS5 for each individual PAP; and
- Finally, identify the livelihood restoration measures that will bring each individual compensation transaction into compliance with IFC PS5.

Nova Solar will undertake a baseline survey at the earliest opportunity (following the Ramadan period, 2017). Data will be collected from all PAPs before any Project on-the-ground activities. In addition to gathering socio-economic and vulnerability data about PAPs, it will also include a number of questions formulated to answer the abovementioned points. It is anticipated that the questions will be qualitative in nature. This exercise requires individual-level assessment of each PAP on a case-by-case basis.

5. **Identify vulnerable PAPs (individual/households-level):** To fully understand vulnerability in the Project context and identify whether there are project-affected persons or households who may need additional livelihoods support. Nova Solar is to undertake a baseline socio-economic survey at the earliest opportunity (following the Ramadan period) that will include questions that help to assess vulnerability. Data will be collected from all PAPs before any Project on-the-ground activities.

These baseline data will form the point of comparison against which to monitor the socio-economic status, including vulnerability, of PAPs over time through subsequent survey rounds. This will enable assessment of whether the livelihoods of vulnerable PAPs are stable or improved in relation to the baseline, or whether they need additional support. If subsequent surveys find that vulnerable PAPs are worse off, this will trigger additional measures by Nova Solar to specifically support these individuals.

6. **Approach to livelihoods restoration packages:** Given the constraints on land availability in the AoI, and not wishing to cause indirect impact on land availability for others (i.e. knock-on effects to non-PAPs), Nova aims to support PAPs in restoring their livelihoods with options to enhance and maximise the productivity and use of the land they own already through improved agricultural practices, and hence productivity.

The livelihoods restoration options targeted specifically at PAPs are highlighted within the consolidated CDP portfolio in Table C11.3.

7. **Monitoring:** Nova Solar will conduct periodic monitoring of PAPs using the survey developed as part of Task 2.

8. **Grievance Mechanism:** Given the potential severity of grievances related to economic displacement, Nova Solar will implement its Grievance Mechanism as described in Section 7.8 of the *SEP.*

## 11.7 *COMMUNITY DEVELOPMENT NEEDS*

This section outlines the community development needs identified by Nova Solar through community consultations and primary and secondary data analysis. It forms the basis for the portfolio of potential CDP projects listed in Section 11.7.

Existing secondary information and available socio-economic baseline data collection activities for the ESIA and ESIA Addendum have been used to identify and analyse community needs within the Project area, and inform the development of the first iteration of the CDP and associated activities.

This data collection highlighted that the most pressing concerns for communities were identified to be:

- Agricultural development, namely:
    - Crop cultivation; and
    - Livestock herding.
- Water security, namely:

    - Potable; and
    - Irrigation.
- Access to improved health care;
- Skill acquisition & livelihood source diversification (Small Business Development), including access to microcredit;
- Access to electricity; and
- Education infrastructure.

These development needs and challenges described by communities are discussed further below and grouped thematically.

### 11.7.1 *Agricultural Development – Crop cultivation*

**Poor conditions and weak productivity for farming:**

- Reliance and dependence on the rain-fed system of agriculture and no irrigation. This means it is not possible to plant and harvest crops more than once in a year. As well as affecting productivity, it also causes seasonal unemployment and can lead to food insecurity (in the case of years of lower rainfall and drought).
- Lack of farm machinery or mechanised farming support(1). All farm work is done manually or with the use of a cattle-drawn plough.
- The topography of the area means farmland is prone to flooding during the rainy season.

**Insufficient and/or unaffordable farming inputs:**

- The cost of farming inputs and supplies is deemed high. For instance, although the Government rate for fertilizer was reported to be 1,900 Naira (said to be the subsidised rate), this was said to be unavailable to local farmers due to supply shortages. Farmers are therefore buying fertiliser at the rates and prices set on open markets, reported to be 10,000 Naira (2).
- The same was said to be the case with buying improved seed varieties, meaning farmers often replant their seeds. This reduces the yield rate of the crop.
- Herbicides and insecticides were also reported to be expensive, meaning farmers were unable to buy them, making crops vulnerable to pest and disease.

**Lack of dedicated support or resilience mechanisms for farming:**

- Poor financial / social support network. The local (i.e. village or hamlet level) support network to which farmers can go to for assistance when in difficulty is limited. This can make households vulnerable during times of drought, lower than normal yields or other periods of food insecurity.
- Access to available Government Agricultural Extension Services and significant support programmes is compromised by poor knowledge of the range and extent of the support on offer, resulting in increased vulnerability for farmers in the event of crop pest or disease outbreak that requires a concerted Government response and support.

(1) Note that this does not mean that introduction of mechanised farming methods would be an appropriate technology in the Project context.
(2) Please note that these figures have not been verified but are based on interviews undertaken in the field.

**Resource Scarcity:**

- Land scarcity due to land take or land allocation within Kankiya District for light industrial developments and population growth leading to pressure on available land. This has reportedly significantly increased the purchase and rental prices of land.
- Farmers report they usually run out of money before the end of the farming season (harvest). This lack of capital limits their capacity to procure basic farm inputs to increase productivity.

***Figure C11.10 Crop cultivation, Gadun Kaya***

***Figure C11.11 Grain storage, Buddai***

11.7.2 ***Agricultural Development – Livestock herding***

**Resource Scarcity:**

- Land of adequate size and sufficiency for farming or grazing is increasingly difficult to acquire due to population pressures, price increases and proposed developments including two solar projects and light industrial development.
- Inadequate or insufficient supply of water sources means that in the dry season watercourses dry up and humans and livestock compete for water.
- Limited grazing options.
- Lack of capital to purchase good breeds of livestock to improve the herd.

**Lack of dedicated support or resilience mechanisms for livestock management:**

- Poor veterinary support and livestock extension services support from the Ministry of Agriculture. Extension workers do not visit livestock farmers to provide support during seasons when they need it. This makes them vulnerable to outbreaks of preventable livestock diseases.
- Lack of access to micro-credit for purchasing improved breeds and growing the herd.
- There is a lack of skills and know-how in small livestock production which have minimal land requirements.

***Figure C11.12 Cattle for pulling ploughs, Buddai***

***Figure C11.13 Rabbit breeding***

### 11.7.3 *Water Access and Security – Potable and Irrigation*

Most livelihood activities rely on access to and availability of water in some form. Households collect water for drinking, cooking, bathing and cleaning. Food processing, typically carried out by women, also requires water.

**Inadequate infrastructure:**
Directly affected communities report that they have inadequate water access for both farming and domestic use. Shallow water wells (that make use of shallow groundwater) identified during field investigations were found to be in poor condition and respondents reported they were sometimes infested with maggots. Hand-pump boreholes were found to be located a considerable distance from the directly affected communities.

**Poor hygiene and sanitation standards:**
The ESIA baseline found that diarrhoeal disease, frequently related to water, is the second most common type of communicable disease reported by health facilities in the AoI. The December 2016 field visit found that according to statistics maintained by health centre staff, about 5% of cases reported were cholera(1), a water-borne disease.

Due to lack of access to potable water in schools, it is reported that the school day can be cut short when pupils have to return home to drink water owing to thirst/dehydration.

(1) Cholera is caused by poor hygiene and sanitation conditions and water contamination and can be exacerbated in times of drought and flood. Please note, however, that this figure has not been validated and in the Project context, where diagnostic capabilities are limited, it could therefore also be related to other water-borne diarrhoeal diseases caused by similar poor hygiene and sanitation conditions.

***Figure C11.14 Water collection, Buddai***

### 11.7.4 *Health Care Access*

**Shortage of staff and consumables:**

- The health centre closest to the Project footprint is in Kauyenmaina. This health centre lacks medical equipment for provision of primary care, such as stitching and open wound dressing.
- The centre also has staff shortages relative to the number of patients. As a result there are insufficient staff to keep patients in overnight and so child delivery is limited to the daytime only. For secondary and tertiary care, patients are referred to hospitals in larger settlements such as Kankiya General Hospital.

**Preventable communicable diseases:**

- The ESIA states that the most common health cases reported by health facilities are communicable diseases such as malaria, respiratory tract infections and diarrhoeal disease, all of which are preventable. The field visit in December 2016 included key informant interviews with health workers who confirmed many cases can be attributed to poor sanitation.
- The health centre attendants interviewed stated that health sensitisation and awareness programmes related to waste water management and water handling methods are required.

***Figure C11.15 Kauyenmaina Health Centre emergency room***

***Figure C11.16 Health Centre, Dandoro***


### 11.7.5 *Skill Acquisition & Livelihood Source Diversification*

**Cost of production/inputs:**

- Most women in directly affected communities are involved in food processing of some kind. The food produce they typically process is maize, guinea corn, millet, beans, and soya beans. They usually get their raw materials from the markets.
- FGDs and interviews with women indicate that the cost of production could be reduced if they were allowed to purchase agricultural produce directly from the farmers who produce the raw product.

**Shortage of skills to support alternative livelihoods and resilience:**

- Women also stated that skills acquisition in knitting, weaving, food processing and packaging, soap making and tailoring would help to enhance their livelihoods and increase their earnings.
- Men in directly affected communities also expressed an interest in acquiring craftsmanship training such as carpentry to provide an alternative livelihood option and help to support household earnings, particularly in the dry season.
- Literacy rates among women are lower than among men in the AoI. Women expressed interest in adult education programmes to improve their literacy level.
- The ESIA stated that there is a technical school (Business and Apprenticeship Training Centre), and a tertiary institution (Katsina School of Health Technology).

***Figure C11.17 Milling place, Buddai***

11.7.6 ***Access to Electricity***

**Lack of appropriate electrical infrastructure**

- Field investigations in December 2016 identified that the directly affected communities lack access to electricity, hence the main sources of fuel are kerosene and firewood, contributing to deforestation and erosion.
- FGDs with communities in the AoI also found that lack of electricity supply affects storage, preservation and processing of food.
- In the absence of information on household income levels, it is not possible to ascertain whether, if electricity were to be provided, people would be able to afford to pay for it.
- The consultant observed solar street lighting in the AoI, however it was not working.

***Figure C11.18 Solar street lighting, Kauyenmaina***

### 11.7.7 *Public Education Infrastructure*

**Dilapidated infrastructure**

- Educational infrastructure in the Project AoI shows visible structural defects, such as cracked walls and dilapidated roofing;
- Schools were found to lack basic potable water and sanitation facilities; and
- Due to the limited number of secondary schools, students wishing to pursue secondary level education therefore attend secondary school in Kankiya. This represents a barrier to accessing secondary education.

**Resource shortage:**

Respondents reported that local community schools have a shortage of teaching staff and teaching aids such as boards, chalk, textbooks and furniture.

## 11.8 *COMMUNITY DEVELOPMENT PROJECT PORTFOLIO*

### 11.8.1 *Overview*

The CDP implementation strategy will be broken down in three phases in order to 'start small' and then, as capacity and experience is built up across the Nova Solar team and implementing partners, projects can increase in scale, reach and complexity:

1. **Short-term projects:** Year 1. Dual focus on 'quick wins' and prioritisation of funding projects that provide livelihoods enhancement for PAPs. The short-term projects can then be extended in scale and reach to include the entire AoI in the medium- to long-term.

2. **Medium-term projects:** Year 2 to 5. Focus on livelihoods enhancement and productivity.

3. **Long-term projects:** Year 5 and beyond. Programmes that have more interdependencies and rely on the implementation of short- and medium-term projects before they can be initiated. They require more planning and longer implementation timeframes as they are more complex and oriented towards social networks that promote self-sufficiency, and may last for the remainder of the life of the Project.

Table 6.1 provides a summary of the potential projects which could be chosen, timeframes for implementation and their intended outcomes. These will be subject to consultation and prioritisation prior to agreeing on the final community development portfolio.

***Table C11.3 Community Development Portfolio – to be further refined***

| Package | ***Potential* Partner** *TBC following assessment. See Section 11.8.2* | Primary Opportunity | Associated Opportunity | PAP Focussed Livelihood Restoration Projects | Short Term CDP Projects | Medium Term CDP Projects | Long Term CDP Projects |
|---|---|---|---|---|---|---|---|
| Water Security Package | | Sustainable Potable Water Systems – Community | Less time spent collecting water, providing more time for other livelihood activities. | | | | |
| | | Sustainable Potable Water Systems - Public Services (schools and health centre) | | | | | |
| | | Dam Maintenance and Water Storage | Development of irrigation and improved water security for land-based livelihoods | ✓ | | | |
| Health and Hygiene Package | | Community-led total sanitation | Improved community hygiene and health status, increased productivity, lower household expenditure on healthcare | | | | |
| | | Health Facility Support | | | | | |
| Farming Package | | Farming Extension Programme – Skills/Capacity Development Component | Increased production, food security and income generation | ✓ | | | |
| | | Farming Extension Programme – Farming Inputs | | ✓ | | | |
| | | Farming Extension Programme – Demonstration Farming | | ✓ | | | |
| | | Networking to get alternative sharecropping agreement in neighbouring communities | | ✓ | | | |
| | | Irrigation Systems | Longer growing season; increase in annual production and income generation | ✓ | | | |
| | | Support to Farmer and Herder Associations | Greater bargaining power and resilience to adverse conditions | ✓ | | | |
| Livestock Herding | | Livestock Management Support and Introduction of Zero Grazing | Increase livestock productivity and resilience; income generation through livestock sale | ✓ | | | |
| | | Livestock Management Support - Introduction of Improved Existing Breeds | | ✓ | | | |
| | | Introduction of Semi-Intensive Livestock Breeding | Livelihood diversification and income generation through semi-intensive livestock sale | ✓ | | | |

| Package | *Potential* Partner *TBC following assessment. See Section 11.8.2* | Primary Opportunity | Associated Opportunity | PAP Focussed Livelihood Restoration Projects | Short Term CDP Projects | Medium Term CDP Projects | Long Term CDP Projects |
|---|---|---|---|---|---|---|---|
| Support to Small/ Scalable Business: Market Chain and Value Addition | | Rural electrification (either off-grid solar or on-grid through step-down transformer) | Opening up opportunities for livelihoods diversification (and future-proofing livelihoods) with use of powered machinery and access to e-learning (by charging phones) | | | | |
| | | Small/Scalable Business - Support and Skills Development | Increased resilience and better informed decision-making; income generation | | | | |
| | | Literacy and Technical/Vocational Skills | Greater income potential; access to written information | ✓ | | | |
| | | Support to Food Processing | Greater income generation and economic independence for females. | ✓ | | | |
| | | Enhancing Access to Markets and the Value Chain | Greater buying power; market diversification; greater income generation | | | | |
| | | Small Business Finance and Microcredit | Growth and improvement in management and profit of small businesses | | | | |

### 11.8.2 ***Short Term Projects***

*Water Security Package*

A precursor activity to implementing water security projects is to conduct a hydrogeological study to understand the sustainable yield of the local aquifer. Further detail about this can be found in Section 11.8.3.

*1. Sustainable Potable Water Systems - Community*

| **Project Description** | | | | |
|---|---|---|---|---|
| This Project addresses the challenge of availability and access to potable water for drinking and domestic use. In so doing, it contributes to a reduction in water-borne disease, as well as reducing a household's time in travelling to collect water.<br><br>Hand pumps are to be provided in the local community to provide clean water for drinking and domestic use. The number of hand pumps to be implemented, as well as their location, is to be determined following hydrological investigations. The hand pumps are to be managed by community-based water management committees set up and trained to ensure its ongoing maintenance and cleanliness. | | | | |
| **Proposed eligibility** | | | | |
| Primary AoI | Secondary AoI | Tertiary AoI | | |
| | | | | |
| **Dependencies / Preparatory Work**<br>This project will require hydrogeological investigation by the EPC Contractor to ascertain sustainable water yield in the local aquifer (see Section 11.8.2) and hence the feasibility of drilling additional boreholes. | | | | |
| **Achievement of CDP Objectives** | | | | |
| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
| | | | | TBC – see Section 11.8.2 |
| **Performance indicators**<br>• Number of functioning hand pumps implemented to date (as compared to plan)<br>• Number of active hand pump management committees (as compared to hand pumps)<br>• Change in travel time to collect water<br>• Change in waiting time to collect water<br>• To be defined further with implementing partner | | | | |
| **Exit Strategy**<br>Formation and training of community water management committees to be responsible for the management and repair of the hand pumps. | | | | |
| **Optionality/Risk Sharing**<br>• Potential for collaboration with Pan Africa Solar (PAS) to expand the coverage or share implementing partner<br>• Option to extend to Tertiary AoI in the long-term | | | | |

*2. Dam Maintenance and Water Storage (PAP focussed)*

| **Project Description** |
|---|
| Water capture in the rainy season and storage in the dry season is a fundamental |

element that supports the local economy and livelihoods. Water from dams is used for watering of crops and livestock and as such farms tend to be clustered around dams. There are reports that before its bank burst in 2013, the Kankiya Dam supported fishing activities also(1). The dam collapse also impacted farmers, some of which are reported to have moved to farm closer to a different dam. Farmers in the area surrounding the dam rely on it for the refill of their hand dug wells from the shallow water table that gives them a supply of water year-round. As such, there is a great dependency on the dams locally. Without this store of water, farming activities and any additional extension services to support them, are unlikely to be sustainable.

It is understood that the Kankiya dam, like others in the area, needs periodic rehabilitation and desilting and long term maintenance. Increased use of the dam is reported to be putting pressure on its walls. It is understood that it is currently heavily silted, reducing its capacity to store water, and that it is repaired infrequently. This is usually carried out by local contractors organised by a local community-based association (Kankiya Irrigation Farmers Association) for maintaining the dam that contracts the work out.

The objective of the project would therefore be to enable the long term maintenance of the dam, for communities in the AoI to have more reliable access to water for farming and livestock all year round and more efficient management of water resources. This in turn would extend the growing season, enhance annual production of crops, resulting in increased production for household consumption and income generation.

This project will have two components consisting of:

- Nova Solar will carry out an investigation into the best and most effective way of supporting the long-term rehabilitation and maintenance of the dam, with preference for a sustainable model that does not create dependence on Nova Solar. The following implementation options, amongst others, will be explored:
    - During construction, work with the EPC Contractor to assess the local dams in the AoI, understand the type and frequency of rehabilitation work that needs to be done and support the Kankiya Irrigation Farmers Association to put in place a maintenance programme;
    - Supporting a local business/contractor in carrying out the dam maintenance work to a high standard and develop a viable business model for this, e.g. through provision of equipment, training, etc. that they can use on an ongoing basis, including for other dams other than Kankiya dam.
- Investigate the feasibility of implementing additional water capture, storage or management methods appropriate to the local context.

The investigation to better understand the feasibility of implementing such a Project will be frontloaded as it is seen as an enabler for further agricultural extension programmes and to take advantage of the EPC Contractor team's engineering skills during the construction phase.

| **Proposed eligibility** | | |
|---|---|---|
| Primary AoI | Secondary AoI | Tertiary AoI |
| | | |

**Dependencies / Preparatory Work**

Assessment of existing dams by the EPC Contractor (due to the technical/engineering nature of this work) to understand the condition of the dam and maintenance needs.

| **Achievement of CDP Objectives** | | | | |
|---|---|---|---|---|
| Livelihood enhancement and | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support |

(1) Ladan, SI. 2015. Water Resource Management: Dam Collapse and its Implications on Agricultural Production in Kankiya, Northern Nigeria. *International Journal of Sciences*. 4(06)

| | | | | |
|---|---|---|---|---|
| restoration for PAPs | | | | implementation |
| | | | | TBC – see Section 11.8.2 |

**Performance indicators**

- Longer growing/cultivation season
- Increase in annual production
- To be defined further with implementing partner

**Exit Strategy**

- Train Farmer and Herder Associations (supported through a separate CDP project) to manage dams
- Handover to government agency

**Optionality / Risk Sharing**

- Given the proximity of Kankiya Dam to the PAS Project's site, Nova Solar shall discuss potential collaboration on this project with PAS in order to avoid overlaps.
- Involve the local community and support the Kankiya Irrigation Farmers Association organisation for dam maintenance in carrying out the work throughout the duration of the Project.

*Health and Hygiene Package*

## Community-Led Total Sanitation Project

**Project Description**

The infrastructural improvements in water access and quality in local communities, as outlined in Project Description 1, although important for improving health outcomes in their own right, require a concurrent change in health practices and beliefs to maximise benefits of improvements in water provision. It is therefore necessary to implement a community-based behaviour change and communication (BCC) and sanitation element alongside provision of potable water to reinforce good practices in an integrated manner with regards water, hygiene and sanitation (WASH).

Alongside the hand pumps constructed in the directly affected communities, a community-led total sanitation project(1)(2) will therefore be implemented to sensitise communities in aspects such as:

- collective mobilisation and decision-making to stop open defection
- hand washing practices
- water handling and storage
- waste management
- appropriate methods of water treatment
- practices to avoid cross-contamination

The second component of the project is for the community-led construction of pit latrines within the community. The focus of the project however is on changing behaviours related to poor hygiene, rather than on installing sanitation hardware.

Given the low literacy context, particularly for females, it is important that visual materials are used and if possible that they are illustrated in an ethnographically appropriate manner.

(1) http://www.communityledtotalsanitation.org/page/about-site accessed 04/04/2017

(2) According to a USAID WashPlus Learning Brief from October 2015 Community-led total sanitation of CLTS is "*Grounded in participatory rural appraisal techniques that engage communities in their own problem solving, CLTS harnesses the power of community decision making and social solidarity to influence individual behavior and achieve communitywide results. It is a facilitated process to inspire rural communities to collectively abandon the practice of open defecation and build latrines (or toilets) without reliance on external subsidies*."
http://www.washplus.org/sites/default/files/resource_files/clts_brief2015.pdf accessed 04/04/2017

| | | | | |
|---|---|---|---|---|
| **Proposed eligibility** | | | | |
| Primary AoI | | Secondary AoI | | Tertiary AoI |
| | | | | |
| **Dependencies / Preparatory Work** | | | | |
| **Achievement of CDP Objectives** | | | | |
| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
| | | | | TBC - see Section 11.8.2 |
| **Performance indicators**<br>• Change in open defecation<br>• Improvement in hand-washing practices<br>• Change in beneficiary health knowledge<br>• Change in incidence (and reporting) of new cases of diarrhoeal or water-borne disease in the local health facilities. | | | | |
| **Exit Strategy**<br>To be defined with implementing partner. | | | | |
| **Optionality/Risk Sharing**<br>• Potential for collaboration with PAS to expand the coverage or share implementing partner<br>• Option to extend to Tertiary AoI in the long-term | | | | |

*Farming Package – (PAP focussed)*

A precursor activity to implementing farming extension projects is to carry out a study of the local soil type and carry out community land use planning in a consultative manner. Further detail about this can be found in Section 11.8.2.

