



**Project design document form
(Version 11.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title of the project activity	Nova Power Solar Project in Korhogo, Cote d'Ivoire
Scale of the project activity	<input checked="" type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale
Version number of the PDD	2.2
Completion date of the PDD	20/06/2019
Project participants	Nova Power, Korhogo Solaire, Côte d'Ivoire Energies (CI-ENERGIES)
Host Party	Côte d'Ivoire
Applied methodologies and standardized baselines	Methodology: ACM0002 - Grid-connected electricity generation from renewable sources - Version 19.0 Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0)
Sectoral scopes	Sectoral Scope : 1 - Energy industries (renewable - / non-renewable sources)
Estimated amount of annual average GHG emission reductions	22,679 tCO ₂ e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The “Nova Power Solar Project in Korhogo, Cote d'Ivoire” involves the construction and operation of large scale solar photovoltaic (PV) plant of 24.96 MWp. Korhogo Solaire, an company registered in Côte d'Ivoire is the owner SPV (Special Purpose Vehicle), Nova Power, an Moroccan company is the project developer. The project is located 1.5 km from Binguebougou in department Korhogo, region Savanes in Côte d'Ivoire. The solar power plant will be equipped with 96,000 modules JKM325PP of 325W each and 20 inverters EFASOLAR 1000. It will be connected via 90 kV evacuation line to national grid. The project boundary included the generation site and the electricity network to which the project will be connected.

The project is developed under the sectoral Scope 1 - Energy industries (renewable - / non-renewable sources). The methodology ACM0002 (Version 19.0) is applied since its purpose is the installation of a new grid-connected renewable power plant (Greenfield). In the baseline, the “electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants”. The average power generation of the project for the period of 7 years is estimated at 40,428 MWh per year, resulting in emissions reductions of up to 22,679 tCO_{2e} per year for a fixed crediting period totalling 158,756 tCO_{2e} over 7 years.

To date, electricity in Côte d'Ivoire is mainly generated from fossil fuels (natural gas and fuel oil) which leads to considerable greenhouse gas emissions. The project activity will therefore substitute fossil-fuel intensive grid-electricity and cut down GHG emissions by an estimated annual reduction of 22,679 tCO_{2e}

In 2005, the Renewable Energy development policy was established. The Renewable Energy Directorate has set a Electricity Code adopted by the Assembly in March 2014. This should promote, the development of the Renewable Energy sub-sector in Côte d'Ivoire. The target was at 15% of renewable energy generation by 2020^{Source/}.

The project is expected to contribute to sustainable development of Côte d'Ivoire by supporting the country in meeting its energy demand and increasing the reliability of supply in a cost-effective and environment-friendly manner.

The implementation of the project activity contributes to sustainable development in Côte d'Ivoire. The project will:

- Reduce the dependence from imported energy sources, above all natural gas and fuel oil.
- Improve energy supply, at competitive costs.
- Provide employment to local population mostly during construction,

The proposed CDM project activity is not a Component Project Activity (CPA) that has been excluded from a registered CDM Programme of Activities (PoA) as a result of erroneous inclusion of CPAs

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A.2. Location of project activity

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The project is located in Côte d'Ivoire, region Savanes, department Korhogo, 1.5 km from Binguebougou village. The GPS coordinates of the site for the project are 9° 31' 58" N, 5° 49' 42" W.



Location of project activity.

A.3. Technologies/measures

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The project will be a new utility scale solar photovoltaic power generation facility with an installed capacity of 24.96 MW that is connected to the high voltage electricity distribution network. The PV power plant will be equipped with 96,000 modules JKM325PP of 325W each and 20 inverters EFASOLAR 1000, which will convert direct current (DC) into alternating current (AC) electricity. The inverters will be connected to transformers from where the electricity will be connected to 90 kV evacuation line. The power plant will be connected to national grid.

Electrical meters will be installed at the interconnection points to measure the net energy supplied to the grid. All installed equipment will be new, and the project is "greenfield". No facility existent on the proposed site prior to installation of the PV plant.