*3. Farming Extension Programme – Skills/Capacity Development Component*

| |
|---|
| **Project Description**<br><br>Farming is the primary livelihood in the Project AoI with crop production a source of household subsistence and income. Community FGDs have indicated a key challenge in sustaining and farming based livelihood is the lack of support they have in improving farming practices/methods and productivity.<br><br>The project will help to directly address this through knowledge transfer, helping farmers to adapt to and adopt new practices that contribute to:<br><br>• soil conservation and erosion prevention<br>• water-efficient farming and irrigation methods<br>• companion planting<br>• production and use of mycorrhizal inoculum (subject to this being assessed as an appropriate technology on the basis of soil analyses per Section 11.8.2 as it is highly dependent on soil type)(1) |

(1) Mycorrhizal spores are present in most soils and live within the root system of vascular plants. They essentially provide the plant with inoculants that are beneficial for fighting off diseases. The relationship they form with the roots is one that is

- continuous minimum mechanical soil disturbance
- diversification of crop species grown in sequences and/or associations

As the farming methods require management skills and a learning process by the farmer, this project requires time for benefits to be fully realised as it requires several seasons to be embedded. It is anticipated that Nova Solar would invest in an initial intensive period of farmer capacity development at the start of this project, followed by less intensive 'maintenance and monitoring' of the programme thereafter coupled with a technical handover to the community to increase its ownership over time.
This project will 'start small' involving the PAPs and their settlements in the Secondary AoI in the short term. It may be gradually be extended and rolled out to the wider AoI in the longer term.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

- Hydrological study
- Soil investigation

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Adherence / Continuity in application of improved farming methods
- Project attrition rate (i.e. what proportion of beneficiaries that started the programme, completed it)
- Change in annual yield
- Beneficiary farmer feedback
- To be defined further with implementing partner

**Exit Strategy**

- Formation of Farmer Associations (as part of associated CDP project) to encourage peer learning, continuous knowledge transfer and retention of information among farmers.
- As part of a clear exit strategy, boundaries about where Nova Solar investment and input starts and stops over time will be set

**Optionality/Risk Sharing**

- Potential for collaboration with Pan Africa Solar to share implementing partner
- Option to extend to Tertiary AoI in the long-term

### *4. Farming Extension Programme – Farming Inputs*

**Project Description**

an important part of the plant's immune response and provides the fungi with the nutrients it requires to survive and reproduce. For this reason it is considered a symbiotic relationship. Mycorrhizal inoculums are part of a family of microbial inoculants used in horticulture that are beneficial to plants. Microbial inoculants are used in the capacity of bio-fertilizers to primarily boost the immune response in vegetables. Microbial inoculants can be rizobacterial, nitrogen fixing, phosphate-solubilizing, or a fungal in the form of mycorrhizal inoculums.

Farming is the primary livelihood in the Project AoI with crop production a source of household subsistence and income. Community FGDs have indicated a key challenge in sustaining a farming-based livelihood is the lack of resources such as farming inputs (e.g. seeds, fertiliser) to boost productivity. The aim of this is to ensure that farmers have access to farm inputs to improve productivity.

This project is complimentary to the skills and capacity development component of the *Farming Support and Extension* programme and will be implemented alongside it. Its aim is to select the right farming inputs that are appropriate to the local conditions, provide access to them and improve productivity. On the basis of laboratory analyses, the project will include the following elements, where they are assessed to be appropriate for the local soil and farming conditions:

- The introduction of improved varieties of existing crop seeds
- The introduction of additional appropriate inputs, such as fertilizers, pesticides, herbicides and tools through collaboration with suppliers.

As the introduction of new farming inputs requires management skills and a learning process by the farmer, this project requires time before benefits are fully realised as it requires several seasons to be embedded. It is anticipated that the project will require an initial intensive investment from Nova Solar (in investigations, training, inputs etc.) and implementation at the start, followed by less intensive 'maintenance and monitoring' of the programme thereafter coupled with a technical handover to the community to increase its ownership over time.

This project will 'start small' involving the PAPs and their settlements in the Secondary AoI in the short term. It may be gradually extended and rolled out to the wider AoI in the longer term.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

- Hydrological study
- Soil investigation

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Adherence / Continuity in application of improved farming inputs
- Project attrition rate (i.e. what proportion of beneficiaries that started the programme, completed it)
- Change in annual yield
- Beneficiary farmer feedback
- To be defined further with implementing partner

**Exit Strategy**

- To be defined further with implementing partner.
- As part of a clear exit strategy, boundaries about where Nova Solar investment and input starts and stops over time will be set

**Optionality/Risk Sharing**

- Potential for collaboration with PAS to share implementing partner
- Option to extend to Tertiary AoI in the long-term

*5. Farming Extension Programme – Demonstration Farming*

**Project Description**

Farming is the primary livelihood in the Project AoI with crop production a source of household subsistence and income. Community FGDs have indicated a key challenge in sustaining a farming-based livelihood is the lack of resources such as farming inputs (e.g. seeds, fertiliser) to boost productivity.

This Project is connected to the other two elements of the *Farming Extension Programme*, bringing them together by providing a location where they can be applied and demonstrated. This element of the programme is however contingent on the ability of Nova Solar to secure land within the Project AoI, mindful of prevailing scarcity of land available for agricultural purposes (that is not already in use). Should it not be possible to secure land from the Katsina State Government, a potential alternative model is to rent land from farmers known to have a larger and surplus pieces of farmland.

This project will be implemented in the short term and frontloaded to provide a space that can be used for:

- Demonstrating the application of both farming methods and improved inputs to farmers
- Farmers to practice the application of both farming methods and improved inputs themselves
- Allowing farmers to harvest what they produce, as a motivational element
- Providing an 'evidence-base' for the techniques and inputs being applied by the programme, demonstrating their effectiveness to others and supporting uptake and participation in the programme when it is expanded to the wider AoI
- Produce harvested from the demonstration farm will be distributed among the Project participants; vulnerable PAPs (where they fulfil the qualitative criteria in *Box B7.2*) will be prioritised for this. Nova Solar and the CDAC, based on their ongoing relationship with PAPs, will assist the implementing partner in identifying those whose households are most vulnerable.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

Investigate options for plot of land for demonstration farm

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC – see Section 11.8.2 |

**Performance indicators**

- Crop productivity comparison between existing farms and demonstration farm
- To be defined further with implementing partner

**Exit Strategy**

- Farmer Association (formed as part of associated CDP project) to take on control of and operation of demonstration farm in the long-term
- If no longer required upon termination of farming-related project, the land can be returned to the owner and the rental terminated

**Optionality/Risk Sharing**

*6. Networking to get alternative sharecropping agreement in neighbouring communities*

**Project Description**

This project provides direct support to PAPs who wish to sustain this livelihood but have not yet secured access to replacement land, or do not own other plots.

The project will aim to help PAPs find farmland options through entering into sharecropping agreements with other farmers in neighbouring communities who may have surplus land. This will be achieved through:

- Encouraging farmers to network with those in neighbouring communities
- Community congresses with farmers in neighbouring communities to agree on the key principles of sharecropping
- Interested farmers with additional/surplus agricultural land in neighbouring communities will be linked to PAPs in order for them to form a sharecropping agreement
- Provision of assistance in the drafting of the sharecropping agreement

The sharecropping agreement will not require the payment of rental upfront, rather, the PAP will be expected to pay with a share of his or her production. In this way, it does not place a financial burden on the PAP.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| PAPs only – as per the list of compensation recipients compiled by the KTSG | | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- % of PAPs wishing to enter into sharecropping agreements who succeed in doing so
- Number of sharecropping agreements made
- Duration of the sharecropping agreement

**Exit Strategy**

The project will exist for a limited time only (e.g. 2 years), following which it will be assumed PAPs do not require additional assistance in securing access to land.

**Optionality/Risk Sharing**

*Livestock Package – (PAP focussed)*

*7. Livestock Management Support*

**Project Description**

Community FGDs with men and women found that key challenges in keeping livestock include insufficient options for grazing livestock, associated with land scarcity.

The project will support livestock herdsmen by exploring options to improve efficiency through such means as:

- sustainable grazing methods so as to avoid overgrazing and erosion and increase maximum sustainable yields; and
- livestock management in the areas of hygiene, pest and disease control, meat and dairy production.

The support will be tailored to the breed of livestock. This project will be extended in the medium-term to include introduction of improved breeds and cross-breeding practices.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Uptake in zero grazing livestock farming methods
- To be defined further with implementing partner

**Exit Strategy**

The formation of Herder Associations will be supported (as associated CDP project) to encourage greater self-sufficiency and shared learning among livestock herders.

**Optionality/Risk Sharing**

Option to extend to Tertiary AoI in the long-term

### 11.8.3 ***Medium Term Projects***

*Water Security Package*

*10. Sustainable Potable Water Systems - Public Services*

**Project Description**

Hand pumps are to be provided in a number of schools and health facilities. In the short-term, this will be done in the schools and health facilities in directly affected communities, with potential for extending the work further in the Project AoI in the medium-term.

The hand pumps are to be managed by the staff (and in the case of schools, the students) in the respective schools and health centres who will be trained to ensure its ongoing maintenance and cleanliness.

Availability of potable water is crucial for pupils studying in school and for ensuring hygienic and clean conditions in health facilities, preventing infection. The objective of this is to therefore improve the conditions for users of education and health facilities in the Project AoI, contributing to a reduction in barriers to accessing them.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

This project will require hydrogeological investigation by the EPC Contractor to ascertain sustainable water yield in the local aquifer (see Section 11.8.3) and hence the feasibility of drilling additional boreholes

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Access to potable water in school in Primary and Secondary AoI
- Access to potable water in health centre
- School days are not cut short because students are thirsty
- To be defined further with implementing partner

**Exit Strategy**

Training of school children, teachers and health personnel to manage the hand pumps and associated infrastructure

**Optionality/Risk Sharing**

- Potential for collaboration with PAS to expand the coverage or share implementing partner
- Option to extend to Tertiary AoI in the long-term

*Farming Package*

*11. Irrigation Systems*

**Project Description**

To compliment the short term *Farming Extension Programme* components and the work to maintain dams and build water storage, Nova Solar will seek to partner with an organisation capable of implementing irrigation schemes in the Project AoI that are appropriate for the local context. As irrigation schemes require careful and detailed planning processes, this project would be implemented in the medium term once the short term farming and water security projects are underway. Irrigation would also be reliant on the land use planning exercise.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

Prior implementation of the short-term *Dam Maintenance and Water Storage project*

**Achievement of CDP Objectives**

| Land-based livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Change in area of land covered by irrigation schemes
- Change in length of growing season
- Number of farmers adopting irrigation as part of the project
- To be defined further with implementing partner

**Exit Strategy**

The training and capacity building element would ensure knowledge and skills remain beyond the duration of the project, reinforced by peer support and knowledge sharing through formation of Farmer Associations.

**Optionality/Risk Sharing**

- Option to extend to Tertiary AoI in the long-term

### *12. Support to Formation of and Enhance Existing Farmer and Herder Associations*

**Project Description**

The aim of the project is to address a challenge identified by farmers and herders in the community FGDs regarding the lack of support networks and resilience mechanisms. The project will help to coordinate the formation of associations and or strengthening of existing associations (such as the Myete Allah Cattle Breeders Association) to ensure continuous shared learning and networking among themselves.

The associations will have their own governance structures and include such activities as, but not limited to:

- a mechanism to elect members and leaders
- a set of rules and regulations to guide the activities of the association
- manage collective access to inputs, micro credit, training opportunities and any other value chain improvement activities in the long term, as well as
- potential for formation of a savings club or group to enable farmers or herders to take small loans when needed

The project compliments the *Farming Extension Programme* projects and the livestock management projects. It will therefore be developed in the medium term, helping to

| | | | | |
|---|---|---|---|---|
| reinforce the positive benefits of these four short term projects, supporting their sustainability. As such, this project forms part of the exit strategy for those projects. | | | | |
| **Proposed eligibility** | | | | |
| Primary AoI | Secondary AoI | Tertiary AoI | | |
| | | | | |
| **Dependencies / Preparatory Work** | | | | |
| **Achievement of CDP Objectives** | | | | |
| Land-based livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
| | | | | TBC - see Section 11.8.2 |
| **Performance indicators**<br>• Number of Farmer/Herder Associations formed<br>• Achievements of the Associations to date<br>• To be defined further with implementing partner | | | | |
| **Exit Strategy**<br>Project will be designed to ensure that Farmer/Herder Associations become autonomous and independent from the support provided initially by the Nova Solar project. | | | | |
| **Optionality/Risk Sharing**<br>• Option to extend to Tertiary AoI in the long-term | | | | |

*Market Chain and Value-Addition Package*

*13. Electrification Project*

**Project Description**

One of the 'Good Practices' that underpins the CDP is to future-proof livelihoods, support beneficiaries to diversify their livelihood (e.g. with support to growing businesses) in an area where the rural economy will change due to population growth. The community needs assessment indicated access to electricity as a need.

Access to electricity is a key driver for many livelihood improvements and diversification through adoption of new technologies and can bring many benefits such as:

- Student access to e-learning materials;
- Health worker access to telemedicine advice;
- Lighting in a shop during the night to allow it to stay open for longer;
- Power for machinery (production and processing) and health equipment; and
- Lighting in the household.

To this end, Nova Solar will explore the following as options for an electrification project:

- *Option 1:* Provision of 'plug-and-play' off-grid solar panel kits(1). These are being rolled out elsewhere in Nigeria and if successful may be replicated in the Project AoI. There is potential for roll-out to target groups such as PAPs, health facilities and local businesses.

(1) http://www.lumos-global.com/ accessed 03/04/2017

- *Option 2:* Installation of a step-down transformer to provide power from the grid to the local community in the AoI – the community would pay for access to electricity in the conventional way.
- *Option 3:* Community-owned and distributed micro grid solar power generation, which are operating on a commercial basis in Nigeria and elsewhere(1). The Federal Government has launched two pilot projects.

Note that this project would commence in the short-term, likely to involve a pilot project (with regards options 1 and 3) at first to identify the most appropriate rural electrification option(s) and model. Following proof of model/concept, it would be scaled-up/rolled out in the medium- to long-term given that is expected significant investment and planning would be required.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| PAPs and their households | Target groups such as business and health facilities | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- If Option 1: Number of solar power kits purchased and in use – change over time
- If Option 2 and/or 3: Number of active electricity subscribers – change over time
- Direct feedback from a sample of end-users to understand success of uptake

**Exit Strategy**

For Option 1, the kits are self-contained and paid for by the individual over the phone. It is understood that this would require a one-off investment.

**Optionality/Risk Sharing**

- Option to extend to Tertiary AoI in the long-term
- Potential for collaboration with PAS in terms of piloting, alignment of rural electrification model selected and cost-sharing

### *14. Small Business - Support and Skills Development*

**Project Description**

Male and female respondents in community FGDs identified lack of support for small business as a challenge in reducing dependence on farm production and increasing resilience through livelihood diversification into other income-generating activities.

The objective of the project is to provide support and additional skills to existing small businesses, run by men or women. The aim is to help them improve the way they run their business, enable them to plan their activities to support increased income generated.

(1) Specifically, the Project team has been assessing the powerhive model: http://www.powerhive.com/

Small household-based (targets women) and market-based businesses (targets men) will receive training in the following suggested areas, to be further defined through consultation with the CDAC and local businesses:

- food hygiene and storage
- access to market
- money management
- networking
- economies of scale
- etc.

This project will be rolled out in the medium-term in the Primary and Secondary AoI and potentially to the Tertiary AoI in the long-term.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Land-based livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**
To be defined with implementing partner

**Exit Strategy**
To be defined with implementing partner

**Optionality/Risk Sharing**

*15. Literacy and Technical/Vocational Skills – PAP focussed*

**Project Description**

Skill acquisition was identified as a need by both men and women in community FGDs. Men cited a need for craftsmanship skills such as masonry and carpentry. Women cited skills in weaving, food processing and packaging, soap making and tailoring would help to support their livelihood. Women also have higher illiteracy rates than men.

Nova Solar will seek opportunities to collaborate with local technical and vocational institutions and NGOs to support them in:

- Enhancing existing programmes or courses
- Potential for setting up additional courses

Potential partners include:

- The Business and Apprenticeship Training Centre
- The Katsina School of Health Technology, or
- Development in Nigeria North (DiN North)

The support could extend to:

- Provision of equipment and learning aids
- Funding of e-learning technologies (such as that provided by DIN North)
- Funding places for CDP beneficiaries

This project will be rolled out across the full AoI.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Land-based livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| As an alternative livelihood option | | | | |

**Performance indicators**

- Number of beneficiaries receiving literacy, technical and/or skills training
- Tests to measure achievement of staff
- Course completion or attrition rate
- To be defined with implementing partner

**Exit Strategy**

None required. This project involves a short, fixed-term course to support individuals gain additional skills that they can then apply as part of their livelihood on a daily basis.

**Optionality/Risk Sharing**

*16. Support to Food Processing – PAP focussed*

**Project Description**

The main crops cultivated in the Project AoI are legumes and grains. Many of these are then processed by women for sale or consumption.

The project will support the formation of women's associations who come together to share learning, support each other, benefit from economies of scale in purchasing raw produce and accessing markets.

Once formed, the activity of these women's groups will be enhanced and supported through the provision of processing machines for raw produce such as ground nut oil extraction, grain milling as well as threshing and drying floors.

The number of machines to be provided will be determined by the group and the type of raw produce they already process. The groups will be trained in maintenance, repair and safety of the food processing machines. These will be communally owned and managed by the women's groups. Those using the machines will be charged an agreed amount for usage and this money will be used for management and running of the processing machines.

| |
|---|
| Formation of associations of food processors will include committees appointed to manage the processing machines and agree prices. |

| **Proposed eligibility** | | |
|---|---|---|
| Primary AoI | Secondary AoI | Tertiary AoI |
| | | |

| **Dependencies / Preparatory Work** |
|---|
| |

| **Achievement of CDP Objectives** | | | | |
|---|---|---|---|---|
| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
| As an alternative livelihood option | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Number of food processing associations formed
- Number of women belonging to food processing associations
- Number of food processing equipment provided
- Change in production rate or output (compare before and after project implementation)
- Change in average income generated (compare before and after project implementation)
- To be defined further with implementing partner

**Exit Strategy**

- Formation of associations of food processors will include committees appointed to manage the processing machines and agree prices
- Community buy back system
- To be defined further with implementing partner

*Livestock Package*

*17. Introduction of Semi-Intensive Livestock Breeding – PAP focussed*

**Project Description**

This project helps to address the community-identified challenge of lack of land for grazing livestock and skills for semi-intensive breeding of smaller animals.

The project will introduce farmers to semi-intensive systems of rearing livestock such as goat, sheep, poultry, rabbit as well as aquaculture. Eligible persons will be trained in how to manage the selected livestock and given the breeds and other inputs to enable to start doing so. The starter pack will include a specified number of animals, a pen and feed for a month.

This project will provide ongoing support to its beneficiaries with extension services to provide assistance where needed and monitor the progress of the livestock.

Eligibility for participation in this project will need to be carefully considered. It will need to 'start small' involving the PAPs and their settlements in the Secondary AoI, then gradually extend and be rolled out to the wider AoI in the longer term.

| | | | | |
|---|---|---|---|---|
| **Proposed eligibility** | | | | |
| Primary AoI | | Secondary AoI | | Tertiary AoI |
| | | | | |
| **Dependencies / Preparatory Work** | | | | |
| **Achievement of CDP Objectives** | | | | |
| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Number of persons participating in project and attrition rates
- Productivity of semi-intensive livestock breed (i.e. reproduction)
- Mortality rate of semi-intensive livestock breed in the care of project beneficiary
- Beneficiary understanding of the requirements for keeping the semi-intensive livestock
- To be defined further with implementing partner

**Exit Strategy**

The livestock keepers will own the livestock and manage it themselves

**Optionality/Risk Sharing**

- Potential for collaboration with PAS to share implementing partner

### *17. Livestock Management Support - Introduction of Improved Existing Breeds*

**Project Description**

This medium term project is an extension of the short term project on *Livestock Management Support*. Livestock herders will be provided with improved breeds of existing livestock that is bred to suit the Project conditions. These improved breeds will be cross-bred with existing stock to introduce improved traits including drought and disease resilience. The introduction of improved breeds will be accompanied by training in the practice of cross-breeding so that herders learn the practice of selection for producing improved hybrids and that they are able to do so autonomously.

| | | | | |
|---|---|---|---|---|
| **Proposed eligibility** | | | | |
| Primary AoI | | Secondary AoI | | Tertiary AoI |
| | | | | |
| **Dependencies / Preparatory Work** | | | | |
| **Achievement of CDP Objectives** | | | | |
| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Rate of uptake of improve breed varietals

| |
|---|
| • Beneficiary feedback about the project<br>• To be defined with implementing partner |
| **Exit Strategy**<br>To be defined with the implementing partners |
| **Optionality/Risk Sharing**<br>• Potential for collaboration with PAS to share implementing partner or costs<br>• Option to extend to Tertiary AoI in the long-term |

### 11.8.4 *Long Term Projects*

Given that long term projects will be implemented in five or more years' time, it is likely that changes in the short and medium term project portfolio will occur in the interim and therefore long term projects will in turn be subject to change and readjustment. It is also possible that, as implementation progresses, additional projects that are aligned to the CDP objectives may be included in its portfolio.

*Market Chain and Value Addition Package*

*18. Enhancing Access to Markets and the Value Chain*

**Project Description**

The short- and medium-term projects in the areas of livestock breeding, farming, food processing and small business support aim to increase production and hence a surplus that is beyond that required for household consumption. Surplus produce will only lead to an increase in income generation if the producer is able to access a market in which to sell it. This project will therefore support the creation of market chain and value-addition networks whereby the crop farmers/producers are linked to the food processors and traders, helping them to negotiate a fair price that is beneficial to both parties.

In addition, training will be provided to equip project beneficiaries with knowledge and skills to help them:

- Negotiate better prices for goods and services they produce
- Decide what to sell and what to keep for household consumption

Women's food processing associations may for example gain better bargaining power for the raw produce they need by buying it in bulk directly from producers. This will contribute to access to market for their product in the long term by making it more price-competitive.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| As an alternative livelihood option | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- Presence and number of trade links formed between producers and processors
- Change in price of agricultural and processed goods, whether up or down
- To be defined further with implementing partner

**Exit Strategy**

Existence and functioning of farmer, herder and food processing associations

**Optionality/Risk Sharing**

| |
|---|
| Option to extend to Tertiary AoI in the long-term |

*19. Small Business Finance and Microcredit*

**Project Description:**

In addition to Project 18. *Enhancing Access to Markets and the Value Chain*, small businesses, farmers and livestock herders may in the long term have a requirement to access rural or micro credit facilities to apply for small loans at affordable interest rates in order to help them to grow their business or their production levels.

Those wishing to access micro credit will first be required to participate in a financial management programme where they will be shown a number of skills to help manage their load, including but not limited to:

- opening of bank accounts and credit ratings (normally a pre-requisite for access micro credit)
- income and expenditure calculations
- profit and loss
- deposit and withdrawal of money from a bank account
- credit repayments
- interest rates
- loan application process
- and interest and savings

The project will be implemented in conjunction with financial institutions that are present in the State. The project implementation partner will not act as a guarantor for the loans of project beneficiaries but will help them to open bank accounts and give them training such that they can apply for credit facilities from financial institutions.

**Proposed eligibility**

| Primary AoI | Secondary AoI | Tertiary AoI |
|---|---|---|
| | | |

**Dependencies / Preparatory Work**

**Achievement of CDP Objectives**

| Land-based livelihood enhancement and restoration for PAPs | Provides long term benefits | Meets community needs | Fits with Nova Solar philosophy | Partners available to support implementation |
|---|---|---|---|---|
| | | | | TBC - see Section 11.8.2 |

**Performance indicators**

- % of beneficiaries demonstrating understanding of basic financial knowledge
- % of beneficiaries who open bank accounts
- % of beneficiaries able to access credit facilities
- % of beneficiaries who meet their loan repayments
- % change in beneficiary annual income over time
- To be defined further with implementing partner

**Exit Strategy**

Over time, beneficiaries will open and manage bank accounts / micro credit facilities autonomously

| **Optionality/Risk Sharing** |
| --- |
| Opportunity for collaboration with Pan Africa Solar |

## 11.9 *CDP VALIDATION*

A broad-based engagement and consultation process was carried out to validate the CDP. It served to check that the proposed areas of focus for the CDP projects were deemed appropriate by PAPs, the communities in the wider AoI, local customary leadership and State Government authorities. Additional input received from stakeholders in relation to the CDP includes the following, to be taken into account in CDP implementation:

- The State and Local Governments do not have any ongoing development plans or initiatives for the issues that Nova Solar has selected to address through its CDP;
- There is no formal approval process required for any of the chosen CDP projects in Kankiya;
- The State and Local Governments do not have a practical apparatus in place to support any of the initiatives proposed in the CDP, though they know that they are priorities for the people;
- The State Ministries consulted believe that the CDP should be submitted to them (in the form of a proposal) before implementation, in case they have concerns about the implementation plans. They also think that it may be integrated into some plans they have for the future;
- The traditional leadership believes that the priorities selected in the CDP match the needs of the community, but they are also interested in capacity building and mind-set change among the local population to get buy-in for any development or livelihoods assistance they receive. They think that it is important to coach beneficiaries to help generate a maintenance culture to sustain the positive impacts of any community development initiatives;
- Community members consulted, including PAPs, agreed that the CDP focus areas are aligned with the main livelihoods challenges they experience;
- The community groups consulted responded that they are willing to make a contribution to initiatives such as providing manpower; and
- All community-based organisations identified are male. Women do not have their own community groups however a number of them expressed interest in forming a support group through the CDP, particularly for value-addition activities such as food processing.

## 11.10 *CDP IMPLEMENTATION PROCESS*

This section outlines the steps to be taken for progressing the CDP towards implementation. Section 11.8.1 provides an indicative CDP implementation timeline that is explained in greater detail in Section 11.8.2 and 11.8.3.

### 11.10.1 *Indicative Schedule*

An indicative schedule of the sequencing of tasks to advance the CDP planning towards implementation is provided in Table C11.4.

***Table C11.4 CDP Implementation Process***

| Action | Pre-Financial Close | Immediately after Financial Close / Early stage of Construction | Commercial Operations |
|---|---|---|---|
| Prioritise community needs and projects sequencing | Completed in May 2017; see summary in *Section 11.9* | | |
| Define the CDP implementation model | | | |
| Identify and screen potential partners | | | |
| Preparatory work - Secure land for demonstration farm | | | |
| Update the CDP with information gathered | | | |
| Hire Community Liaison Officer (CLO) – CLO to have project management and development skills | | | |
| Form Community Development Advisory Committee | | | |
| Develop detailed scopes of work (SoW) for community development projects | | | |
| Invite potential project implementation partners to submit a proposal and detailed project plan based on the SoW | | | |
| Review project proposals submitted | | | |
| Award projects to implementation partners selected | | | |
| Preparatory work - Conduct soil analyses | | | |
| Preparatory work - Conduct hydrological investigations | | | |
| Preparatory work - Community land use planning | | | |
| Develop detailed implementation plans with input from preparatory works | | | |
| Develop monitoring and evaluation plan/framework | | | |
| Land clearance | | | |
| CDP projects implementation | | | |
| Conduct monitoring and evaluation | | | |

### 11.10.2 *Implementation Actions Prior to Financial Close*

*CDP Implementation Model*

The Nova Solar Project Management Team will agree upon the CDP operating model to be implemented, considering the following options:

- Option 1: *Grant making/Foundation* – an advanced version of options 2 and 3. Good for overall long term sustainability but can be challenging to establish in the beginning with significant start-up costs.

- Option 2: *In-house implementation by employed experts* – gives Nova Solar full control of CDP implementation but requires recruitment of a team of additional staff and to run programmes that are outside of the company's core competency.

- Option 3: *Outsource to organisations specialised in different areas* – less control than Option 1 but programmes are implemented by organisations that have the appropriate expertise, making this option less hands-on. This means that Nova Solar needs to maintain close supervision and monitor progress. A challenge for the Nova Solar team could be the administrative burden of monitoring several organisations.

- Option 4: *Outsource to a single implementing 'umbrella' organisation that manages the various organisations implementing the different projects* – Similar level of control to option 3 but with less administrative burden as a single organisation is given management control. The downside could be the increased management overheads and the risk of allocating control over the CDP into one organisation that could be successful or weak.

*Identifying and Screening Partners*

**Identification**

The Nova Solar team will identify and approach potential partners with capacity to support the implementation of CDP projects and elements. Potential partners identified thus far have been suggested for the project portfolio and their details are available in Appendix C3. Further work is needed to screen and select the most appropriate partners for each CDP package. Potential implementing partners may include:

- Local or national non-governmental organisations (NGOs);
- International NGOs;
- Community-based organisations such as women's groups;
- Academic institutions, such as vocational training institutions; and
- Local Government Agencies.

Once projects have been prioritised, the Nova Solar team will meet with the partners identified in Appendix C3 and identify any other additional organisations with partnership potential. The Nova Solar team will also engage with potential Government partners or collaborators to ensure that CDP

projects are aligned with Federal and State Government development-related policies and plans.

The aim of these meetings will be to:

- Confirm understanding of development priorities in the area;
- Confirm understanding of organisational areas of focus and expertise;
- Understand and assess organisational capacity for partnering; and
- Seek additional solutions to the problems faced by local communities in the Project area.

**Securing Land for Demonstration Farming**

As outlined in Section 11.7, the proposed farming extension package requires an area of land on which to cultivate a demonstration farm to train people in the application of improved farming techniques and inputs. Produce grown on the demonstration farm will be provided to beneficiaries, including vulnerable persons.

Mindful of this requirement, Nova Solar has initiated enquiries to identify a suitable area of land for a demonstration farm.

**Screening**

Organisations identified to have partnership potential will be further screened to provide assurance that they are able to fulfil both CDP and Nova Solar contract management and governance requirements. Screening will be done according to the following principles/criteria:

- Proven track record in delivering similar projects;
- Already have start-up funds and will not be singly dependent on Nova Solar financing for their activities, i.e. have other ongoing projects;
- References provided by third parties that they have worked with previously;
- Are a registered entity, with bank account and registered address; and
- No conflicts of interest within the potential partner team, e.g. no political affiliation etc.

A screening form for potential implementing partners will be used to enable rigorous and transparent selection of candidate implementing organisations in accordance with the criteria defined above. A template of this form can be found in Appendix C2. It is recognised that in the Project context, potential partners may not meet all of the screening requirements. This may require an action plan to be put in place by Nova Solar for the potential partner to work towards meeting these requirements over time, potentially with some additional capacity building and support from Nova Solar.

This process will lead to a shortlist of implementing organisations that broadly has the means, capacity and integrity to implement the community development packages to the required standard.

*Updates to the CDP and Implementation Plan*

The information gathered and the outcome of all the steps above will be incorporated into the CDP prior to financial close. This will form the basis for commencing CDP implementation.

### 11.10.3 *Implementation Actions After Financial Close*

*Formation of Community Development Advisory Committee*

Following financial close and the recruitment of a dedicated Community Liaison Officer for the Project, the Community Development Advisory Committee will be formed as described in Section 11.4.

*Project Scope of Work and Award Process*

Following on from prioritisation of development projects and identification of potential partners (see Section 11.8.2), Nova Solar will be in a position to draft clear scopes of work for each project or package of projects. These scopes of work will be used to request proposals from the potential partners identified through the screening process in Section 11.8.2. The potential partners will be invited to submit project proposals/plans that include the following information:

- Project plan / log frame;
- Detailed budget and resources;
- How the proposed project aligns with the CDP objectives and principles; and
- Profile of individuals who will be managing and involved in the implementation.

Some of this information will have already been provided at the screening and selection stage and therefore can simply be cross-referenced to avoid duplication of information. Nova Solar will screen and select the project proposals based upon the following criteria:

- Alignment with CDP principles;
- Achievable objectives and timeframe;
- Partner capacity; and
- References from third parties.

It may be necessary to follow up and revert to the potential partner to request clarification or additional information for the proposal before making a decision on awarding a CDP project contract to them.

The project agreement and contracting stage will be as per standard Nova Solar processes, in line with its Environmental and Social Management System. As well as the scope of work provided in the proposal, the contract agreement will include the following:

- Proposal Scope of Work;
- Nova Solar Standard Terms & Conditions;
- Reporting and disclosure requirements for financials;
- Reporting and disclosure requirements for activities; and

- Break clauses in case of any breaches, malpractice, and misuse of funds.

*Preparatory Work*

Farming-related projects need a sound and detailed understanding of the local conditions in which plants grow. Understanding of factors such as sunlight, temperature, water, soil and rainfall, as well as types of seed used, is essential. This detailed understanding enables the design of an appropriate farming extension programme; suited to the local conditions with the right farming techniques and inputs.

Many agricultural projects fail because they are standardised and the 'homework' has not been done beforehand; assuming that successful application of inputs (e.g. fertilisers which are acidic) in one area can be successfully replicated in another. Lack of detail around factors such as soil pH and biomass can lead to the incorrect type of agricultural intervention, with potential for negative consequences in production and wasted resources (money, time, inputs).

This section discusses a number of tasks and investigations required to enable the CDP projects to be designed and implemented on solid evidence base. The sequencing and tentative timing of this work is found in Section 11.8.1.

**Water Investigation**

Although the quality of water from hand pumps/wells was assessed to World Health Organisation drinking water parameters as part of the ESIA, hydrological studies to understand levels of water availability and rates of aquifer recharge have not been carried out. Without good understanding of water availability, agricultural programmes may face challenges if there is not reliable supply of water. Irrigation projects for example may be ruled out if this is the case. Addressing water supply scarcity and reliability is therefore a critical path element for many of the elements in the CDP; without a reliable water source, the farming extensions programme may not be implemented successfully.

Typically, the investigation involves drilling boreholes in several locations and conducting pump-tests as these are drilled. This allows determination of the sustainable yield and selection of a suitable location for a borehole. This may mean drilling and pump-testing in several locations before finding a suitable location for the borehole. The pumping trials must be designed to assess the wells' ability to deliver the required volumes of water at rates and times of year that supplies are required. Alongside the pumping trial must be the consideration of the infrastructure needed to deliver the abstracted water, such as pipes and pumps, as well as the water quality.

This investigation would be integrated with the preparatory work to be carried out by the EPC Contractor to assess the feasibility of water abstraction for the construction phase, as outlined in the *Water Management Plan*. The *Water Management Plan* further recommends testing the water levels in any other boreholes in the vicinity of the Project at the same time, to ascertain whether there were any localised impacts on other users.

**Soil Analyses**

Analysis of the characteristics of the soil in the Project AoI forms the bedrock for the farming-related projects. It informs the selection of the most appropriate seed varietals, farming inputs and practices.

This would typically require taking soil samples from across the AoI and sending these for laboratory analysis. Depending on what is available, the analyses may be done by the Agricultural Sciences department of a university or by a certified laboratory. Care needs to be taken when collecting the sample to avoid sample contamination, requiring a sterile sample container. Care also needs to be taken in ensuring samples are transported to the laboratory in the right conditions, e.g. right temperature, maximum time kept in container, right humidity and avoiding exposure to sunlight.

The parameters to be analysed include biomass content, key elements and acidity (pH). Once receive, the results of the soil analysis need to be reviewed by a qualified local agronomist who, in conjunction with a good understanding of the local farming practices, will make recommendations to inform the design of the farming projects.

**Land Use Planning**

Given the local livelihoods context and restrictions on land availability, it is essential that any meaningful community development programme be underpinned by a fully inclusive land-use planning exercise that maps out existing natural resources such as grazing, arable land, water and clearly establishes in detail all existing official and unofficial conventions for land and resource use.

This spatial information will then be used to develop a common community based agreement for the use of these resources through tailor-made programmes that are more sustainable and appropriate to the local context. The land use planning process needs to be collective and inclusive (ensuring that women, youth and other groups are included) and could be led by the CDAC.

*Project Planning*

Post financial close, the detailed planning phase for the CDP implementation will be initiated alongside the other activities described in the previous sections. The process will be iterative and will be led by the Project CLO in consultation with the CDAC and the implementing partners selected. The project Scopes of Work and proposals will form the basis for the planning and resourcing and will be built upon to finalise the following items:

- Projects to be supported;
- Steps and responsibilities for engaging local partners;
- Implementation and management responsibilities;
- Budgeting and resourcing;
- Conditions of support;

- Timelines for implementation;
- Key performance indicators;
- Monitoring and evaluation;
- Communication strategy; and
- Exit plan

*Ongoing Engagement*

As the CDP programmes develop, Nova Solar and the CDAC should continue to liaise and consult with groups in the community as required including women, youth and the elderly, in addition to key community institutions/groups including Farmer Associations. This will ensure that a range of development needs (and associated opportunities for addressing them) are fed into future planning as the CDP progresses ensuring that a broad range of priorities are being addressed.

Additional projects identified through this process in the longer term will be assessed according to the criteria identified in *Section 1.2 CDP Objectives and Principles*. Engagement is to be carried out in line with *SEP*.

## 11.11 *CDP BUDGET AND FINANCING MODEL*

### 11.11.1 *CDP budgeting*

Indicative or estimated budgets for each proposed community development project are not provided in the CDP. Experience shows that making rough estimates on the basis of previous projects in similar contexts can differ widely and be misleading.

As such, the approach to be taken for budgeting and costing of projects shall simply be to provide a specific and clear scope of work to candidate NGOs / implementing partners, upon which they shall base their project proposal and budget.

### 11.11.2 *Long-Term CDP Financing Model*

Because the CDP is to last for the life of the Project (over 20 years), and the immediate priority is to support livelihood enhancement and restoration for PAPs, Nova Solar and its sponsors will finance the CDP through two separate mechanisms:

- **'Capex budget' one-off:** an initial fixed budget to fund a livelihoods restoration programme for PAPs, to be deployed between financial close and project COD; and

- **Ongoing 'opex budget':** an annual budget thereafter of approximately US$100k per year for the operation phase. The opex budget ties Nova Solar business performance to community development and investment, ensuring that benefits/cash flows are shared. The opex budget will be reviewed annually by the company alongside company financial performance and the annual development plan. In order to account for

fluctuations in annual profit levels adversely impacting the ongoing support to, and sustainability of, community development projects, Nova Solar intend to propose a 'floor' below which the annual community development budget will not fall.

Additional financial and technical resources may be engaged. The possibility of supplementing the CDP budget through matched funding or technical assistance programmes through Project lenders or other development finance sources will be investigated. Where possible, and where objectives are aligned, Nova Solar will consider working in partnership with other organisations and developers in the area to co-finance community development projects/programmes and share risk.

## 11.12 *MONITORING AND EVALUATION*

To ensure that the community development projects Nova Solar invests in continue to have the desired outcome and benefit intended beneficiaries, a monitoring and evaluation (M&E) programme will run concurrently to CDP implementation.

Nova Solar will establish a monitoring and evaluation framework that includes progress and performance indicators.

### 11.12.1 *Progress Monitoring*

Nova Solar will monitor progress against milestones as established in the CDP implementation schedule and detailed project plans. Progress monitoring will include aspects such as community consultations, grievance, income and livelihood restoration and reporting. A 'monitoring spreadsheet' will be set up, based on the specificities of each CDP package, to bring all this information together to include:

- Activities to be completed;
- Target date for completion;
- Progress to date;
- Progress in the previous monitoring period;
- Target for current monitoring period;
- Reasons for delay; and
- Actions taken.

### 11.12.2 *Performance Monitoring*

Performance monitoring will be undertaken to assess the impact and the outcomes of the community development programmes Nova Solar implements. Performance monitoring indicators will be based on those indicators described for each project, to be further refined in consultation with the implementing partner. In addition, the monitoring programme will identify adjustments in the implementation of the CDP, if required.

Detailed M&E will be undertaken at six monthly intervals and comprehensive monitoring reports with key findings will be provided to the Nova Solar senior management, sponsors and lenders.

External monitoring will take place annually, carried out by an approved external organisation such as an NGO or M&E consultancy. The outcome of external monitoring will feed into the annual CDP review and planning process.

Projects will be monitored in the first stages more frequently (e.g. monthly) and subsequently quarterly or annually depending on the nature of the project to ensure that:

- There is regular review of the progress of various programmes and any issues have been promptly addressed;
- Project objectives are relevant, and if required are changed;
- Benefits are reaching the intended beneficiaries;
- Funds are being appropriately used; and
- Feedback from beneficiaries as well as implementing partners is regularly sought and any required actions are administered.

### 11.12.3 *Information from CDP Partners*

To aid this process, implementing partners will submit monthly progress reports to Nova Solar, including:

- A breakdown of budget usage (which can be shared publicly for transparency purposes);
- Progress against key performance indicators; and
- Any difficulties or issues which have arisen during the reporting period.

## 11.13 *REPORTING AND DOCUMENTATION*

Nova Solar will report to a range of internal and external stakeholders regarding the CDP process, progress and outcomes as well as lessons learnt. Proactively communicating and reporting on CDP progress and performance indicators to manage expectations will enable Nova Solar to build trust, credibility and foster positive relationships with local stakeholders. A reporting programme will be developed and kept up to date to ensure all requirements are met.

Nova Solar will use the data collected through its M&E framework to compile reports annually pertaining to its community development and social performance activities. This will include relevant reports from implementing partners as well as verification and monitoring information gathered by Nova Solar and the external M&E consultant for the CDP. A framework for reporting of CDP progress and performance to Project stakeholders is provided in Table C11.5.

### *Table C11.5 Draft Reporting Framework*

| Stakeholder Group | Requirements | Reporting Period | | |
|---|---|---|---|---|
| | | **Monthly** | **Quarterly** | **Annually** |
| Implementing partners | • Monthly reporting at the beginning / project start-up<br>• Quarterly and annual reporting thereafter - once the project is up and running | ✓ (report; initial phase/start-up only) | ✓ (report) | ✓ (report) |
| State Government | • Annual reports will be provided to the State Government and relevant line ministries in the manner and form expected. | | | ✓ (report) |
| Local Government Authority Reporting | • Annual report<br>• Formal meetings on a quarterly basis | | ✓ (formal meeting) | ✓ (report) |
| Lender Reporting | Annual report to be tailored to lender needs | | | ✓ (report) |
| Internal Reporting | • Direct reporting to the Project Management Team and ESG Committee (verbal/written); and<br>• Annual reports. | ✓ | ✓ | ✓ |
| Community Reporting (Beneficiaries) | Performance reports and their communication will be tailored to meet the needs and circumstances of the communities in a manner that is understandable and relevant, allowing beneficiaries to provide feedback | | ✓ (verbally) | ✓ (verbal/pictorial summary of annual report) |

Appendix C1

# Assumptions and limitations of the CDP

## *12 APPENDIX C1: ASSUMPTIONS AND LIMITATIONS OF THE CDP*

Based on discussion with the Client, it is the consultant's understanding that the majority of PAPs have managed to secure access to replacement land and are therefore amenable to agriculture-based livelihood enhancement and support because it is assumed they have access to cultivable land.

The CDP has been developed based on the following information available to the consultant:

- The socio-economic baseline information in the ESIA;
- A field visit in December 2016 to better understand the Government-led compensation process, engage with PAPs about compensation received and carry out Focus-Group Discussion with PAPs and other groups in the Project AoI to understand their needs and primary challenges;
- A second field visit in January 2017 to better understand land availability and what proportion of PAPs have gained access to replacement land;
- Additional secondary information gathered from searches of existing literature; and
- Contextual information provided by the Client.

Further information may come to light during subsequent consultation with intended beneficiaries or other stakeholders who may influence views of the viability, prioritisation and focus of the projects detailed herein. Proposed projects should be considered indicative until the actions mentioned in Section 11.8 have been completed.