The solar panels specifications are detailed below:

Parameter	Unit	Value
Solar module		
Manufacturer	-	JinKo
Type	-	JKM325PP
Unit Nominal Power	Wp	325
Number of modules (PV Cells)	-	960 000
Estimated annual electricity in the 1 st year	GWh/year	41.383
Inverter		
Manufacturer	-	EFACEC
Model	-	EFASOLAR 1000
Number of inverters	-	20
Maximum power	kW	1400kW

The warranty period of the modules is 25 years, which is therefore established as the effective lifetime. The JinKo modules are also expected to operate at 16.75% maximum efficiency.

The baseline scenario is a continuation of current practice, which is identical to the scenario existing prior to the implementation of the PV Plant.

The technologies and measures are not available in Côte d'Ivoire and will be imported. A representative energy flow and balance of the system and equipment are presented below. The JinKo JKM325 PV modules with a maximum efficiency of 16.75%, the plant is expected to generate 41.48 GWh in year 1.

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Côte d'Ivoire (host Party)	Nova Power (Private Entity)	No
Côte d'Ivoire (host Party)	Korhogo Solaire (Private Entity)	No
Côte d'Ivoire (host Party)	Côte d'Ivoire Energies (CI-ENERGIES) (Public Entity)	No

A.5. Public funding of project activity

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The project does not receive public funding from Parties included in Annex I to the Convention.

A.6. History of project activity

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The PV project is neither registered as a CDM project activity nor included in another registered CDM PoA. It is not a project activity that has been deregistered. The Project Participant declares that the project has not been excluded from a registered CDM PoA, nor a registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) exists in the same geographical location as the proposed project.

A.7. Debundling

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Not applicable.

SECTION B. Application of selected methodologies and standardized baselines

B.1. Reference to methodologies and standardized baselines

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The selected methodology for this project is ACM0002: Grid-connected electricity generation from renewable sources - Version 19.0).

The project also uses Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0), which is valid from 27/02/2017 to 26/02/2020 and includes host country.

B.2. Applicability of methodologies and standardized baselines

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The choice of the ACM0002 methodology is accurate since the proposed project activity respects all the applicability conditions required.

ACM0002 version 19 applicability conditions	Project activity applicability
This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant;	The project activity is a greenfield solar photovoltaic power plant substituting

ACM0002 version 19 applicability conditions	Project activity applicability
b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	electricity produced on the grid by renewable energy.
The project activity may include renewable energy power plant/unit of one of the following types: - hydro power plant/unit (with or without reservoir), - wind power plant/unit, - geothermal power plant/unit, - PV solar plant/unit, - wave power plant/unit or - tidal power plant/unit;	The project activity is the construction and operation of a solar photovoltaic power plant and hence the methodology is applicable.
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The project activity does not involve any capacity additions, retrofits, rehabilitations or replacements.
In case of hydro power plants, one of the following conditions shall apply: a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3) of the methodology ACM0002, is greater than 4 W/m ² ; or c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3) of the methodology ACM0002, is greater than 4 W/m ² ; or d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3) of the methodology ACM0002, is lower than or equal to 4 W/m ² , all of the following conditions shall apply: - The power density calculated using the total installed capacity of the integrated project, as per equation (4) of the methodology ACM0002, is greater than 4 W/m ² ; - Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; - Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m ² shall be: a.) Lower than or equal to 15 MW; and b.) Less than 10 per cent of the total installed capacity of integrated hydro power project.	Not applicable as the proposed project activity involves a solar photovoltaic power plant.
In the case of integrated hydro power projects, project proponent shall: - Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or - Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM	Not applicable as the proposed project activity involves a solar photovoltaic power plant.

ACM0002 version 19 applicability conditions	Project activity applicability
project activity.	
The methodology is not applicable to: <ul style="list-style-type: none"> - Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; - Biomass fired power plants/units. 	The proposed project activity neither involves <ul style="list-style-type: none"> - switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site, nor - biomass fired power plants/units.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.	The project activity does not involve capacity additions, retrofits, rehabilitations or replacements.
In addition, the applicability conditions included in the tools referred to above apply.	Applicability conditions of the applied tool are justified.

Table 1: Compliance of the project activity regarding ACM0002 applicability conditions.

From the above it is concluded that the project activity meets all the applicability conditions of the methodology ACM0002 version 19.0 “Grid connected electricity generation from renewable sources”.

The project activity also meets the following applicability conditions of “Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0).