Appendix C2

# Potential Implementation Partner Assessment Form

# 13 APPENDIX C2: POTENTIAL IMPLEMENTATION PARTNER ASSESSMENT FORM

Nova Solar Power

## Form – Community Development Partner Assessment

Document version: 1.0
Document date: 31/03/2017

| Questions<br>*(pointers are in itallics)* | NGO/Organisational Details |
|---|---|
| Name of organisation | |
| Organisation contact details | |
| Key contact | |
| Type of organisation<br><br>*(Non-governmental organisation / communit-based organisation, cooperative, association, academis institution, other)* | |
| Areas of interest<br><br>*(e.g. health, agriculture, education, business, etc.)* | |
| Organisational objectives<br><br>*(check for organisation strategy documents, policy statement etc.)* | |
| Geographic reach | |
| How long have they been working in the area? | |
| Example projects<br><br>*(can attach to 'additional information' page of this form)* | |
| Funding model<br><br>*(multi- / bi-lateral donors, private sector, international NGO, individual donations, other – what?)* | |
| **How they choose partners** | |

| | |
|---|---|
| Do they work with local community?<br><br>(*in what way*) | |
| Do they work with government?<br><br>(*in what way*) | |
| Local community engagement / relationship | |
| How are they linked to Government development plans? | |
| Appetite to work with Corporate partners | |
| Any history of working with Corporate partners | |
| What is the organisational and physical infrastructure?<br><br>(*team, assets, locations etc.?, e.g. what tyof own equipment, do they have their own laptops?, the idea is to ensure the implementation partner is already a 'going concern' and will not become reliant on Nova Solar for funding*) | I |
| Staffing levels and competency<br><br>(*can attach to 'additional information' page of this form*) | |
| Monitoring and Evaluation processes<br><br>(*check for M&E frameworks and project logframes, what indicators do they monitor?, are indicators qualitative and/or quantitative?*) | |
| **Any potential conflicts of interest to investigate in more detail?**<br><br>(***e.g. political connections, affiliated to organisations not aligned to Nova Solar Values***) | |

Appendix C3

# List of Potential Implementing Partners to be Assessed – [*Additional assessment pending*]

## 14 APPENDIX C3: LIST OF POTENTIAL IMPLEMENTING PARTNERS TO BE ASSESSED – [AS PER SECTION 11.9, ADDITIONAL ASSESSMENT PENDING]

### Table C14.1 List of Organisations to be Assessed

| Organisation | Organisation Description | Contact Details |
|---|---|---|
| **Africare** | *Have implemented projects in conjunction with the private sector including water, sanitation & hygiene, literacy, agriculture & food security and empowerment of women & youth* | **Dr. Orode Doherty** (Country Director): odoherty@africare.org;<br>**Dr. Patrick Adah** (Malaria Programme Director); padah@africare.org;<br><br>+ 234 1 454 4213<br>https://www.africare.org/country/nigeria/<br>54b Fatai Idowu Arobieke Street, Lekki Phase 1, Lagos |
| **DIN North** | *Active in Katsina State. Have implemented community development projects for several years.*<br><br>*Have previously worked in the areas of agricultural livelihoods; business management skills for women; food processing; WASH programmes that target women and children; e-learning and introducing modern technologies in resource-poor rural settings.* | **James Odey** (Project Director): +234 (0) 70 391 606 63<br>**Dr. Caroline Ifeka** (Senior Advisor): c.ifeka@gmail.com; +61 411 321 870<br><br>aradinng@gmail.com<br><br>www.aradinng.org<br><br>**Head office:**<br>59 Atu Street, Opposite Atu Secondary School. P. O. Box 3076, Calabar, Cross River State<br><br>**Katsina:**<br>c/o Old Education Secretariat, Bakori, Bakori LGA, Katsina State |

| Organisation | Organisation Description | Contact Details |
|---|---|---|
| **The Society for Family Health** | *The local partner for the International NGO Population Services International (PSI). First Nigerian NGO qualified to receive funding directly from the U.S. Agency for International Development.*<br>*Social marketing (i.e. use of business models) to promote uptake of health products and other social goods:*<br>• *HIV Voluntary Counselling and Testing*<br>• *Malaria: promotion of long lasting insecticide treated nets and pre-packaged treatment*<br>• *Contraception: provision of information, services and products to assist birth spacing*<br>• *Water, sanitation and hygiene: behaviour change and communication, along with community mobilisation, education, and awareness on the importance and benefits of safe water, safe storage, and community hygiene.* | info@sfhnigeria.org<br><br>Phone: + 234 9 461 8823<br><br>http://www.psi.org/country/nigeria/#solutions<br><br>8 Port Harcourt Crescent<br>Area 11 Garki<br>Abuja, Nigeria |
| **Women Farmers Advancement Network (WOFAN)** | *Participative approach to community development, setting up self-governing groups or cooperatives within communities to work together for community development in the areas of water and sanitation, agriculture, water and soil conservation, value chain & food processing and improved agricultural technology.* | **Hajia Salamatu Garba** (Founder): salmaj7<br><br>info@wofan-ng.org<br>wofangroup@yahoo.com<br><br>+2348186620598<br>+234 818 662 0598<br><br>Along Gwarzo Road, Opposite Bayero University, Kano (BUK)<br>Newsite Gate<br>Kano |

Annex D

# Worker Management Plan

# *15 ANNEX D: WORKER MANAGEMENT PLAN*

## 15.1 *INTRODUCTION*

Nova Solar is committed to the fair treatment of its employees and those of its contractors. This includes upholding the principles of worker protection (including workers hired by contractors and other third parties), non-discrimination within the context of Nova Solar's commitment to local content, promoting safe and healthy working conditions, and avoiding child and forced labour amongst direct employees and those within its supply chain.

To this end, Nova Solar will ensure that all direct employee and contractors undertaking activities for or on behalf of the Project undergo a fair and open employment process, are in possession of a written contract, are informed of their legal rights and have been assessed as medically fit to do the work for which they are employed. Nova Solar employees and contractors will also have the right to raise complaints and grievances in a confidential manner, as outlined in the *Worker Grievance Mechanism.*

The *Worker Management Plan* describes how this will be achieved by Nova Solar and its contractors, with specific the measures outlined in Table D15.2.

## 15.2 *GUIDING PRINCIPLES*

Nova Solar and its contractors will implement the *Worker Management Plan* with reference to the following guiding principles:

- *Adherence to International Standards*: Satisfy the requirements of IFC Performance Standard 2, and the underlying United Nations and International Labour Organisation instruments. Where there are discrepancies between international standards and Nigerian law the more stringent shall take precedence.

- *Commitment to Transparency:* Commit to ensuring transparency to all key stakeholders around the hiring process, conditions of work, policies and procedures, employment duration and related matters.

- *Commitment to Non-discrimination and Equality*: Ensure no discrimination(1) in the course of hiring, managing or terminating the employment of a worker.

- *Maximisation of Local Content* as described in the associated *Local Content Plan.*

- *Commitment to Health and Safety*: Nova Solar and its contractors will implement best practice with regards to health and safety of their

(1) Discrimination: Unfair/Unequal treatment on the basis of gender, race, colour, sex, religion, political opinion, national extraction or social origin, sexual orientation, HIV status or disability.

workforce. This will include appropriate training, supervision, procedures, safety equipment, reporting and monitoring protocols.

- *Child labour is to be avoided* and specific control measures will be put in place to ensure that young persons, defined as those aged under 18 years(1) , are not engaged to work for or on behalf of Nova Solar, its contractors and primary suppliers.

These guiding principles underpin the remainder of the *Management Plan*.

## 15.3 *LEGAL REQUIREMENTS*

The national and international requirements relating to the management of workers that will be used in the development of the Management Plan are shown in Table D15.1.

***Table D15.1 Reference Sources***

| Type | Documents |
|---|---|
| International | Performance Standard 2: Labour and Working Conditions (2) , and associated International Labour Organisation Conventions that it references. |
| National | • Labour Act (Chapter 198) (No. 21), as amended 1990 (3)<br>• National Agency for the Control of HIV and AIDS (Establishment) Act, 2007 (4)<br>• Trade Unions Act, as amended 2005 (5)<br>• Regulations on National Content Development for the Power Sector, 2014 |

## 15.4 *ROLES AND RESPONSIBILITIES*

The *Worker Management Plan* will apply throughout the duration of the Project and responsibility for employment will (broadly) be apportioned as follows:

- The EPC Contractor will manage employment of most workers associated with the Project during pre-engineering and construction (although Nova Solar will maintain a small number of directly employed site-based and other staff); and
- Nova Solar (or its Operation & Maintenance Contractor) will manage employment during the operation phase.

Although responsibility for managing worker well-being during pre-engineering and construction falls to the EPC Contractor for the bulk of workers associated with the Project, Nova Solar is ultimately accountable for ensuring that it is carried out in accordance with the *Worker Management Plan*.

Responsibilities for the specific elements of worker well-being will be assigned once the EPC Contract and workforce requirements (in terms of skills and

(1) Nigeria Labour Act, Section 3. (2) (e)
(2) http://www.ifc.org/wps/wcm/connect/0d7a4480498007faa1f7f3336b93d75f/Updated_GN2-2012.pdf?MOD=AJPERES
(3) http://www.nigeria-law.org/LabourAct.htm
(4) http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=87620&p_country=NGA&p_count=255
(5) http://lawsofnigeria.placng.org/laws/TRADE%20UNIONS%20ACT.pdf

numbers) are finalised. An additional column entitled '*Roles and Responsibilities*' will therefore be added to Table 1.1 in order to document this.

## 15.5 *WORKER ROLES AND NUMBERS*

The duration of the pre-engineering and construction phase is expected to be 12 months. It will be the phase with the greatest level of activity and largest workforce. The equipment and machinery to be used in this phase includes cranes, earthmoving equipment, jack hammers, loaders, compressors and service-vehicles. This phase of work is estimated to require a team of 250 workers, on mainly short term and fixed task contracts. The team will be divided into low skilled (construction labour, security staff), semi-skilled (drivers, equipment operators), and skilled personnel (engineers, land surveyors, project managers).

The operational workforce will be smaller, estimated to number around 50 people, and will be composed of workers with different skill sets to those during pre-engineering/construction. The operations team will include engineers, technicians, security personnel and labourers. The duration of this phase is expected to be 25 years and therefore permanent jobs will be created.

## 15.6 *MEASURES AND ACTIONS*

This section presents a series of actions to be undertaken by Nova Solar and its EPC Contractor to protect the well-being of workers. Please note that worker health and safety is addressed in the *Occupational Health and Safety Management Plan*.

### *Table D15.2 Nova Solar Worker Management Measures*

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| | ***Recruitment and Selection*** | |
| 1. | **Develop Recruitment Guidelines** | Based on the timeline of activities to be undertaken, define the type and number of roles required, seeking to ensure that the principle of Equal Opportunities is upheld.<br>Develop job descriptions that form the selection criteria for each role. Job descriptions are to include:<br>• Responsibilities and tasks;<br>• Physical/medical attributes required;<br>• Minimum general skills, qualifications/certifications and experience required;<br>• General reporting lines;<br>• Health and safety requirements (e.g. safety protocols, materials handling safeguards, etc.); and<br>• An overview of the general performance metrics/evaluation criteria for the role.<br>Job descriptions should be communicated to local communities in a manner which is accessible to those with limited/no literacy (as detailed further below), and to both men and women. |
| 2. | **Application Process** | Implement a transparent and accessible job application and short-listing process to:<br>• In consultation with local stakeholders, define the 'local community' from which candidates will be drawn;<br>• Manage expectations surrounding employment;<br>• Provide the opportunity for members of the local community to apply; and<br>• Match people to jobs based on their skills.<br>Jobs will be advertised via the most relevant and culturally appropriate communication method and media for the target population, in line with the *Stakeholder Engagement Plan*. This may include job advertisement posters affixed in public places such as schools, health centres, mosques and market places. The jobs available and the recruitment process will also be advertised verbally in the Project AoI through community meetings that allow people to ask questions.<br>Job advertisements/announcements will include key information, such as:<br>• Number and description of the roles available;<br>• Instructions on how to apply for a role; |

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| | | • Clarity around potential hiring and employment timelines; and<br>• Minimum age requirements (over 18 years old).<br><br>Candidates applications are to be sorted and short-listed based on their fulfilment of the skills, qualifications and experience required for each role (as per job description in Item 1). Documentation of all decisions will be maintained so that any grievances raised in this regard can be reviewed efficiently.<br><br>A register of all applications, applicant details and their skills will be compiled. This is to be used to:<br><br>• Short-list candidates once vacancies arise;<br>• Define skills development and Health and Safety (H&S) training requirements;<br>• Identify potential candidates to be retained longer-term in the operation phase; and<br>• Record the results of the application process.<br><br>Nova Solar and its contractors will implement a 'no hiring at the gate' policy in order to discourage speculative visits to the site in search for work.<br><br>For measures targeted at maximising local employment opportunity in the AoI, see the *Local Content Plan*. |
| 3. | **Worker Selection** | Once applications are received, reviewed and filtered in the applications register, applicants will be selected on the basis of the following:<br><br>• Aged more than 18 years (based on official identification document such as ID or voter registration card).<br>• In view of the requirements of the *Local Content Plan:*<br>o For unskilled roles, priority will be given to applicants from the local communities in the AoI; and<br>o For skilled roles, priority will also be given to candidates from the local communities in the AoI in instances where two or more candidates possess equal qualifications;<br>• Make a judgement of each candidate's suitability for training in the required skills where skills or experience gaps exist between the best candidates and the requirement of the role;<br>• Select all roles based on the application of the job description criteria in Item 1 and the Guiding Principles of this Management Plan as set out in Section 15.2;<br>• Once applicants are selected, they will receive a formal offer of employment.<br>• A written employment contract will be prepared which will include details of the job description for the person's role, remuneration, employment duration, employee benefits and conditions of employment;<br>• Provide consistent feedback to all unsuccessful applicants and to any other stakeholders, about the reasons for the selection of the candidates to be employed; and<br>• Where there are concerns around discrimination or a lack of transparency of any aspect of the hiring process, investigate the matter through the grievance mechanism outlined in the *Stakeholder Engagement Plan*, consult any relevant parties and provide a report on the investigation and any corrective actions to the complainant. |

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| | ***Worker Engagement*** | |
| 4. | **Legal and Other Requirements** | Nova Solar will ensure that, in relation to direct employees and those of contractors, the worker engagement and contracting process complies with the Nigerian Labour Act, including written employment contracts signed by the employer and the employee (stating position, length of contract, daily/monthly salary, allowance(s), entitled annual holiday, notice period, grievance procedure and code of conduct.<br><br>Workers will be paid in accordance with Nigerian law (including Nigerian minimum wage requirements), on time, without making deductions unless these are stipulated in their contract.<br><br>Where workers are members of a trade union, they will not be prevented from exercising rights under trade union membership (1).<br><br>Paid maternity leave, sick leave and annual leave will be granted to workers as per the Nigerian Labour Act, as a minimum. |
| 5. | **Onboarding & Induction** | Nova Solar will inform workers of the nature and duration of their employment, their contracted hours of work, leave entitlements and other legal rights, and require contractors to do the same for their workers.<br><br>Nova Solar will implement the *Worker Grievance Mechanism* and communicate the process and its purpose to workers and contractors upon commencement of their employment.<br><br>At the commencement of employment, provide workers with an induction and training package/programme including, but not limited to:<br><br>• Project, workplace and camp inductions;<br>• Introduction to the hazards, critical risks and control measures relevant to their role;<br>• Expected behaviours, including in the course of interaction with communities, in line with the Nova Solar and/or EPC Contractor Worker Code of Conduct;<br>• Nova Solar ESMS, incident/near miss reporting mechanism, Project Policies and Management Plans; and<br>• Disciplinary procedures and when they apply. |
| 6. | **Training Programme (ongoing)** | Nova Solar will establish a training programme that is based on the skills of the applicant (as per Item 2, recorded in the application register) and the risks involved in their role.<br><br>The training programme will aim at developing the necessary skills required for the fulfilment of job descriptions (i.e. |

(1) The Nigerian Trade Unions Act (2005 Amendment), Section 12(40) states that "Membership of a trade union by employees shall be voluntary and no employee shall be forced to join any trade union or be victimised for refusing to join or remain a member."

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| | | filling of skills gaps) and the transfer of knowledge and skills to local workers, including of new skills and qualifications as the case may be. |
| 7. | **HIV & AIDS** | The Occupational Health and Safety Plan/Programme will include a component on HIV&AIDS and other sexually transmitted infections (STIs). The component will include:<br><br>• The facilitation of awareness briefings on HIV/AIDS and other STIs for all employees;<br>• The provision of informational material on AIDS / HIV and other STIs;<br>• Guidance on conduct within the local community by members of the external workforce related to respecting local customs, norms and traditions; and<br>• Facilitating access to advice for workers on the nature of HIV/AIDS and other STIs, as applicable. |
| 8. | **Record-Keeping and Management** | Nova Solar and its contractors will maintain up-to-date records and retain them for three (3) years as stipulated under Nigerian law.<br><br>Employment-related records to be kept by Nova Solar and its contractor include:<br><br>• An Employee Register, comprising: numbers of employees in each role and their personal details, employment status of each employee (including subcontractors), duration of employment, days and hours worked by each employee, and wages and social security contributions paid;<br>• Records of training attended by each employee;<br>• The application register (including skills) established in the hiring process;<br>• Occupational health and safety incidents, near misses and hazards reported; and<br>• Grievances or complaints reported through the Worker Grievance Mechanism, including details of grievance follow-up and closeout. |
| 9. | **Termination of contracts following construction phase** | Nova Solar and its contractors will assist workers in preparing themselves for the eventual completion of the construction phase of the Project, and by consequence, the termination of employment, e.g. encouraging saving, seeking out other job opportunities in advance.<br><br>Prepare letters of recommendation for workers to include:<br><br>• Duration of employment;<br>• Role and nature of the tasks carried out for the Project;<br>• Employee character; and<br>• Recommendation for future employment (if this is the case). |

Annex E

# Local Content Plan

# *16 ANNEX E: LOCAL CONTENT PLAN*

## 16.1 *INTRODUCTION*

In accordance with the Nigerian *Regulations on National Content Development for the Power Sector (2014)* and Nova Solar's own commitment to creating shared value with local communities, local content in the workforce will be maximised. To this end, the Nova Solar *Local Content Plan* provides specific guidance on how to integrate this in the job advertisement and selection, and procurement processes throughout the Project lifecycle.

Local employment opportunities in the Project will be greatest during the construction phase and therefore short-term in nature. It is however important that the benefits of local employment are maximised during both the construction and operation phases. The ratio of local to external workers and suppliers will depend on the availability of skills and services within the population in the AoI (1).

Stakeholder engagement has revealed that local businesses have an interest in participating in the Project supply chain through provision of goods and services. It is therefore important that stakeholder's expectations about the degree of participation of local content are carefully managed.

In support of the above, this Framework Management Plan outlines the guiding principles and processes regarding local content management (jobs and supply of goods and services) as they apply to Nova Solar and the EPC Contractor.

Once additional information about the EPC Contract and workforce requirements (for both construction and operation) becomes available, the Management Plan will be developed further. Table D15.2 identifies the key elements of the *Local Content Plan*.

## 16.2 *GUIDING PRINCIPLES*

Nova Solar and its EPC Contractor will implement the *Local Content Plan* with reference to the following guiding principles:

- Adherence to the Nigerian Electricity Regulatory Commission *Regulations on national Content Development for the Power Sector, 2014* that aims to ensure local companies also develop capacity to compete in the growing power sector;
- Build the capacity of Nigerians in the skills related to developing, constructing and operating a solar PV power project;
- Promote the procurement of locally produced and/or locally available products and services;

(1) On the basis of baseline educational status in the AoI it is anticipated that local communities have potential to fill many of the low-skilled roles, some of the semi-skilled roles and a limited number of specific skilled positions.

- Workers, contractors and suppliers will be contracted in the following order of priority:
    1. From within the Project AoI;
    2. From Katsina Katsina State;
    3. From Nigeria; and
    4. International.
- Nova Solar and its EPC Contractor will develop the local skills base through internal training provision and through the skills and capacity building elements of its Community Development Plan.

These guiding principles underpin the remainder of the Framework Management Plan. Because elements of local content development are closely connected to the recruitment process, the *Worker Management Plan* should also be referred to.

## 16.3 *LEGAL REQUIREMENTS*

The national regulations that this Management Plan aims to comply with are the Nigerian Electricity Regulatory Commission *Regulations on National Content Development for the Power Sector, 2014* ('Regulations'). The main aim of the Regulations is to "promote the deliberate utilisation of local human and material resources in the Nigerian Electricity Supply Industry"(1) as follows:

i. "*Deliberate* utilisation of Nigerian human and material resources, goods, works and services in the NESI (2) ;
*ii.* *Opening of the NESI at all levels of its complexity to involve Nigerian people and expertise;*
*iii.* *Building capabilities in Nigeria to support increased investment in the NESI; and*
*iv.* *Leveraging existing and future investment in the NESI to stimulate the growth of Nigerian and Nigeria-located enterprise."*

The Regulations require the licensee to give *first consideration* to:

*i.* "*qualified Nigerian companies, for the supply of goods and works, and for the provision of services; and*
*ii.* *goods made in Nigeria and services provided by Nigerian firms in the award of contracts, and*
iii. *suitably qualified Nigerians for employment and training*."

## 16.4 *ROLES AND RESPONSIBILITIES*

Although the responsibility for local content development during the pre-engineering and construction falls to the EPC Contractor, Nova Solar is ultimately accountable for ensuring that it is carried out in accordance with the Regulations.

(1) ACAS-LAW, March 20015. 'Local Content Regulation for Nigeria's Power Sector' http://www.acas-law.com/assets/power-johnasokhia-150413152651-conversion-gate01.pdf, accessed 01/03/2017.
(2) Nigerian Electricity Supply Industry

Responsibilities for the specific elements of local content development will be assigned once additional information about the EPC Contract, as well as workforce (in term of skills and numbers) and procurement needs, become available. An additional column entitled '*Roles and Responsibilities*' will be added to Table E16.1 in order to document this.

## 16.5 *WORKER ROLES AND NUMBERS*

The duration of the pre-engineering and construction phase is expected to be 12 months. It will be the phase with the greatest level of activity and largest workforce. The equipment and machinery to be used in this phase includes cranes, earthmoving equipment, jack hammers, loaders, compressors and service-vehicles. This phase of work is estimated to require a team of 250 workers, on mainly short term and fixed task contracts. The team will be divided into low skilled (construction labour, security staff), semi-skilled (drivers, equipment operators), and skilled personnel (engineers, land surveyors, project managers).