No	Applicability condition	Applicability to this project activity
1	The project activity is implemented in Benin, Burkina Faso, Côte d’Ivoire, Ghana, Mali, Niger, Nigeria, Senegal, and Togo, members of WAPP and is connected to the project electricity system;	The project is a greenfield grid connected power generation in Côte d’Ivoire. Hence the tool is applicable.
2	The CDM approved methodology that is applied to the project activity requires the determination of CO ₂ emission factor(s) through the application of the grid tool;	The applied ACM0002 requires the calculation of emission factors using applicability version of “Tool to calculate the emission factor for an electricity system”. Hence the tool is applicable.
3	The project activity uses ex ante option for the grid emission factor as indicated in the tool i.e. no monitoring and recalculation of the emissions factor during the crediting period is required.	The project used the ex-ante option. No recalculation of GEF during the crediting period of the project is required.

Table 2: Compliance of the project activity project activity regarding applicability conditions of Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0).

Other tools mentioned in the methodology are not applicable to this project activity.

B.3. Project boundary, sources and greenhouse gases (GHGs)

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Source		GHGs	Included	Justification/Explanation	
Baseline scenario	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂	Yes	Main emission source	
		CH ₄	No	Minor emission source	
		N ₂ O	No	Minor emission source	
Project scenario	For geothermal power plants, (fugitive) emissions of CH ₄ and CO ₂ from non-condensable gases contained in geothermal steam	CO ₂	No	Main emission source (Only for geothermal)	
		CH ₄	No	Minor emission source (Only for geothermal)	
		N ₂ O	No	Minor emission source	
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydrocarbon/ refrigerant	No	Main emission source (Only for geothermal)	
		CO ₂ emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO ₂	No	Main emission source (Only for solar thermal power plants and geothermal power plants)
			CH ₄	No	Minor emission source
	N ₂ O		No	Minor emission source	
	For hydro power plants, emissions of CH ₄ from the reservoir.	CO ₂	No	Minor emission source	
		CH ₄	No	Main emission source (Only for hydro)	
		N ₂ O	No	Minor emission source	

B.4. Establishment and description of baseline scenario

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According to ACM0002 Version 19.0 and since the project activity is the installation of a new grid-connected renewable power plant (Greenfield) the baseline scenario is the following:

“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system.”

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as described in section B.6.1.

B.5. Demonstration of additionality

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The project demonstrates additionality in line with simplified procedure to demonstrate additionality in line with ACM0002 Version 19.0.

The project is a grid connected renewable electricity generation technology solar photovoltaic technologies.

The project is a first of its kind in Côte d'Ivoire; fulfil one of the following conditions:

- (a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent;
or
(b) The total installed capacity of the technology in the host country is less than or equal to 50 MW.

There are no PV plants running in Côte d'Ivoire¹. Therefore it was concluded that there is less than the threshold of 50MW of solar PV connected to the grid in Côte d'Ivoire.
Therefore the project meets the additionality criteria as specified and is additional.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

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According to the approved methodology ACM0002, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (t CO₂e)

BE_y = Baseline emissions in year y (t CO₂)

PE_y = Project emissions in year y (t CO₂e)

Project emissions

According to the approved methodology ACM0002, project emissions are calculated as follows:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \quad \text{Equation (1)}$$

Where:

PE_y = Project emissions in year y (t CO₂e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (t CO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)

$PE_{FF,y}$, $PE_{GP,y}$ and $PE_{HP,y}$ are equal to 0 as the project is an installation of a PV solar plant with no auxiliary fossil fuel consumption.

Leakage emissions

No leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Baseline emissions

The baseline emissions will be calculated as per equation 7 of the methodology as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (tCO₂/yr)

- EG_{PJ,y}** = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the PROJECT in year y (MWh/yr)
- EF_{grid,CM,y}** = Combined margin CO₂ emission factor for grid connected power generation in year y (tCO₂/MWh)

EG_{PJ,y} for green-field renewable energy power plants shall be calculated as per equation 8 of the methodology as follows:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

- EG_{PJ,y}** = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the PROJECT in year y (MWh/yr)
- EG_{facility,y}** = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

EF_{grid,CM,y} from the Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0), value of 0.561 tCO₂/MWh for solar projects.