The operational workforce will be smaller, estimated to number around 50 people, and will be composed of workers with different skill sets to those during pre-engineering/construction. The operations team will include engineers, technicians, security personnel and labourers. The duration of this phase is expected to be 25 years and therefore permanent jobs will be created.

## 16.6 *MEASURES AND ACTIONS*

This section presents a series of actions to be undertaken by Nova Solar and its EPC Contractor in accordance with the guiding principles in Section 16.2.

### *Table E16.1 Local Content Management Actions and Measures*

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| | ***Local Labour*** | |
| 1. | **Application Process** | • Recruitment will be based on merit and will follow a transparent process, as per the *Worker Management Plan*.<br>• To this end, the Nova Solar local content development aspects of the recruitment selection process will be included in job adverts and explained in community meetings during pre-construction.<br>• To ensure access to job opportunities by local community members who may be unable to submit a written application, an alternative process may be used when recruiting for manual and low-skilled jobs, such as:<br>  • Requesting that Village Heads provide lists of candidates from their settlements (lists will be capped up to a set number for each Village); and<br>  • Interviewing those persons named on the lists and selecting candidates from each of the Villages, ensuring that there is reasonable representation of each Village in the workforce, skills dependent.<br>• This process will be discussed and agreed with appropriate representatives of the local community. |

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| 2. | **Worker Selection** | • For unskilled roles, priority will be given to applicants from the local communities in the AoI;<br>• For semi-skilled and skilled roles, priority will also be given to candidates from the local communities in the AoI in instances where two or more candidates possess equal qualifications; and<br>• During the worker screening and selection process, workers will be categorised according to whether they are:<br>o Category A: From the Project AoI;<br>o Category B: From Katsina State;<br>o Category C: Nigerian nationals; or<br>o Category D: International workers.<br>• This categorisation will be included in the register of applicants (as described in Item 2 of the *Worker Management Plan.*) and monitored on an ongoing basis a per Table E16.3.<br>• Where they have the attributes needed for the role, Category A workers will be prioritized, followed by Category B, C and D workers. |
| | **Contract Termination** | The letter of recommendation prepared for workers whose contract is ended is important for demonstrating their experience on a Project that is being executed following international best standards/practices and where they have received training and skills development from industry experts. |
| | ***Subcontracting*** | |
| | **Procurement Planning** | Nova Solar and the EPC Contractor will make their local content priorities (as defined in this management plan) explicit in their supplier and contractor engagement meetings and selection processes.<br><br>Nova Solar and the EPC Contractor will undertake a review of local businesses in the AoI to identify potential suppliers. The review will be carried out against the following criteria:<br><br>o Size and capacity;<br>o Goods and services they are able to provide – quality and volumes;<br>o Reliability of their supply chain and lead times on orders;<br>o The conditions of their premises, workplace etc.;<br>o Experience of working for similar projects; and<br>o Opportunities for developing their capacity in the long-term.<br><br>Goods that may be procured from local suppliers may include, but not be limited, to:<br><br>o Consumables (such as food, cleaning products, airtime) for the construction camp;<br>o Construction tools and consumables (such as small hardware);<br>o Construction related equipment<br>o Etc.<br><br>Services that may be procured from local contractors may include, but not be limited to:<br>o Welding;<br>o Cleaning of solar panels;<br>o Cleaning of construction camp;<br>o Basic maintenance and upkeep;<br>o Earthmoving equipment/services;<br>o Etc.<br><br>Where suitable local suppliers and contractors cannot be found, Nova |

| Item no. | Requirements | Action / Mitigation Measure(s) |
|---|---|---|
| | | Solar and/or the EPC Contractor may expand their procurement search to Katsina State as a whole, and, failing that, the rest of Nigeria and then internationally. |
| 4. | **Procurement process** | The contractor tendering and selection process will be open to all businesses.<br><br>As well as applying standard selection criteria, the process will also prioritise suppliers/contractors as follows:<br><br>o Category 1: Nigerian company – local to AoI;<br>o Category 2: Nigerian company – Katsina;<br>o Category 3: Nigerian company – National-level; and<br>o Category 4: Locally registered international entity.<br><br>In some cases, local businesses may be identified that do not fulfil all the selection criteria however demonstrate the commitment to developing and implementing improvements over time in order to meet industry standards. Businesses with potential for development will also be invited to participate in the procurement process.<br><br>Agreements with local suppliers and contractors will be drawn up according to standard procurement processes. If needed, the contractor agreement will also contain a development plan to help the supplier or contractor close any gaps identified in the procurement selection process. |
| | ***Capacity Building and Training*** | |
| | **Development Plan** | As part of the capacity building element of local content development, performance reviews will be held quarterly (more frequently if needed) with local suppliers and contractors to provide feedback to enable their continuous improvement towards fulfilling industry standards.<br><br>As part of the periodic review process, an action/development plan will be developed to enable the local contractor and supplier to close any gaps identified, if needed, with support from Nova Solar and/or its contractor. |
| 6. | **Training Plan** | Nova Solar and its contractors will develop a training programme to be open to a) local workers and b) representatives of the businesses that are part of the Project supply chain.<br><br>The training plan will be tailored to developing the necessary skills required for the fulfilment of job descriptions and service delivery agreements (i.e. filling of skills gaps) and the transfer of knowledge to local workers that will include gaining new and additional skills and qualifications. Table E16.2 provides an outline of potential training objectives by worker role that is to be developed further by Nova Solar and its contractors following review of applicant skills. |
| 7. | **Capacity Building** | The local workforce will benefit from having worked with specialists that will bring their international experience and who will offer on-the-job training, coaching and support. |
| 11. | **Monitoring and Reporting** | Information about the Project's local content development will be documented and reported monthly. Table E16.3 and Table E16.4 show the information required for the reporting. |

## 16.7 *CAPACITY BUILDING AND TRAINING*

The key capacity building objectives and activities for a number of worker roles are proposed in Table E16.2, to be further defined by Nova Solar and the EPC Contractor.

In addition to the support outlined in Table E16.2, they will also receive the following as standard:

- Project induction;
- Scenario-based emergency response training;
- Discussion of topics pertaining to health, safety and specific role requirements through Toolbox Talk and Safety Shares; and
- Ongoing coaching and mentoring from experienced professionals.

***Table E16.2 Capacity Building Objectives***

| Role | Objectives / Potential skills gaps | Activities |
|---|---|---|
| Driver | o OHS hazards and controls of the role.<br>o Compliance with Nova Solar / EPC Contractor driver requirements and behaviours.<br>o Compliance with Nova Solar Traffic and Transport Management Plan.<br>o Correct licencing for the role (i.e. not just a standard driver licence). | o Defensive and off-road driving training (some classroom, mainly practical).<br>o Emergency response (practical, scenario based)<br>o Vehicle inspections (practical)<br>o First aid training (classroom and practical) |
| Cleaner | o OHS hazards and controls of the role. | o PPE use training (demonstration/practical)<br>o Handling and storage of chemicals/cleaning agents (classroom and practical)<br>o Manual handling and ergonomics (classroom and practical) |
| Mechanic | o OHS hazards and controls of the role.<br>o Compliance with Nova Solar / EPC Contractor vehicle standards. | o Manual handling and ergonomics (classroom and practical)<br>o Fuel handling (practical)<br>o Hand safety (practical)<br>o Workshop housekeeping (practical)<br>o Maintenance and tyre management schedules (classroom) |
| Security guards | o OHS hazards and controls of the role.<br>o Codes of conduct governing the security profession. | o Scenario-based security training on rules of engagement, proportional use of force (classroom and practical/role play)<br>o Emergency response (scenario-based)<br>o First aid training (classroom and practical) |
| Operators (truck-mounted crane, bulldozer, front-end loader) | o OHS hazards and controls of the role.<br>o Environmental requirements of the role.<br>o Demonstrate the required operator behaviours.<br>o Correct operator licencing/certification for the role. | o Fuel handling (practical)<br>o Pre-start inspections (practical)<br>o Accredited operator certification (classroom and practical) |
| Foreman | o OHS hazards and controls of the role. | o Supervision coaching (classroom and role play)<br>o Practice ‘spotting’ for reversing heavy vehicles (using standards hand signals) (practical)<br>o Emergency response (scenario-based)<br>o First aid training (classroom and practical) |

| Role | Objectives / Potential skills gaps | Activities |
|---|---|---|
| Site labourers | o OHS hazards and controls of the role. | o Manual handling and ergonomics<br>o Hand safety<br>o Use of PPE<br>o Inspection and correct use of tools |
| Welder | o OHS hazards and controls of the role.<br>o Correct qualifications for welding/hot work. | o Accredited welder/hot work certification (classroom and practical)<br>o Use of PPE (practical)<br>o Inspection of equipment prior to use (practical)<br>o Fire safety (practical)<br>o Emergency response (scenario-based) |
| Local supplier | o OHS hazards and controls for small business.<br>o Basic hygiene (e.g. if handling/storing food).<br>o Understanding of expiry dates.<br>o Quality requirements.<br>o Purchase planning.<br>o Stock management.<br>o Basic accounting.<br>o Proposal-writing.<br>o Basic understanding of the Nigerian Labour Act. | Inclusion in the Nova Solar CDP project tailored for business skills and capacity development. |

## 16.8 *MONITORING AND REPORTING*

Nova Solar and its EPC Contractor will monitor and report on its local content management on a monthly basis, collating the information required to complete Table E16.3 and Table E16.4.

### *Table E16.3 Local Employment Report*

| **Position type** | **Cat A** (AoI) | **Category B** (Katsina) | **Cat C** (National) | **Cat D** (International) | **Total** |
|---|---|---|---|---|---|
| Low skilled worker days | *number (%)* | *number (%)* | *number (%)* | *number (%)* | *number* |
| Semi-skilled worker days | *number (%)* | *number (%)* | *number (%)* | *number (%)* | *number* |
| Skilled worker days | *number (%)* | *number (%)* | *number (%)* | *number (%)* | *number* |
| **Total** | *number (%)* | *number (%)* | *number (%)* | *number (%)* | *number* |

### *Table E16.4 Local Procurement Report*

| **Supplier/Contractor** | **Type of good/service** | **Cat 1 ($)** (local to AoI) | **Cat 2 ($)** (Katsina) | **Cat 3 ($)** (National) | **Cat 4 ($)** (International representative) | **Total ($)** |
|---|---|---|---|---|---|---|
| | | *sum (%)* | *sum (%)* | *sum (%)* | *sum (%)* | |
| | | *sum (%)* | *sum (%)* | *sum (%)* | *sum (%)* | |
| | | *sum (%)* | *sum (%)* | *sum (%)* | *sum (%)* | |
| | | *sum (%)* | *sum (%)* | *sum (%)* | *sum (%)* | |
| | | *sum (%)* | *sum (%)* | *sum (%)* | *sum (%)* | |
| ***Total*** | | | | | | |

Annex F

# Worker Grievance Mechanism

# *17 ANNEX F: WORKER GRIEVANCE MECHANISM*

## 17.1 *INTRODUCTION*

During the anticipated 12 month preparatory works and construction phase, the EPC Contractor workforce is estimated to peak at circa 250 workers. The operational workforce for the Project is it estimated at 50 workers.

The IFC Performance Standard 2 requires that a grievance mechanism be provided for workers to raise workplace concerns. The purpose of this management plan is to outline the processes that Nova Solar and its EPC Contractor will have in place to manage worker grievances, in keeping with IFC PS2 and Nigerian law.

Once additional information about the EPC Contract and workforce/local employment arrangements become available, the worker grievance mechanism will be developed further.

## 17.2 *GUIDING PRINCIPLES*

The *Worker Grievance Mechanism* will be guided by the following principles:

- It will be established as early as possible in the Project lifecycle and remain in place throughout operations;
- It will remain separate from the *Community Grievance Mechanism*;
- It will be transparent and accessible to the local and external workforce;
- Complaints can be made anonymously;
- It will have an organisational structure and roles and responsibilities established to resource the mechanism;
- When concerns are raised they will be addressed promptly;
- Timely feedback will be provided to those concerned, without any retribution;
- It will not pose a barrier to the use of other processes for addressing labour complaints that are available under Nigerian law; and
- It will be communicated to workers in a clear and understandable manner.

## 17.3 *APPLICABILITY*

This worker grievance mechanism applies to workers who are not covered by an IFC-compliant collective bargaining agreement through membership of a trade union.

This worker grievance mechanism does not apply to workers who:

- Are members of a trade union, as provided for under Nigerian law (1) ; and
- Whose trade union has a worker grievance mechanism under a collective

(1) As provided for under the Trade Unions Act

bargaining agreement that meets the requirements of IFC PS2 (as outlined in this document) (1).

This worker grievance mechanism does not prevent workers from accessing other means of redress for their complaints, such as judicial means provided under the *Nigerian Labour Act, Part IV: Settlement of disputes, Section 81* that states:

*"any party to the contract feeling himself aggrieved may make complaint to a court having jurisdiction, which may thereupon issue a summons to the party complained against (the aggrieved party, the court, the party complained against and the complaint being hereafter in this section*".

## 17.4 *WORKER GRIEVANCE PROCESS*

The EPC Contractor will have in place a worker grievance mechanism that consists of the elements in Table F17.1.

(1) See IFC Guidance Note 2: Labour and Working Conditions, GN. 58.

### *Table F17.1 Worker Grievance Process*

| Element | Description | Responsibility |
|---|---|---|
| 1. Train and communicate | • Communicate the grievance mechanism to employees and contractors workers at the start of employment<br>• Train workers in how to access the grievance mechanism<br>• Encourage its use<br>• Make supervisors and CLOs aware of their responsibility in handling and communicating worker grievances as well as maintaining confidentiality | HR Department/Representative |
| 2. Submission of a grievance / Raising of a complaint / concern | • Accessible and appropriate to every type of worker, regardless of gender, literacy, work schedule, etc.<br>• More than one means of submitting a grievance will be provided, e.g. text, grievance/suggestions box (checked weekly), phone, email, verbal report<br>• Anonymous: Grievance mechanism protects the identity of the worker – will not require personal information or physical presence<br>• The grievance is raised and directed other than to the worker's immediate supervisor<br>• Grievances of local workers can be submitted to the CLO | Grievance received by:<br>• HR Department/Representative may receive the grievance<br>• Supervisor once removed<br>• Supervisor twice removed<br>• CLO (if from local workers) |
| 3. Document Grievance | • Record grievance in accordance with the ESMS<br>• Worker grievance form<br>• Maintain grievance records confidentially | Grievance recorded by:<br>• HR Department/Representative may receive the grievance<br>• Supervisor once removed<br>• Supervisor twice removed<br>• CLO (if from local workers) |
| 4. Form Grievance Committee | • Grievance Committee is to be kept small and composed of worker and management representatives<br>• Members of the Grievance Committee may vary, depending on the grievance type and on the worker (e.g. the workers' direct line manager/supervisor would not be allowed to be a member) | • HR Department/Representative<br>• Project Manager |
| 5. Assess and investigate the Grievance | • Grievance is handed to the Grievance Committee which:<br>o Assesses the severity of the grievance<br>o Assigns roles and responsibilities for grievance investigation and/or redress | Grievance Committee |
| 6. Low-severity/Simple grievances | • Can be discussed in regular worker meetings/forums to reach a solution<br>• Can be closed out within 14 days | Grievance Committee |
| 7. Escalation of serious grievance | • If grievance is severe or sensitive (e.g. discrimination, harassment), escalate it to senior management<br>• The EPC Contractor is obliged to involve Nova Solar in the resolution of serious grievances submitted by its team<br>• Aim to close out a serious grievance within 45 days | • Grievance recipient<br>• Grievance Committee |
| 8. Carry out investigation | • If grievance is severe or sensitive, involvement of an external investigator or of the judiciary may be required | Grievance Committee |

| Element | Description | Responsibility |
|---|---|---|
| 9. Review findings and assign actions | • Agree action plan (and allocate roles and responsibilities) for addressing the grievance, based on investigation outcome<br>• Actions managed and tracked as per the EPC Contractor or Nova Solar E&S management system<br>• Follow-up and track actions | • Grievance Committee<br>• HR Department |
| 10. Timely resolution | • Low-severity/Simple complaints can be closed out within 14 days<br>• Serious/Complex grievances will be resolved within 45 days<br>• If a worker submits a complaint in a manner that is not anonymous (i.e. provides personal details), they will be informed of delays and when he/she can expect a response | Grievance Committee |
| 11. Report back | • Provide for a meeting to discuss the grievance should the worker wish to attend<br>• The worker should have the right to be accompanied or represented by a colleague or trade union official at the meeting<br>• Where grievances are anonymous (or where the worker agrees), responses are posted at locations that can be seen by all workers | Grievance Committee |
| 12. Appeals and escalation | • Workers engaged by the EPC Contractor will have the option/ability to appeal to the Nova Solar team if they feel the EPC Contractor's resolution of their grievance is unsatisfactory.<br>• In this case, the contractor worker grievance appeal will be escalated to the Nova Solar Project Manager. | |

## 17.5 *ROLES AND RESPONSIBILITIES*

The worker grievance mechanism will have a clear assignment of roles and responsibilities for each of its separate elements.

The Grievance Committee is the core group appointed for resolving the grievance. Upon receipt of a worker grievance, the Grievance Committee will be responsible for assessing and investigating the grievance, assigning and tracking actions and reporting back to the complainant. The composition of the Grievance Committee is representative of the workforce and includes supervisors, managers and worker representatives.

## 17.6 *TRAINING*

Training on the worker grievance mechanism will be provided to supervisors and all other workers, relevant to their role and responsibilities, to include but not be limited to:

- expected behaviours and accepted practices when interacting with colleagues in order to avoid a grievance;
- means available for workers to submit a grievance;
- roles and responsibilities for handling and resolving worker grievances, and;
- worker grievance recording and tracking procedures.

## 17.7 *REPORTING AND RECORDING*

All worker grievances will be received, registered, documented and tracked by means of a secure system. As a minimum the following information will be recorded:

- Date;
- Details of the complaint;
- Prioritisation, depending on severity of the grievance, to assist with setting the timelines for resolution;
- Resolutions agreed with the worker; and
- Actions implemented.

## 17.8 *MONITORING AND EVALUATION*

The EPC worker grievance mechanism will be subject to internal monitoring and evaluation every three months to ensure its effectiveness. Monitoring and evaluation indicators will include the average time taken to close out a grievance, as well as any barriers/obstacles to closing out a grievance.

Annex G

# Traffic and Transport Management Plan

# *18 ANNEX G: TRAFFIC AND TRANSPORT MANAGEMENT PLAN*

## 18.1 *INTRODUCTION*

The purpose of this management plan is to ensure that construction of the Project components does not adversely affect road users and other sensitive receptors. This Traffic and Transportation Management Plan (TTMP) therefore identifies the potential impacts and appropriate measures to mitigate them.

## 18.2 *TRAFFIC CONTEXT*

The Project is located close to Kankiya along the Kankiya – Katsina stretch of the A9 Highway. The A9 Highway is a paved road connecting Kano to Katsina. The majority of the routes connecting Lagos to Katsina State comprise dual carriage ways. Access roads connecting communities comprise unimproved and unsealed tracks that have deteriorated due to the effects of flooding.

Existing traffic volumes in the immediate Project area are not known. Based on field observations, overall traffic volumes in the Project area, including traffic volumes on the A9 Highway, are assumed to be very low.

## 18.3 *SENSITIVE RECEPTORS*

Receptors in the vicinity of the Project related traffic activities include other road users, residents of the communities along the roads used to access the site as well as schools and mosques located adjacent to the road.

Project-related traffic could potentially disturb (via noise, vibration, and/or dust) activities within these structures, and could pose a safety hazard to residents who walk along the road. This includes construction-related traffic, as well as any traffic generated by periodic maintenance or inspection activities.

## 18.4 *PROJECT TRANSPORT REQUIREMENTS*

The Project will require the movement of both light and heavy duty vehicles to, from and around the Project site. The movement of heavy vehicles will mainly be limited to periods of construction when equipment is being delivered to site, or when there are peaks in construction activity.

The construction phase will last for approximately 12months. Peak heavy vehicle movements during the construction phase will be associated with the delivery of the solar panels. During the construction phase, approximately 400,000 solar panels will be transported to the Project site. The solar panels will arrive in Lagos in approximately 500 shipping containers, each of which will be transported via road to the Project site near Kankiya, approximately 1,200 km away (by road). The majority of the route will be comprised of dual carriageway highways, which are characterised by higher traffic flows and larger vehicles.

At this stage, the EPC contractor and exact travel routes have yet to be confirmed. It is assumed that the site will be able to process between six and ten containers per day at peak operation, equating to 6-10 truck movements to the site per day (and an equivalent number of return trips by trucks). Assuming deliveries 5 days per week, this would result in deliveries over a 10 to 17 week period.

## 18.5 *TRAFFIC MANAGEMENT MEASURES*

Prior to the commencement of construction, Nova Solar 5 Farms Ltd (NSF) and its contractor(s) shall use the framework TTMP as the basis for preparing a detailed TTMP. This will identify specific measures to mitigate any predicted impacts. The final TTMP shall include detailed procedures that demonstrate how the impacts of traffic on communities be taken into consideration.

The contractor(s) shall develop and submit:

- procedures 30 days prior to the start of the construction phase; and
- detailed project-specific procedures that specify how the requirements of their TTMP will be implemented to the satisfaction of the appropriate traffic authorities.

NSF and the contractor(s) shall regularly update their TTMP as the construction process is developed and vehicle movement and timing requirements are identified in more detail.

If it becomes apparent that the assumptions underlying this TTMP are incorrect, for example if baseline traffic levels are found to be significantly higher than anticipated or project traffic levels are greater than anticipated, this shall be addressed through revisions to the detailed TTMP.

In coordination with NSF, the contractor(s) will:

- specify those responsible for carrying out and managing the procedures;
- identify the procedures and activities the contractor(s) will develop and implement;
- identify the routes that will be used with the estimated numbers of traffic movements, speeds and times of travel;
- identify any work to be undertaken on the roads prior to construction activities to upgrade or stabilise the roads if necessary;
- identify how existing road development plans have been taken into account in the identification of routes and road restoration measures;
- identify the programme of road restoration measures that are likely to be required post construction;

- develop procedures to reduce the exposure of vehicle drivers, their passengers and other road users from the hazards of road-related accidents; and

- provide details of audits and reviews of the components of the project transport system.

In order to address these points, Table B1.1 has been designed to provide a practical plan detailing the actions required to avoid or mitigate potential negative Project impacts to acceptable levels. Monitoring measures are also outlined to ensure that the plan is having the desired effect. These measures should be used to inform the development of the detailed TTMP following the traffic assessment once baseline conditions and detailed Project movements are known.

The measures identified in Table B1.1 are focused on the construction and decommissioning phases. Decommissioning traffic is anticipated to occur at a level similar to, or lower than, that during the construction phase. During the operations phase Project traffic is anticipated to be of low volumes, primarily associated with workforce movements and periodic maintenance activities.

## *Table G18.1 Traffic Control Management Plan*

| Issue | Mitigating/Monitoring Activity | ID No. | Responsibility | Cost ($) | Timing |
|---|---|---|---|---|---|
| Access to construction areas | The following environmental aspects shall be considered in finalising the location of the access road that will be constructed specifically for the Scheme:<br>• environmentally sensitive areas; and<br>• pedestrians. | *T1.1* | Contractor | No separate cost. Included in design fees. | Developed during Project planning, implemented during construction. |
| | Other measures for mitigating the impact of access roads are as follows:<br>• Access will be via specified routes.<br>• Existing, upgradeable roads will be used where practicable, to avoid the need to construct new roads.<br>• Access roads to previously inaccessible sensitive areas will be avoided. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • If the Contractor requires additional routes, a specific proposal will be submitted to the relevant authorities for consideration and approval.<br>• Suitable measures will be implemented to avoid damage to public roads and any damage will be repaired to an equal or better standard in a timely manner.<br>• Temporary roads will be removed when no longer needed and will be reinstated, except where local communities or landowners request that a new road be left in place. All damage to existing roads will also be reinstated.<br>• | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • Temporary access roads will be kept free from deposits to prevent silt, oil or other materials from entering drains or watercourses. Small dams in roadside ditches may therefore be required to assist in silt retention, particularly on steep slopes.<br>• Access routes to be used by construction traffic will be properly signposted. This shall be sufficient to prevent vehicles from leaving the designated routes and ensure that the appropriate speed limits are enforced particularly through | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |

| Issue | Mitigating/Monitoring Activity | ID No. | Responsibility | Cost ($) | Timing |
|---|---|---|---|---|---|
| | residential areas.<br><br>• Access and site roads will be maintained in good condition. | | | | |
| | • Any additional routes will be selected to avoid ecologically sensitive areas, and to minimise erosion.<br>• | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| Routing of construction traffic | • Precautions will be taken by the Contractor to avoid damage to the public highways used by vehicles or other items of equipment. Timber mats, tyres or steel plates will be laid as necessary, in particular under tracked equipment. Any road damage will be repaired.<br><br>• Advance warning will be given of any proposed road diversions and closures.<br><br>• The Contractor should consider whether to use buses to transport workers to the construction site.<br><br>• The Contractor will comply with all statutory vehicle limits (width, height, loading, gross weight) and any other statutory requirement. | *T1.2* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| Temporary traffic control and management | • Traffic flows will be timed, wherever practicable, to avoid periods of heavy traffic flow along main roads.<br><br>• In terms of traffic control, vehicles will be prohibited from reversing unattended into the construction site. Vehicles and plant shall enter and exit the site in a forward direction, as far as possible. In addition, the Contractor will ensure that all heavy goods vehicles are equipped with audible reversing alarms. | *T1.3* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • Clear signs, flagmen and signals will be set up where necessary. If temporary traffic signals are required, the details and locations of the signs shall be discussed with the relevant authorities. The signs will be fixed safely and securely to ensure that they do not become detached or dislocated, and will be visible and comprehensible by all. The Contractor will also carry out maintenance checks to clean and re-secure signs if necessary. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |

| Issue | Mitigating/Monitoring Activity | ID No. | Responsibility | Cost ($) | Timing |
|---|---|---|---|---|---|
| | • Appropriate supervision will be provided by the Contractor to control the flow of traffic when machinery needs to cross roads. | | | | |
| | • <br>• Speed limits will be established and enforced over all construction traffic routes. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • Where roads used by children to reach schools are used by construction traffic, road safety education will be provided at schools. Vehicle traffic will be prohibited during hours that children are travelling to and from school.<br>• Access to residential and commercial properties will be maintained. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • If road closures are required, diversions will be planned and communicated to the authorities (including emergency services and public transport providers) and affected communities in advance (via the pre-construction community meeting) and will be properly sign-posted.<br>  • Crossing for pedestrians and animals will be provided to avoid the need for a diversion.<br>  • No diversion will be permitted that prevents a public transport service from continuing or requires a diversion of more than 1km for vehicles or a diversion of more than 500m for pedestrians or livestock.<br>  • Road diversions will not increase the response time of ambulance and fire services to local communities.<br>  • Notification periods for road closures are as follows: two weeks minimum notice on closure of up to 28 days; one month minimum notice on closure of 28 days to three months; three months' notice for closure over three months or for permanent closure. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • Education on traffic safety will be provided by the Community Liaison Officer(s) (CLOs) to communities not normally subjected to major infrastructure construction. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • Fuel use will be minimised during the transportation of construction materials and personnel. A fuel use assessment | | Contractor | No separate cost. Included in | Developed during Project planning, |

| Issue | Mitigating/Monitoring Activity | ID No. | Responsibility | Cost ($) | Timing |
|---|---|---|---|---|---|
| | will be undertaken, in conjunction with safety assessments, at the outset of the construction programme.<br><br>• A 30km/h speed limit shall be enforced on the access road. The speed limit shall be 50km/h in the towns and villages. The speed limit on the motorways and highways shall be 90km/hr. | | | Construction costs. | implemented during construction. |
| Parking facilities | • The parking of construction vehicles on footways, and double parking, shall be prohibited on public highways in the vicinity of the working width. | *T1.4* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • The Contractors will ensure that part of the Construction Site is set aside for the parking of emergency service vehicles. The Contractor is expected to make provision for a dedicated parking area on the construction base for the private vehicles of construction personnel. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| Maintaining Highways | The Contractor is expected to keep highways free from mud and dust and to ensure that no vehicle or other items of equipment leaving the construction base or working width, deposit soil, debris or rock on public highways or public right of ways.<br><br>Measures will be implemented to ensure that the transport of mud and dust from the site onto public highways and roads is limited. Such measures may include:<br><br>• paving the access road;<br><br>• the use of hard core surfaces on access roads; | *T1.5* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • the provision of an easily cleaned hard standing area within the construction site for vehicles entering, parking and leaving;<br><br>• the provision of wheel washing facilities adjacent to the egress points for use by vehicles leaving the construction base/working width; | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • the appointment of site personnel to clean the construction hard standing area and to remove any mud or debris deposited on the public highways; | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during |

| Issue | Mitigating/Monitoring Activity | ID No. | Responsibility | Cost ($) | Timing |
|---|---|---|---|---|---|
| | • the provision to clean hard standing areas and to clean any mud or debris deposited by work vehicles on roads or footways in the vicinity of the construction site; | | | | construction. |
| | • fully sheeting all works vehicles carrying potentially dusty material or likely to deposit loose materials on the public highway during transit.; or<br>• cleaning and maintaining temporary and permanent roads, and removal of mud and debris from public roads. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| Road Related Accidents | The Contractor's procedures shall specifically cover arrangements for the following important aspects:<br>• the source of and number of qualified drivers required;<br>• training and approval requirements for drivers;<br>• hours of driving and rest periods;<br>• security arrangements for drivers, vehicles and loads;<br>• arrangements for driver communication with control points and vehicle equipment;<br>• language/communication issues;<br>• the source of suitable vehicles (e.g. quality and specification);<br>• the number of vehicles required;<br>• the programme for preventative vehicle maintenance;<br>• vehicle routes, route planning and alternative routes;<br>• overall vehicle movements;<br>• procedures for the emergency recovery of vehicles;<br>• an appraisal of the social impact of vehicles in the local community; and<br>• procedures for spot checks and audits of the transport system and for reporting problems. | *T1.6* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | The contractors Journey Management Plan shall include the following provisions:<br>• a specific Journey Management form shall be completed and approved for journeys of more than 25 kilometres; | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • pre-use vehicle inspections shall be completed and recorded | | Contractor | No separate cost. | Developed during |

| Issue | Mitigating/Monitoring Activity | ID No. | Responsibility | Cost ($) | Timing |
|---|---|---|---|---|---|
| | on the approved form;<br><br>• all drivers shall be trained and evaluated in defensive and off-road vehicle operation; | | | Included in Construction costs. | Project planning, implemented during construction. |
| | • passengers shall comply with the 'Safe Passenger's Code' and drivers shall comply with the 'Safe Driver's Code'; and<br><br>• no unauthorised passengers shall be carried. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| Vehicle Standards and Maintenance | The Contractor shall comply with all other aspects of the Construction Health and Safety Management Plan, which include requirements for vehicle standards and maintenance. The contractor shall also ensure that: | *T1.7* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • All vehicles shall be maintained so that their noise and emissions do not cause nuisance to workers or local people. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • New vehicles: vehicles/equipment purchased 'as new' after contract award shall comply with the appropriate emission standards in force on the purchase date. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | • Older vehicles: vehicles/equipment not purchased 'as new' after contract award shall be maintained so that noise and emissions levels are no greater than when the vehicle/ equipment was new. | | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |
| | The contractor shall produce method statements, as part of their TCMP, to cover routine maintenance and to minimize equipment emissions. Routine maintenance shall be to a high standard to ensure that vehicles are safe and that emissions and noise are minimised. Method statements shall require regular maintenance of diesel engines to ensure that emissions are minimised, for example, by cleaning fuel injectors. | *T1.8* | Contractor | No separate cost. Included in Construction costs. | Developed during Project planning, implemented during construction. |

Annex H

# Camp Management Plan

# *19 ANNEX H: CAMP MANAGEMENT PLAN*

## 19.1 *INTRODUCTION*

During the preparatory works and construction phase, anticipated to last one year, the EPC Contractor workforce is estimated to peak at circa 250 workers. The EPC Contractor workforce will consist of a range of skilled, semi-skilled and unskilled workers employed both from within and outside of the Project Area of Influence. Those workers not living locally and unable to commute to work from their places of residence will be provided accommodation in the form of a construction camp where they will be able to access eating, sleeping, sanitary, recreational and medical facilities (the requirements for which are described in greater detail in Section 19.4).

The purpose of this framework management plan is to outline how the EPC Contractor (or its camp management sub-contractor) will manage the construction camp and its constituent facilities in a way that minimises impact on the local environment, communities and their associated resources in the construction phase of the Project. It is aligned with the *IFC and EBRD Guidance Note on Workers' Accommodation: Processes and Standards*.

Once additional information about the EPC Contract and camp arrangements become available, the framework management plan will be developed in full.

## 19.2 *GUIDING PRINCIPLES*

The guiding principles underpinning the Camp Management Plan are as follows:

- The Camp will be temporary in nature, built to have as limited an environmental footprint as possible and can be dismantled with ease.
- Camp services will be provided to workers on a non-discriminatory basis and they will meet national and international standards for quality, security, and safety.
- Should the EPC charge for any of the services, these will be charged at the market rate.
- If the provision of accommodation and camp management services is outsourced to a contractor, these basic requirements will be contractual obligations.
- Where possible, the Camp will be sited so as to:
    - maximise distance from the nearest community;
    - minimise impact to water and land under cultivation or grazing;
    - minimise distance to the Project site; and
    - minimise disruption to local infrastructure, services and livelihoods.

- Where feasible, the construction camp infrastructure will be located within the Project boundaries so as to eliminate the need for temporary land lease/rental.
- Should temporary rental/lease for the construction camp be required, it will subject to stakeholder consultation and sited in a location that has the broad-based approval of the local community and customary leadership.

## 19.3 *ROLES AND RESPONSIBILITIES*

Although it falls under the responsibility of the EPC Contractor, construction and/or management of the construction camp may be sub-contracted to a specialist camp management company. In which case, the sub-contractor will be responsible for the day to day management of the camp under supervision of the EPC Contractor and Nova Solar.

Responsibilities for the specific elements of camp management will be assigned once additional information about the EPC Contract and camp arrangements become available. An additional column entitled '*Roles and Responsibilities*' will be added to Table H19.1 in order to document this.

## 19.4 *MEASURES AND ACTIONS*

This section presents a series of actions to be undertaken by Nova Solar, the EPC Contractor (and/or its camp management sub-contractor) in accordance with the guiding principles in *Section 5.4.2*.

### *Table H19.1 Nova Solar Camp Management Actions and Measures*

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 1 | **Location selection**<br><br>Inadequate camp location causes disturbance to the local community, increases pressure on local services and livelihoods.<br><br>Inadequate camp location exposes workers to hazards. | • Careful selection of camp location, taking into account the following factors:<br><br>  • maximise distance from the nearest community;<br>  • minimise impact to land under cultivation or grazing;<br>  • minimise distance to the Project site; and<br>  • minimise disruption to local infrastructure, services and livelihoods.<br><br>• Camp to be sited away from wet season flood zone – local community consulted to find out.<br><br>• Camp to be self-contained, including provision of catering, sanitation, sleeping, water and medical facilities.<br><br>• Stakeholder engagement to agree on best location for the camp. | Stakeholder Engagement Plan |
| 2 | **Land access**<br><br>Camp constructed without written permission from land owner results in loss of land access | Rental / Lease agreement for the land on which the camp is built, unless it built on the Project site/footprint, in keeping with *Section 19.2 Guiding Principles*. | |
| 3 | **Site drainage**<br><br>Inadequate site drainage leads to ponding and standing water in the wet season, increasing exposure to slip hazards and malaria mosquitoes that breed in the standing water. | Camp to be sited away from the wet season flood zone – local community consulted to find out.<br><br>Site preparation – ensure flattened, fill in any holes.<br><br>Ongoing site maintenance – flatten any ground that is disturbed, fill in holes e.g. tyre ruts. | Stakeholder Engagement Plan |

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 4 | **Camp Management Processes**<br><br>Poor camp management may lead to:<br><br>• poor maintenance and upkeep;<br>• lowering of health and hygiene standards and service quality;<br>• affect worker morale and productivity; and<br>• trigger worker grievance. | • Selection of competent camp management provider – with adequate internal standards and procedures.<br><br>• Experienced camp manager in place – influenced through the contractor selection process.<br><br>• Quarterly review of camp management provider performance – managed through the contractor management process.<br><br>• Nova Solar and EPC contractor will monitor living conditions to ensure that worker health, safety, security and wellbeing is being respected. | Nova Solar ESMS<br><br>Worker Grievance Mechanism<br><br>OHS Management Plan<br><br>Worker Management Plan |
| 5 | **Health & Safety**<br><br>Poor health and safety standards may lead to:<br><br>• Incidents, illnesses and injuries;<br>• Communicable disease transmission, such as respiratory or diarrhoeal disease; and<br>• Worker grievance. | • Camp design to minimise safety hazards, including electrical systems, anti-slip floors etc.<br><br>• Sufficient number of well-trained camp support staff.<br><br>• Regular camp inspections (following a schedule).<br><br>• Cleaning schedules.<br><br>• Preventative maintenance of key camp infrastructure (e.g. water treatment/filtration system; water pumps; boilers; generators; kitchen equipment).<br><br>• Camp management provider to maintain an issues register. | OHS Management Plan<br><br>Worker Management Plan |

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 6 | **Security**<br><br>Inadequate security arrangements may lead to:<br><br>• Unauthorised access to camp;<br>• Damage or theft of assets/belongings by external or internal persons;<br>• Unforeseen security incidents; and<br>• Human rights abuse by untrained security guards. | • Camp design to include physical barriers such as access gates and fence.<br><br>• Security team at access points to control and log entry and exit of approved persons only.<br><br>• Regular contact and engagement with local security forces.<br><br>• Security personnel to have received background checks prior to employment, ensuring they have no history of human rights misconduct.<br><br>• Security personnel to have received training in rules of engagement consistent with de-escalation; use of force proportional to the threat, in self-defence; provision of medical assistance to injured parties. | Security Plan<br><br>Stakeholder Engagement Plan<br><br>Community Grievance Mechanism<br><br>Worker Grievance Mechanism |
| 7 | **Local content**<br><br>Local community expects to share benefits of employment and business opportunity. | • Where possible, maximise opportunities for local community in camp management/support roles (both men and women), e.g. cleaning, security.<br><br>• Where possible, maximise opportunities for local community to provide goods and services to camp, e.g. supply of certain foodstuffs, cloths. | Local Content Plan |
| 8 | **Water**<br><br>Use and consumption of untreated/unfiltered water may lead to water-borne disease and loss of worker productivity.<br><br>Insufficient provision of water may lead to dehydration.<br><br>Insufficient water for cleaning related to poor hygiene standards. | • The first option for a water source for washing and cleaning in camp is to use boreholes sunk by the EPC Contractor. Should hydrogeological investigations reveal this is not sustainable, water from a local reservoir is to be trucked to site in tankers.<br><br>• Provision of clean/potable drinking water in sufficient amounts. Clean/Potable drinking water to be provided using one of bottled water / onsite water filtration / onsite reverse osmosis.<br><br>• | Water and Wastewater Management Plan |
| 9 | **Solid waste**<br><br>Inadequate storage and disposal of solid waste leads to environmental degradation, conditions that are conducive to pests. | • Solid waste to be stored in closed containers before disposal.<br><br>• Solid waste to be disposed of on a regular basis to prevent build-up of waste.<br><br>• Solid waste to be disposed of at an approved waste disposal facility. | Waste and Wastewater Management Plan |

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 10 | **Wastewater**<br><br>Contamination of soil and/or groundwater due to improper disposal of waste water (human waste/sewage, grey water) impacts human health and environment. | • Grey water to be treated in soakaway.<br><br>• Wastewater treatment facilities will be established for all locations where employees will regularly work and where applicable will be designed and operated to meet the effluent discharge criteria defined in the Water Management Plan (Annex I). | Waste and Wastewater Management Plan |
| 11 | **Air conditioning, ventilation and light**<br><br>Inadequate ventilation impacts worker wellbeing and promotes transmission of communicable disease, e.g. respiratory infection.<br><br>Insufficient lighting impacts worker wellbeing, safety (due to poor visibility) and eyesight. | • Camp design to include sufficient air conditioning units to control temperature.<br><br>• Camp design to include sufficient windows (that can be opened) and lighting.<br><br>• Each worker to have a bedside lamp. | |
| 12 | **Fire safety**<br><br>Poor camp design increases risk of fire.<br><br>Lack of fire safety systems and response plans may lead to worker injury/ fatality and property damage.<br><br>Fire hazards caused by poor electrical installations and equipment. | • Flammable liquids and gases stored in enclosed locations to which access is controlled.<br><br>• Fire break around the camp.<br><br>• Camp design to include sufficient spacing between each building/structure.<br><br>• Fire exits signposted and kept clear.<br><br>• Designated fire wardens to guide people to emergency assembly point.<br><br>• Designated smoking areas.<br><br>• Fire detection/alarm system in each room.<br><br>• Regular testing of fire response system.<br><br>• Fire extinguishers (appropriate for the type of fire being extinguished) positioned at strategic locations and inspected regularly.<br><br>• Maintenance and inspection of electrical systems, cabling and equipment to prevent overloading/overheating. | OHS Management Plan |

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 13 | **Pest and vector control**<br><br>Inadequate camp design may lead to worker exposure to malarial mosquito bites.<br><br>Inadequate camp maintenance, waste storage and disposal may promote breeding of rodent population (disease vectors). | • Windows to be fitted with screens/meshed to prevent entry of insects.<br><br>• Beds to be fitted with insecticide-treated mosquito nets.<br><br>• Regular grounds maintenance and control of standing water pools in the wet season – as per Item 3.<br><br>• Building maintenance to prevent entry and damage caused by rodents.<br><br>• See waste management controls in Item 9 above. | |
| 14 | **Room/Dormitory facilities**<br><br>Poor standard of sleeping accommodation may contribute to:<br><br>• Communicable disease transmission due to overcrowding;<br>• Poor wellbeing due to lack of space and privacy may impact productivity;<br>• Poor fatigue management due to noise; and<br>• Lack of security for personal belongings. | • Provide accommodation with sufficient space (including heights) for each individual.<br><br>• Lockable storage. | |
| 15 | **Sanitary and laundry Facilities**<br><br>Sanitary and laundry facilities that are insufficient in number or of poor standard, may lead to:<br><br>• Increase in transmission of communicable diseases related to hygiene, e.g. diarrhoeal; and<br>• Decrease in worker wellbeing and productivity. | • Camp design to include sanitary and laundry facilities that are sufficient in number.<br><br>• Sanitary facilities kept clean and inspected on regular basis.<br><br>• Use of cleaning and disinfectant products. | Worker Grievance Mechanism |

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 16 | **Catering and Canteen facilities**<br><br>Inadequate catering facilities may lead to injury of kitchen staff.<br><br>Poor quality food affects worker health, morale and productivity.<br><br>Catering staff suffering from infectious disease may transmit it to others through food handling. | • Kitchen design to include safety features, such as sufficient space and easy to clean surfaces.<br><br>• Food provided to workers will be nutritious, of sufficient quantity (mindful of the heavy physical work) and culturally appropriate.<br><br>• Catering staff to have received food health and safety training, including prevention of cross-contamination, adequate cooking temperatures, cleaning and disinfection processes and safe use of kitchen equipment.<br><br>• Regular cleaning of surfaces and kitchen implements with appropriate cleaning products.<br><br>• Catering staff to have undergone pre-employment occupational medical assessment to ensure they do not have pre-existing diseases that can be transmitted to others through food handling, e.g. hepatitis, salmonella, typhoid. | |
| 17 | **Medical/First Aid Facilities**<br><br>Lack of medical or first aid facility may lead to exacerbation of new or pre-existing medical condition/illness/injury. | • Provision of medical staff and equipment that is consistent with:<br><br>  • The number of workers on site;<br>  • The level of risk of the activities carried out on site; and<br>  • Evacuation distance to an advanced medical facility.<br><br>• Pre-employment medical assessments for workers (consistent with occupational exposures) to screen for any pre-existing conditions that may be exacerbated by the work. | Emergency Response Plan (to be developed)<br><br>OHS Management Plan |
| 19 | **Leisure Facilities**<br><br>Lack of leisure facilities may negatively impact worker wellbeing. | Camp design to include communal / recreational areas that includes TV. | Worker Grievance Mechanism |

| Item | Impact / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| 19 | **Closure and site rehabilitation** | • Termination of local worker contracts with sufficient notice provided (at least 30 days).<br>• Termination of local procurement agreements with sufficient notice provided (at least 30 days).<br>• Termination of land rental/lease agreement with the owner.<br>• Site to be rehabilitated through levelling of ground and all waste removed. | Stakeholder Engagement Plan<br>Worker Management Plan<br>Local Content Plan |

Annex I

# Occupational Health and Safety Management Plan

# *20 ANNEX I: OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT PLAN*

## 20.1 *INTRODUCTION*

The purpose of this Framework Management Plan is to ensure that the Health and Safety of personnel (permanent, temporary and contractor) carrying out work for or on behalf of Nova Solar during the life of the Project is prioritised.

The occupational hazards can be considered in three broad areas:

- Hazards that are typical of most solar projects and associated activities during construction and operation;
- Potential security risks associated with the presence of Boko Haram in the north-east and isolated cases of communal violence in the region; and
- Hazards arising from particular features of the location during construction and operation (hot, arid environment, remote location far from advanced medical care).

Critical steps in managing these include selecting suitable directly or indirectly employed workers and ensuring the management system employed during construction and operation is supported by high levels of supervision, site visits, audits, inspections, training and regular review.

A series of hazard identification reviews will be undertaken prior to each phase of the Project to identify the hazards, assess the risk they pose and enable a) the development of management plans to address them, and b) the 'designing in'/embedding of controls in the Project plan.

Once additional information about the EPC Contract and Project plans are available, the Occupational Health & Safety Framework Management Plan will be developed in full. Table I20.2 identifies the key issues that will be included in an Occupational Health and Safety Management Plan that is to cover both the construction and operation phases.

## 20.2 *GUIDING PRINCIPLES*

The guiding principles underpinning the Occupational Health and Safety Management Plan will be as follows:

- All reasonable precautions to protect the health and safety of workers will be implemented.
- Security hazards associated with the movement and presence of Boko Haram groups locally and isolated outbreaks of communal violence will be monitored.
- Preventive and protective measures will be in place in the following order of priority:
  - Eliminating hazards by removing the activity from the work process, where possible;
  - Controlling the hazard at its source through use of engineering controls;
  - Minimising the hazard through design of safe work systems and administrative or institutional control measures; and

    - Providing appropriate PPE in conjunction with training, use, and maintenance of the PPE.
- A comprehensive job safety or job hazard analysis will be undertaken to guide the application of prevention and control measures.
- Workplace incidents and near misses will be investigated, and root causes identified, to put in place additional corrective and preventive measures.

## 20.3 *LEGAL REQUIREMENTS*

The national and international requirements that will be used in the development of the Occupational Health and Safety Management Plan are shown in Table I1.20.1.

***Table I1.20.1 Reference Sources***

| Type | Documents |
|---|---|
| International | Performance Standard 2: Labour and Working Conditions (1), and associated International Labour Organisation Conventions that it references. |
| National | • Factories Act (No. 16 of 1987) (2)<br>• National Agency for the Control of HIV and AIDS (Establishment) Act, 2007 (3) |

## 20.4 *ROLES AND RESPONSIBILITIES*

The *Occupational Health and Safety Management Plan* will apply throughout the duration of the Project and responsibility for occupational health and safety will (broadly) be apportioned as follows:

- The EPC Contractor will manage OHS during pre-engineering and construction; and
- Nova Solar (or its Operation & Maintenance Contractor) will manage OHS during the operation phase.

Although responsibility for managing OHS during pre-engineering and construction falls to the EPC Contractor, Nova Solar is ultimately accountable for ensuring that it is carried out in accordance with the Management Plan.

Responsibilities for the specific elements of OHS will be assigned once the EPC Contract and Project planning are finalised. An additional column entitled '*Roles and Responsibilities*' will therefore be added to Table I20.2 in order to document this.

(1) http://www.ifc.org/wps/wcm/connect/0d7a4480498007faa1f7f3336b93d75f/Updated_GN2-2012.pdf?MOD=AJPERES
(2) http://www.ilo.org/dyn/natlex/docs/WEBTEXT/47979/65089/E87NGA01.htm
(3) http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=87620&p_country=NGA&p_count=255

## 20.5 *MEASURES AND ACTIONS*

This section presents a series of actions to be undertaken by Nova Solar and its EPC Contractor in accordance with the guiding principles in Section 1.2.

### *Table I20.2 Nova Solar Occupational Health and Safety Management Actions and Measures*

| Category | Hazard / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| **Management System Elements** | Inadequate EHS Management | Occupational health and safety (OHS) during the life of the Project will be managed under an Environmental, Health and Safety (EHS) Management System. This involves the following:<br>• compliance with international standards for good construction and industry practices;<br>• adherence to international and national standards and codes of practice on OHS management (e.g. IFC/WB EHS Guidelines; Nigeria Factories Act);<br>• management, supervision, monitoring and record-keeping as set out in the EPC Contractor's or Nova Solar's ESMS and associated management plans and/or monitoring frameworks;<br>• implementation of EHS procedures as a condition of contract, include adherence to Nova Solar policies and procedures in employee and service provision contracts;<br>• clear definition of EHS roles and responsibilities (including the nomination of EHS supervisors);<br>• prior assessment of the OHS risks and hazards associated with pre-engineering, construction, operation and decommissioning including consideration of local cultural attitudes, education level of the workforce and local work practices;<br>• provision of appropriate training on OHS issues for all workers, including initial induction and regular refresher training;<br>• provision of health and safety information in appropriate format, e.g. verbal, pictorial;<br>• regular inspection, review and recording of OHS performance; and<br>• maintenance of a high standard of housekeeping at all times. | OHS Management Plan |
| | Inadequate supervision | • Define levels of worker and team supervision based on the risk of the task and competence of the individual.<br>• Put in place resources to allow adequate levels of supervision.<br>• Nova Solar to ensure it supervises contractor activities with enough frequency. | OHS Management Plan |
| | Roles and Responsibilities | • EHS Manager will be responsible for assisting Team Leaders in implementation of the EHS management system and in auditing and remedial actions. Each employee and contractor will be required to be individually responsible for taking reasonable care of their own health and safety and that of others.<br>• Although the EPC Contractor will be responsible for managing OHS during pre-construction and construction, Nova Solar will supervise the EPC Contractor. | OHS Management Plan |
| | Contractor management | • Contractors will be selected on the basis that they are competent to perform the work and that their EHS management systems are compatible with International best practice. The Contractor and suppliers will be assessed during the contract evaluation process to demonstrate that these requirements are met.<br>• Conduct periodic contractor performance reviews. | OHS Management Plan |

| Category | Hazard / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| | Lack of competence | A system will be established for selection and placement of qualified personnel to meet specific job requirements. Recruitment policies and procedures will include consideration of personal competencies and capabilities required to carry out the EHS functions of the job through the following deliverables:<br>• individual Roles and Responsibilities Statements will be required to define the EHS scope and required competencies of each position including accountabilities, main EHS tasks and hazards and relevant site specific EHS requirements;<br>• Routine and Annual Appraisals will need to take into account applicable standards, the nature of operations and local circumstances to determine level of competence required for each position in terms of EHS related knowledge, experience and requirements; and<br>• EHS training needs should be identified for all employees at all levels. | OHS Management Plan |
| | Lack of available staff | Ensure that the 'people/recruitment' planning process provides for sufficient numbers of competent staff to resource the construction and operation phases. | OHS Management Plan |
| | Lack of training | • Develop a training programme based on the skills and competence needs of the workforce.<br>• Training can be peer-to-peer, self-directed, formal, practical, theoretical or online.<br>• Staff will be trained and their competency assessed. This will be a key strategy in enhancing safety and environmental protection.<br>• A register is kept that documents the training and skills of each worker. | OHS Management Plan |
| | Inadequate EHS management of temporary work sites | • Design and layout of all work sites will be reviewed from an EHS perspective.<br>• EHS team will be integrated into the planning and management process of temporary work site. | OHS Management Plan |
| **Incident management and investigation & Emergency Response** | Incident and near miss management | • Procedures will be implemented for the investigation and reporting of accidents and incidents in accordance with the EHS standards.<br>• Incidents and near misses will be investigated to identify root causes and develop corrective and preventive measures.<br>• Accidents and incidents will be classified according to their severity and frequency of occurrence.<br>• Implementation of corrective and preventive actions will be monitored.<br>• Records will be kept of all accidents and incidents as well as all reported near misses. | OHS Management Plan |
| | Remote work (distance to an advanced medical facility) | • Regular testing of medical evacuation procedures in the Emergency Response Plan.<br>• ERP to include air-based medical evacuation support for critical injuries or illnesses. | Emergency Response Plan (to be developed) |
| | Emergency | • First aid will be provided on site and people will have received first aid training accordingly.<br>• Employees will have access to fully equipped medical facilities, consistent with the number of people on site and risk profile of the activities ongoing at the time.<br>• Emergency response plans will be in place for large scale events and significant incidents. | OHS Management Plan<br><br>Emergency Response Plan (to be developed) |

| Category | Hazard / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| **Occupational health** | Pre-existing condition exacerbated by work | • Workers will be subject to pre-employment medical assessments consistent with their occupational exposure levels.<br>• Undergoing a pre-employment medical and obtaining a fitness for work certificate is a pre-condition of employment.<br>• Ongoing and periodic monitoring of pre-existing medical conditions may be required if recommended by a medical practitioner. | OHS Management Plan |
| | Working under the influence of alcohol | • Pre-employment medical assessments to include alcohol and drugs screening.<br>• Daily / Random breathalyser testing for alcohol<br>• Implementation of disciplinary action against those found to be working under the influence of alcohol<br>• Monitoring of personnel | Alcohol and Drugs Policy (to be developed) |
| | Exposure to environmental conditions e.g. extreme temperatures, inside and outside buildings, humidity levels, dehydration | • Provision of sufficient amounts of clean drinking water.<br>• Regular consumption of water (small amounts frequently), salts and sugars.<br>• Provision of shaded areas.<br>• Regular rest breaks.<br>• Provision of rehydration solution.<br>• Monitoring of personnel.<br>• Suitable lightweight clothing and hat.<br>• Sun screen if required. | OHS Management Plan |
| | Exposure to sources of Noise | • Selection of equipment.<br>• Maintenance of equipment.<br>• Training for personnel<br>• PPE. | OHS Management Plan |
| | Exposure to sources of Vibration | • Selection of equipment.<br>• Maintenance of equipment.<br>• Sufficient rest breaks and rotation of tasks.<br>• Training for personnel.<br>• PPE. | OHS Management Plan |
| | Risk of increased spread of diseases | • Identification of diseases that could pose a hazard to personnel.<br>• Hand washing stations with soap, hot water and hand sanitiser.<br>• Advice to personnel. | OHS Management Plan |
| | Increased stress associated with working environment | Stress within the workforce will be managed through the following:<br>• Advice to personnel.<br>• Support.<br>• Monitoring. | OHS Management Plan |

| Category | Hazard / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| **Safety** | Transport hazards / Vehicles and driving | Vehicle transportation, both on- and off-road, may present a hazard to worker and community safety. Accordingly, the Nova Solar and the EPC Contractor will be expected to develop and implement management systems and procedures that will provide the highest level of control over these hazards, including:<br><br>• A focus will be placed on driver competency (through training) and behaviours.<br>• Suitable vehicles for transporting personnel, materials and equipment will be provided.<br>• Assessment will be made of the transport risks associated with the delivery of materials and transport of staff.<br>• Vehicles (including tyres) will be inspected and maintained according to a schedule.<br>• 'Spotters' will be used at all times on site when heavy vehicles are performing reversing manoeuvres. | Traffic and Transport Management Plan |
| | Risk of injury from materials and equipment | • Suitable equipment which is tested and maintained.<br>• Only trained and competent personnel authorised to use the equipment.<br>• Safe Work Plans/Procedures.<br>• PPE. | OHS Management Plan<br>Work plans |
| | Risk of injury from machinery and moving parts | • Selection of suitable equipment.<br>• Guarding on all moving and rotating parts.<br>• Isolation and lock-out procedures to include the replacement of guarding prior to re-starting a machine after repair or maintenance. | OHS Management Plan |
| | Risk of musculoskeletal injury from poor manual handling or ergonomics | • Manual handling and ergonomics training.<br>• Use of engineering solutions to minimize manual load-carrying.<br>• Define the maximum load/weight to be carried per person.<br>• Work areas/stations to be set up so as to maximize ergonomic benefit. | |
| | Line of fire hazards generated by cranes and lifting equipment | • Implement a permit to work process for critical lifting operations.<br>• Planning of critical lifts.<br>• Operation of cranes and lifting devices done by competent and certified persons.<br>• Set up exclusion area during crane and lifting operations.<br>• Pre-start inspection of lifting equipment.<br>• Operator to maintain body outside of 'firing line'. | OHS Management Plan |
| | Fire or injury due to hot work (welding, grinding) | • Carry out hot work at safe distance from flammable items and substances.<br>• Implement a permit to work process for hot work.<br>• Set up of a designated area for hot work.<br>• Pre-start inspection of hot work equipment.<br>• Operator to use required PPE including fire retardant clothing and eye protection.<br>• If welding, inspect cables beforehand and ensure equipment is earthed.<br>• If using a grinder, ensure the disc is intact and the guard is in place.<br>• Fire extinguisher in close proximity.<br>• Inspect the area following completion of the work to ensure no latent risk of fire from sparks. | OHS Management Plan |

| Category | Hazard / Risk Scenario | Action / Mitigation Measure(s) | Related Project Plan/Procedure |
|---|---|---|---|
| | Exposure to electrical current | • Only competent and certified persons (i.e. electricians) permitted to carry out electrical work.<br>• Permit to work system for carrying out electrical work.<br>• Isolation and lock-out process to be implemented during electrical work (where 'live' electrical work is not required).<br>• Special procedures will be implemented for live electrical work. | OHS Management Plan |
| | Risk of slips, trips, falls | • Proper site set up with clear walkways.<br>• Housekeeping and levelling of surfaces.<br>• PPE.<br>• Site walk rounds. | OHS Management Plan |
| | Risk of contact with hazardous flora and fauna, e.g. snakes, dogs (rabies) | • Identification of flora and fauna that could pose a hazard to personnel.<br>• Advice to personnel.<br>• PPE if required. | OHS Management Plan |
| **Security** | Security incident or breach | • Site design to include physical barriers such as access gates and fence.<br>• Security team at access points to control and log entry and exit of approved persons only.<br>• Regular contact and engagement with local security forces. | Security Plan |
| | Poor selection of security personnel | • Security personnel to have received background checks prior to employment, ensuring they have no history of human rights misconduct.<br>• Security personnel to have received training in rules of engagement consistent with de-escalation; use of force proportional to the threat, in self-defence; provision of medical assistance to injured parties. | Security Plan |

Annex J

# Water and Wastewater Management Plan

# *21 ANNEX J: WATER AND WASTEWATER MANAGEMENT PLAN*

## 21.1 *INTRODUCTION*

The following document describes the Water Management Plan (WMP) that has been prepared to form part of the Environmental and Social Management Plan (ESMP) for the implementation of the proposed Nova Solar development in Katsina State, Nigeria. The plan has been developed to address the potential water resources related impacts that were identified in the ESIA that was prepared on behalf of Nova Power by Fugro Nigeria Limited, and submitted to the Federal Ministry of Environment in December 2015. Unless otherwise stated, the information used in the preparation of the plan has been taken from the baseline descriptions contained in the ESIA.

The WMP provides an outline description of the water resources situation in the project area at present (*Section 21.2*), the estimated water requirements for the project (1) (*Section 21.3*) and associated water supply arrangements (*Section 21.4*), and the water pollution control measures that will be implemented (*Section 21.5*).

## 21.2 *WATER RESOURCES CONTEXT*

### 21.2.1 *Overview*

The project site is situated close to the town of Kankiya in north-western Nigeria on a catchment divide between two upper tributaries of the Sokoto River, itself a tributary of the Niger River (Figure J21.1 and Figure J21.2). The relief of the area is typically that of gently undulating sandy drift plains with scattered ironstone outcrops that lie between the Sokoto basin to the west and the upland plains of the Hadejia River that drains eastwards towards Lake Chad.

The area lies in the sub-Saharan region of west Africa in a zone of savannah-type vegetation with a semi-arid climate. Rainfall averages about 760 mm per year and occurs chiefly in a wet season which lasts from May to October. However, periodic extreme droughts can occur in the region driven to a large extent by the effects of the El Niño/Southern Oscillation (ENSO) which typically occurs every three to five years. A prolonged dry season extending from October to April is dominated by dusty harmattan winds from the northeast. April and May are the hottest months, when temperatures occasionally reach about 37 $^{0}$C.

Most of the streams in the upper Sokoto Basin, including those in the project area, are seasonal in nature and fed by overland runoff. Only a few reaches in the lower parts the basin are perennial, being fed by groundwater discharges from the sedimentary rocks that underlie the basin. The land

(1) Please note that this WMP *excludes* consideration of water requirements for the Community Development Plan, which focuses on livelihood enhancement through agriculture.

across the basin is generally fairly fertile, with fairly extensive areas of flooded plains with deep, well drained soils of sandy loam and sandy clay texture. (1)

(1) Babsal and Co. Limited (1998). Katsina State Environmental Action Plan. Final Report.

Sokoto
Jibia Dam
Katsina
Ajiwa Dam
Site Location
Kankia
Zobe Dam


0 10 20 30
Kilometers

N

**Figure J21.1**
**Water Resources Context**

| | |
|---|---|
| SCALE: 1:800,000 | VERSION: A01 |
| SIZE: A3 | DRAWN: AZ |
| PROJECT: 0381947 | CHECKED: BD |
| DATE: 17/02/2017 | APPROVED: TS |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Ajiwa Dam

Kankia

Zobe Dam

Site boundary
Stream network
Kankia Dam catchment
Basin watershed

0 5 10 15
Kilometers

N

**Figure J21.2**
**Catchment Boundaries**

| | |
|---|---|
| SCALE: 1:300,000 | VERSION: A01 |
| SIZE: A3 | DRAWN: AZ |
| PROJECT: 0381947 | CHECKED: BD |
| DATE: 18/04/2017 | APPROVED: TS |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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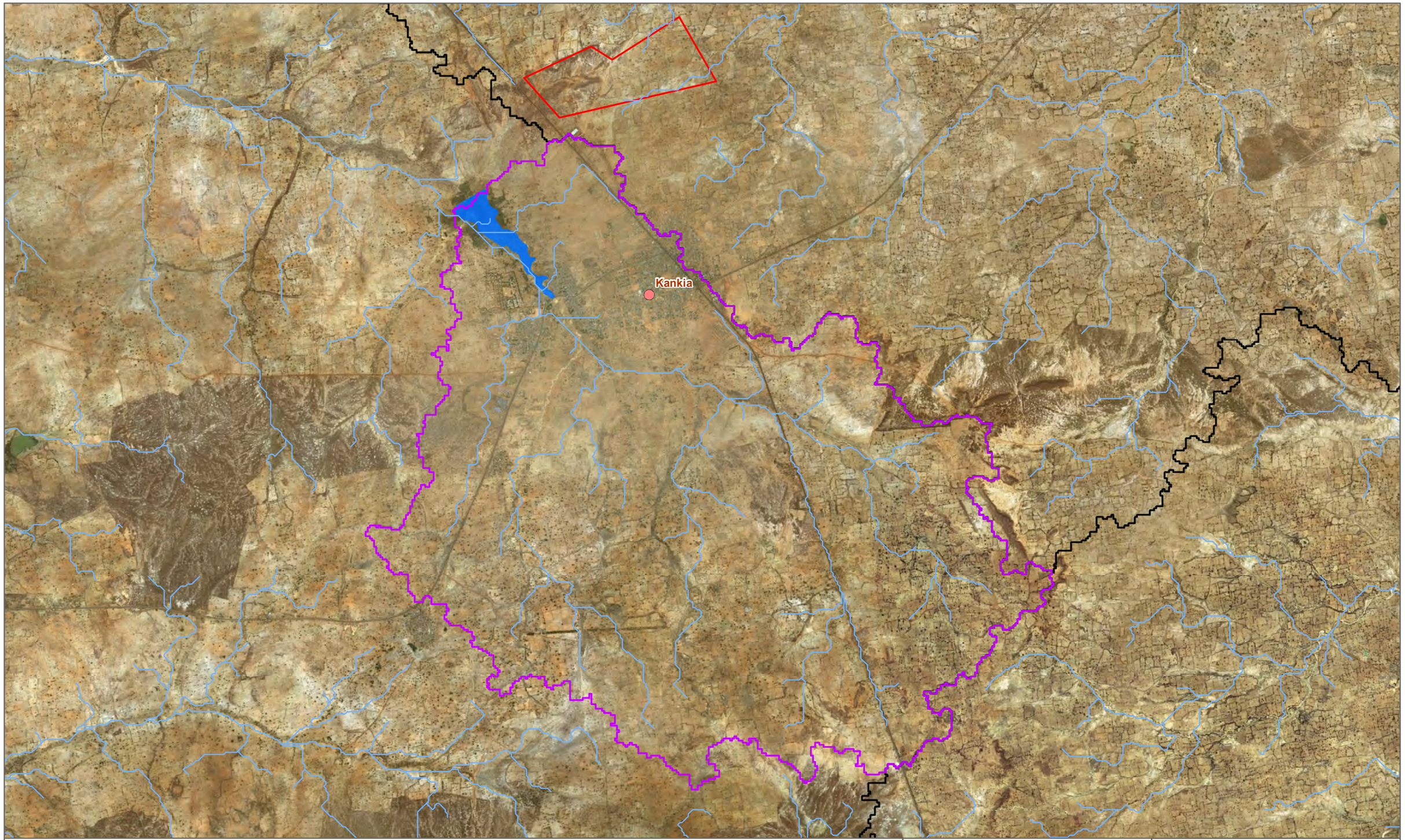
### 21.2.2 ***Hydrology***

The main surface water feature in the vicinity of the project site is the Kankiya dam, which is situated approximately 2 km away on the Ichimani stream which drains to the north through Kankiya town. The seasonal stream is a tributary of the River Gada that flows to the north-west and towards the much larger Jibia Dam some 80 km from the project site.

Kankiya dam is earth-built and was constructed in 1997 to retain surface water runoff from a small (approximately 50 $km^2$) catchment area for use in agriculture (Figure J21.3). The dam generally fills during the wet season and dries up fairly early in the dry season due to evaporation and percolation, after which local communities continue to use the resource by digging shallow access wells in the lake bed as the water table recedes below the surface. Analysis of publically available land elevation and satellite imagery indicates that the dam's volume at full supply level is approximately 890,000 $m^3$.




Site boundary
Stream network
Kankia Dam reservoir
Kankia Dam catchment
Basin watershed

0 0.5 1 1.5 2
Kilometers

N

**Figure J21.3**
**Kankia Dam Catchment**

| | |
|---|---|
| SCALE: 1:50,000 | VERSION: A01 |
| SIZE: A3 | DRAWN: AZ |
| PROJECT: 0381947 | CHECKED: BD |
| DATE: 18/04/2017 | APPROVED: TS |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Path: F:\GIS_DATA\AzuraNovaSolar\MAPS\Figure3_KankiaDamCatchment_A01.mxd

Kankiya dam failed during heavy floods in August 2013 (Plate 1) reportedly due to poor construction and maintenance practices, (1) but from recent (December 2016) Google Earth imagery would appear to have now been restored to its full capacity. It is understood that this has been achieved through collaboration between the Kankiya Irrigation Farmers Union and the local National Assembly.

***Plate J21.1 Kankiya Dam Collapse, 2013 (Suleiman, 2013)***

The road adjacent to the project site forms the catchment divide between the Ichimani stream and Kwartalle stream that runs in a north-east direction through the site itself and towards the Ajiwa Dam that lies some 40 km to the north (*see* Figure J21.2*).*

### 21.2.3 *Hydrogeology*

The geology of the project areas is understood to be typical of the upper Sokoto basin, consisting of Cretaceous and Tertiary semi-consolidated deposits (laterite clay, coarse sands and gravels) that dip gently in a northwest direction and overly older pre-Cretaceous crystalline basement rocks.

Groundwater in exploitable quantities sufficient for rural water supply occurs in the upper Sokoto basin in two forms: the river alluvium which is irregularly distributed, and the weathered and fractured zones within the basement rocks. Information on groundwater availability in the immediate project area is very limited, although anecdotally it is understood that fairly reliable year-round supplies can be obtained from boreholes that are constructed below depths of around 30 metres. There are approximately 10 existing boreholes in the project area (Figure J21.4) although there are no data on their depths or yields.

From some basic calculations of effective rainfall (see Box J21.1), it appears unlikely that there is any recharge to the lower aquifer occurring locally in the project area, and so if deep groundwater reserves are present (this has not

(1) Suleiman Iguda Ladan. Water Resource Management: Dam Collapse and its Implications on Agricultural production in Kankiya, Northern Nigeria. International Journal of Sciences, Volume 4, June 2015

been established) then recharge must be taking place in zones of higher rainfall (and lower potential evaporation) further to the south. It is also possible that the existing wells and boreholes are exploiting soil moisture reserves in the shallower soil layers overlaying the weathered basement rock.

Rabbit Farm Kauyen Maina
Water Well Kauyen Maina
Gridning Place (Mill) Kauyen Maina
Hand Pump in Kauyen Maina
Budai Water Well
Kauyen Maina Primary School
Kauyen Maina Health Centre
Fanga Cemetry
Fanga Water Well
Kankiya Metal Works
GACHI Village Head Place
HAKIMI KANKIYA Palace
Kankia

Site boundary
Well
Borehole
Stream network
Kankia Dam catchment
Basin watershed

0 250 500 750 1,000
Meters

N

**Figure J21.4**
**Borehole and Water Well Locations**

| | |
|---|---|
| SCALE: 1:25,000 | VERSION: A01 |
| SIZE: A3 | DRAWN: AZ |
| PROJECT: 0381947 | CHECKED: BD |
| DATE: 18/04/2017 | APPROVED: TS |

ERM

Nova Solar

PROJECTION: WGS 1984 UTM Zone 32N

SOURCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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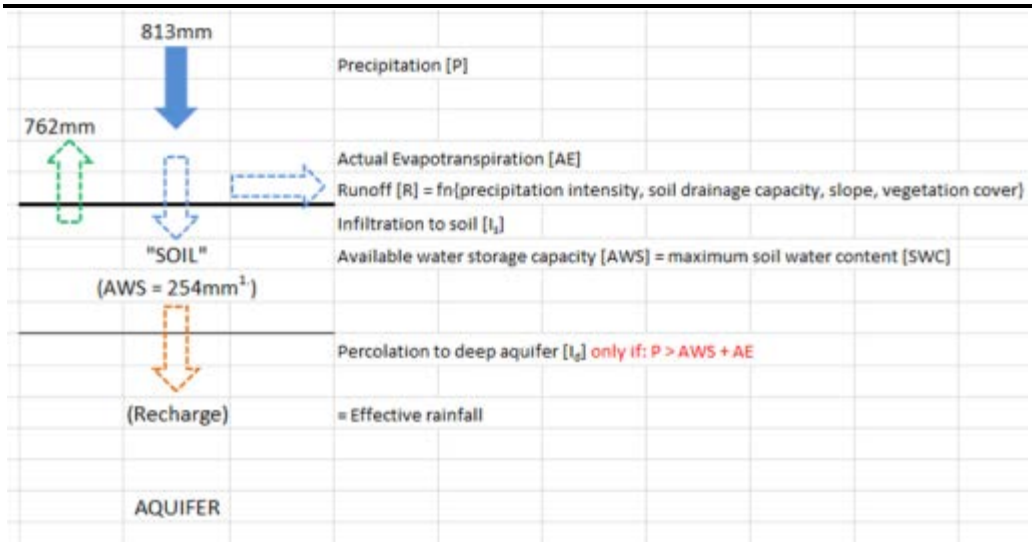
Site specific hydrogeological tests would be required to establish the potential sustainable groundwater yields in the project area.

### *Box J21.1 Calculation of Estimated Effective Rainfall (Recharge)*




Data extracted from following references:


References:

1. Ayoade J.O., Department of Geography, University of Ibadan, Nigeria,"Water Resources and Their Development in Nigeria", 15 September 1975
2. Ogole E.O., Department of Physics, Federal University of Technology, Akure, Nigeria,"Regional trend analysis of pan evaporation in Nigeria (1970 to 2000)
3. 125MW$_p$ Katsina Solar PV Power Plant - ESIA: Chapter 4 Description of Existing Environment
4. FEWS NET/USGS, "Visualising trends in 1981-2015 rainfall in Nigeria, June 2016


## 21.2.4 *Water Supply*

As described above, the main source of agricultural water supply in the area is from the Kankiya dam, which is understood to be used by around 500 farms and gardens that use the water to irrigate crops such as maize, rice, beans, peppers, tomatoes and lettuces (Suleiman, 2015). The dam is also used for livestock watering and fishing, although it understood that the latter use is not as extensive as it was prior to the dam collapse in 2013.

According to the aforementioned ESIA (Fugro, 2015), domestic and potable water for about 75% of the population of Kankiya LGA (currently around 200,000 persons) is obtained from shallow wells, both formally and informally constructed. As described above, many of these wells in the vicinity of the project area are recharged by infiltration from the Kankiya dam reservoir during the wet season. The water quality from these open wells is generally very poor and unsuitable for drinking without treatment, which does not take place. Again according to the ESIA, about 5% of the local population obtain their water directly from private or public wells or boreholes (see Figure J21.4), and the remaining 20% (an estimated 30,000 people) reportedly receive their water from the Kankiya town supply network.

The Kankiya Town piped supply is designed to provide water from three storage facilities (elevated tanks) that are fed from municipal boreholes. The water undergoes basic treatment (filtration) that was installed in 2014. The storage tanks are also used to supply local water-carriers, who then on-sell the water (in 50 litre jerry cans) to local houses and businesses that are not

supplied through the pipeline. In addition, the Local Government and Local Educational Authority each have 33,000 litre water tankers that are used to provide water at the driest times of year. At least two Federal Government institutions in Kankiya including the Girls Secondary School in Kankiya Town have their own boreholes and water storage systems.

The Kankiya water treatment plant and two of the storage reservoirs are still uncompleted. They are part of a project to supply water from the Zobe Dam (see Figure J21.2) to Dutsin-Ma, Kafin Soli, Kankiya, Charanchi and Katsina. The structures and pipeline are at advanced stages. However, the contract from the Federal Government of Nigeria, implemented by Reynolds Construction Company, has either been suspended or cancelled for some time. The State Government has expressed an interest to take over the project and sources indicate that they are in discussions to move ahead with completion. It should be noted that all water supply projects are hamstrung by reliability issues with power supply, compounded by problems with revenue collection from both private and public users. As such, Kankiya Town's water supply system is currently in debt to the local electricity distributor and has been disconnected as a result, and is now relying on diesel generators to run the system.

## 21.3 *PROJECT WATER REQUIREMENTS*

The estimated potable and technical water requirements for the Nova Solar development during construction and operation are summarised in *Table 1*. As shown in Figure J21.5, the majority of this water is required for dust suppression (during construction only) and panel washing purposes (if needed), and the water requirements will therefore reduce as shown during the wet season months when rainfall will offset some of this demand.

These water requirements are estimated based upon the project as currently designed, and are assuming that a low pressure, wet cleaning system will be used to clean the panels, utilising water trucks and manual cleaning hoses.

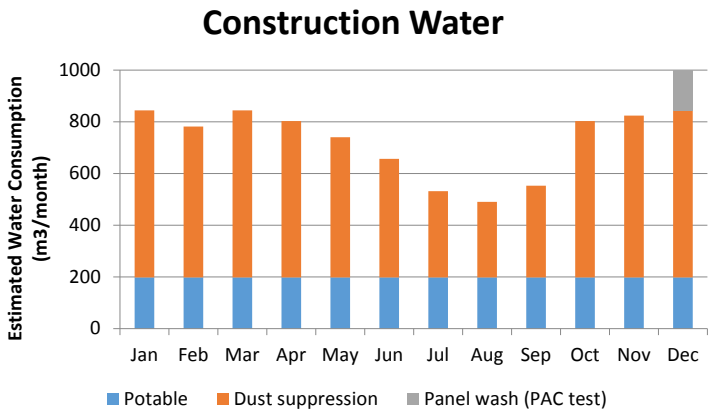
However, as described in the following section, the operational project water demands may reduce significantly in the event that dry panel cleaning methods are successfully tested and deployed at the site. These methods are currently in development in arid areas such as the Middle East and involve the use of a combination of compressed air and microfiber materials to clean the panels, in some cases using remotely controlled mechanical devices.

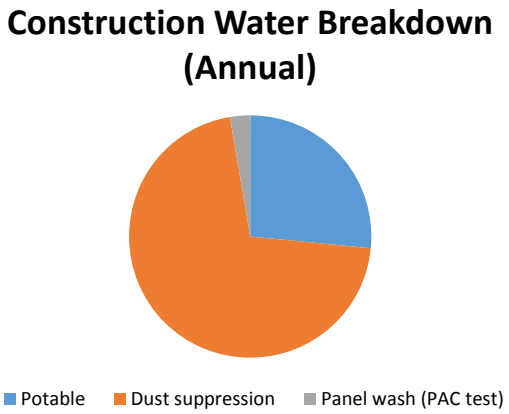
In addition, the construction water demands may also be significantly reduced in the event that it proves technically and economically feasible to use chemical dust suppressants (surfactants and binding agents) to minimise water use during the construction process, and that the appropriate licenses can be obtained for this from the Nigerian authorities.

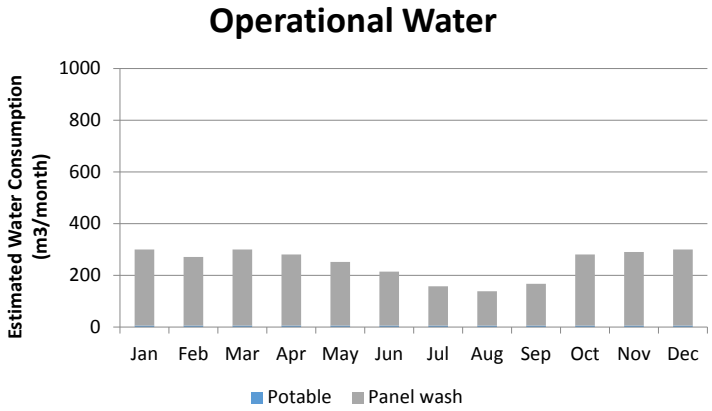
***Table J21.1 Estimated Project Water Requirements (m3)***

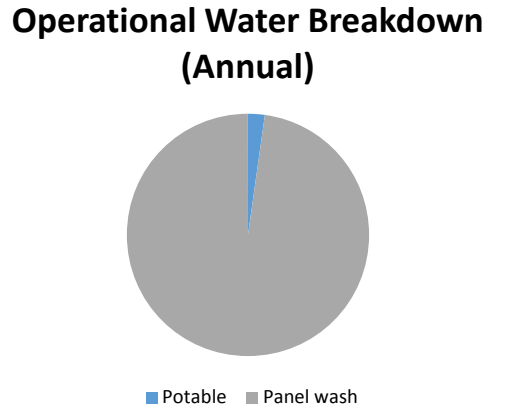
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average rainfall (mm) | 0 | 0 | 0 | 19 | 61 | 111 | 201 | 215 | 101 | 14 | 0 | 0 | 722 |
| Average rainfall days | 0 | 0 | 0 | 1 | 5 | 8 | 15 | 17 | 13 | 2 | 0 | 0 | 61 |
| **Construction supply:** | | | | | | | | | | | | | |
| Potable | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 198 | 2,376 |
| Dust suppression | 646 | 584 | 646 | 604 | 542 | 459 | 333 | 292 | 354 | 604 | 625 | 646 | 6,336 |
| Panel wash (PAC test) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 240 | 240 |
| **Total construction volume (m3)** | 844 | 782 | 844 | 802 | 740 | 657 | 531 | 490 | 552 | 802 | 823 | 1,084 | 8,952 |
| **Operational supply:** | | | | | | | | | | | | | |
| Potable | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 66 |
| Panel wash | 294 | 265 | 294 | 275 | 246 | 208 | 152 | 133 | 161 | 275 | 284 | 294 | 2,880 |
| **Total operation volume (m3)** | 299 | 271 | 299 | 280 | 252 | 214 | 157 | 138 | 167 | 280 | 290 | 299 | 2,946 |

***Figure J21.5 Water Use Breakdown***



## 21.4 *PROPOSED WATER SUPPLY ARRANGEMENTS*

There are four potential sources for the project's water supply: Kankiya dam, the Kankiya town water supply, private boreholes and a tankered supply from further afield (eg Katsina, or one of the large reservoirs shown in Figure J21.1). However, in choosing the final supply mix the following factors will be taken into account.

- The Kankiya dam is extremely important to the local (irrigated) agricultural economy (as evidenced by the reported downturn in this economy following the dam collapse in 2013) as well as for informal community water supply in the absence of a reliable municipal system. Whilst the project requirement during the peak construction period is only a relatively small fraction (less than 1%) of the typical volume of water in the dam at the end of wet season; nevertheless, it would likely displace other users since it is understood that the resource is fully exploited at present. Moreover, the quality of the water would not be good enough for potable supply or panel washing without significant treatment costs being incurred.

- From available (largely anecdotal) evidence the Kankiya town supply is understood to be in need of maintenance and moderate repairs to ensure reliability of supply. At the time of writing, the Local Government has requested that the District Council set up a committee to come up with community plans to ensure the solvency of the town's water system. This unreliability, particularly in the short term, would rule out the use of the town supply for construction purposes, and in the longer term it is also likely to be cost-prohibitive to connect to the town's water system for operational supply purposes as it is more than 3 km from the site and there appear to be groundwater sources much closer to the site that can be exploited.

- Notwithstanding the above, it is possible that local groundwater reserves will be seasonably unreliable since the local borehole supplies are most likely reliant on soil moisture reserves in the shallower soil layers overlaying the weathered basement rock. These reserves may be quite sensitive to fluctuations in annual patterns of rainfall and use by others, and in particular to the periodic droughts that occur in the area as described earlier.

Taking consideration of the above, the following strategy is proposed for managing the water requirements of the project.

1) Exploration and (if feasible) development of an on-site borehole field to supply the project's full construction water requirements, and thereafter the smaller water requirements during operation. Any residual borehole capacity following construction would be transferred for use in perpetuity by the local community as part of the wider Community Development Plan.

2) The above borehole field would include a dedicated borehole of approximately 10,000 litres/day (300 $m^3$/month) capacity to supply potable

water for the construction workforce. This borehole will thereafter be used to supply the smaller operational workforce and panel washing requirements from year 2 onwards. The water would be treated (as necessary) to meet Nigerian potable water supply standards. Upon project completion, this borehole would be made available to the Kankiya town authorities for integration within their municipal supply system.

3) Detailed hydrogeological investigations will be undertaken to ensure that any borehole supplies that are developed do not impact on existing boreholes or shallow wells in the area, e.g. through identification and monitoring of adjacent boreholes and wells (within at least a 500 m radius) during drilling and pump testing.

4) In the event that hydrogeological investigations do not identify sufficient local groundwater reserves to meet the full construction water requirement, consultation will be undertaken with local authorities to supply the dust suppression requirements for construction via water tankers from one of the large reservoirs that exist in the area. The most likely option would be the reservoir that lies just to the north Kandandani, approximately 25 km along the main road north-west from Katsina (for reasons discussed earlier, Kankiya Dam is not suitable due to its importance for local irrigated agriculture and will therefore be avoided). It is estimated that approximately one storage tanker (30-50 m3 capacity) per day would be required during the peak dry season.

5) As a priority, and in recognition of the potential unreliability in groundwater supplies and general water scarcity in the area, investigate the (technical and economic) feasibility of using chemical dust suppressants during construction and/or dry panel cleaning methods during operation to further minimise the volumes of water used by the project throughout its lifetime. As and when such technologies are introduced, any surplus water resources developed under 1 and 2 above that are no longer required would be transferred for use by local communities under the wider Community Development Plan.

This strategy will be developed in further detail during the subsequent planning phases of the project, and in consultation and agreement with the local authorities and communities as described.

## 21.5 *WATER POLLUTION CONTROL MEASURES*

All construction related water quality risks will be minimised by the effective implementation of standard requirements for all construction within or in close proximity to water bodies and/or water supply wells. These are summarised in *Box 2*, and will be enforced through standard terms and conditions for contractors.

### *Box J21.2 Environmental Guidelines for Construction Activities Close to Water*

- Access/disturbance to river or stream banks will be kept to an absolute minimum, where possible establishing a buffer zone and leaving existing vegetation in place.
- Exposed surfaces will be kept to a minimum, and re-vegetated and / or stabilised immediately following works.
- Suitable onsite sediment and erosion control measures will be established prior to construction and until site is stabilised afterwards. These may include cut-off drains (to divert surface runoff from exposed soils or construction areas), silt traps to manage and retain sediments on site, and heavy duty silt fencing between the construction site and any nearby surface body water.
- All sediment and erosion control measures will be inspected and maintained on a regular basis, including clearance of channels or silt traps during the wet season.
- Appropriately lined and bunded storage areas will be used for all fuel, lubricant or other chemical stockpiles, including vehicle fuelling stations, situated at a safe distance (preferably more than 50m) from any surface water features or water supply wells, and away from river floodplains during peak flood season.
- All plant and equipment will be regularly checked and maintained to minimise the risk of fuel or lubricant leakages.
- All spent solvents, liquid wastes and spent fuels / lubricants will be stored in lined and bunded areas, and transported off-site for safe disposal.
- No vehicle fuelling, washing or maintenance (for project vehicles) will take place within a distance of 50 m from any surface water feature, drainage channel or village water supply well.

In addition, site management staff will be trained and equipped to respond to pollution incidents, including the isolation and clean-up of fuel and lubricant spills. An Emergency Prevention, Preparedness and Response Plan will be developed and implemented detailing how the Project will minimise the likelihood and consequences of accidental spills. This will include:

- design specifications and operating procedures to reduce the probability and size of spills;
- spill detection;
- availability of spill kits;
- spill containment and clean-up;
- training of staff, especially drivers; and
- testing and emergency drills.

All spills that do occur will be fully cleaned up and sites remediated to enable their continued use.

Finally, wastewater treatment facilities will be established for all locations where employees will regularly work and where applicable will be designed and operated to meet the effluent discharge criteria defined in *Table 2*. In the event that septic tanks are used, these will be located in accordance with Schedule 10 of the National Environmental (Sanitation and Wastes Controls) Regulations (2009) as follows:

- At least 15 m from any potable water supply, well or surface water feature;
- At least 2 m from any footing or foundation wall;
- At least 4 m from any property line or boundary wall; and
- In a place where they can be properly inspected.

### *Table J21.2 Applicable Wastewater Effluent Standards*

| Parameters (mg/l unless shown) | National Environmental (Sanitation and Wastes Controls) Regulations 2009 | International Guidelines (for comparison) |
|---|---|---|
| | Schedule XI – Disposal of Industrial Effluents | IFC General EHS Guidelines (Treated Effluent) |
| pH | 5.5-9.0 | 6-9 |
| $BOD_5$ at $20^0C$ | 30 (500 for land application) | 30 |
| COD | 250 | 125 |
| Total Suspended Solids | 100 | 50 |
| Total Dissolved Solids | 2100 | |
| Chloride (as CL) | (600 for land application) | |
| Fluoride | 2.0 | |
| Sulphate (as $SO_42$) | (1000 for land application) | |
| Sulphide (as $S^2$) | 2.0 | |
| Cyanide (as CN-) | 0.2 | |
| Ammonia (as N) | 50 (0 for land application) | |
| Total Nitrogen | - | 10 |
| Total Phosphorus | - | 2.0 |
| Oil and grease | - | 10 |
| Arsenic (as As) | 0.2 | |
| Phenolic compounds (as phenol) | 1.0 | |
| Cadmium, Cd | 2.0 | |
| Chromium | 0.1 | |
| Copper | 3.0 | |
| Lead | 0.1 | |
| Mercury | 0.01 | |
| Nickel | 3.0 | |
| Selenium | 0.05 | |
| Zinc | 5 | |
| Boron (as B) | (2 for land application) | |
| Pesticides (total) | Absent | |
| Alpha emitters, uc/ml | $10^{-7}$ | |
| Beta emitters, uc/ml | $10^{-6}$ | |
| Coliforms (MPN/100ml) | - | 400 |