B.6.2. Data and parameters fixed ex ante

Data/Parameter	EF_{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	Grid emissions factor for West African Power Pool
Source of data	Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0).
Value(s) applied	0.561 tCO ₂ /MWh
Choice of data or measurement methods and procedures	Not applicable
Purpose of data	Calculation of baseline emissions.
Additional comment	Not applicable

B.6.3. Ex ante calculation of emission reductions

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The formula for calculating emission reductions is as follows:

$$ER_y = BE_y - PE_y$$

Where:

- ER_y** = Emission reductions in year y (tCO₂/yr)
- BE_y** = Baseline emissions in year y (tCO₂/yr)
- PE_y** = Project emissions in year y (tCO₂/yr)

Project emissions

Utility scale solar PV projects do not produce any emissions, therefore PE_y = 0.

As there are no project emissions for a renewable energy project, then the calculation of emission reductions is simply going to be the baseline emissions.

Baseline Emissions

In order to estimate the baseline emissions, the CME has chosen to fix the value for $EF_{grid,CM,y}$ on an ex-ante basis as 0.561 tCO₂/MWh in accordance with the Standardized Baseline ASB0034: Grid emission factor for West African Power Pool (version 01.0).

The estimated annual average electricity to be generated by the PROJECT is 40,428 MWh per year. This value is taken from project “Business Plan” and based on the Yield Report.

Therefore the baseline shall be 40,428 MWh x 0.561, which gives us a baseline of **22,679 tCO_{2e}**.

Estimation of emission reductions

As mentioned earlier, emission reductions are to be determined using the following equation:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂/yr)

BE_y = Baseline emissions in year *one* (tCO₂/yr) = **22,679 tCO₂**

PE_y = Project emissions in year y (tCO₂/yr) = **0 tCO₂**

Therefore, as we have already established that the emission reductions shall be the same as the baseline, the annual estimated emission reductions are **22,678 tCO_{2e}**

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions (t CO _{2e})	Project emissions (t CO _{2e})	Leakage (t CO _{2e})	Emission reductions (t CO _{2e})
Year 1	23 524	0	0	23 524
Year 2	22 936	0	0	22 936
Year 3	22 776	0	0	22 776
Year 4	22 616	0	0	22 616
Year 5	22 458	0	0	22 458
Year 6	22 301	0	0	22 301
Year 7	22 145	0	0	22 145
Total	158 756	0	0	158 756
Total number of crediting years	7			
Annual average over the crediting period	22 679	0	0	22 679

B.7. Monitoring plan**B.7.1. Data and parameters to be monitored**

(Copy this table for each piece of data or parameter.)

Data / Parameter	EG _{facility,y}																			
Unit	MWh/yr																			
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y																			
Source of data	Electricity meter(s) at the delivery point of connection.																			
Value(s) applied	<table border="1"> <thead> <tr> <th>Year</th> <th>Net power generation (MWh)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>41 934</td> </tr> <tr> <td>2</td> <td>40 886</td> </tr> <tr> <td>3</td> <td>40 599</td> </tr> <tr> <td>4</td> <td>40 315</td> </tr> <tr> <td>5</td> <td>40 033</td> </tr> <tr> <td>6</td> <td>39 753</td> </tr> <tr> <td>7</td> <td>39 475</td> </tr> <tr> <td>Total</td> <td>282 995</td> </tr> </tbody> </table>		Year	Net power generation (MWh)	1	41 934	2	40 886	3	40 599	4	40 315	5	40 033	6	39 753	7	39 475	Total	282 995
Year	Net power generation (MWh)																			
1	41 934																			
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3	40 599																			
4	40 315																			
5	40 033																			
6	39 753																			
7	39 475																			
Total	282 995																			
Measurement methods and procedures	<p>Two electricity meters will be installed at substation located at the point of connection.</p> <p>Import and export of electricity will be monitored. The net electricity generation will be calculated as a difference between export and import.</p> <p>Meters will be of 0.2 accuracy class as per Grid Code of Côte d'Ivoire.</p> <p>A SCADA system allows the whole PV facilities to be manually or automatically controlled and monitored locally or remotely.</p> <p>Technical/Engineering/Maintenance Department is responsible for measurements.</p>																			
Monitoring frequency	Continuous measurement and at least monthly recording.																			
QA/QC procedures	<p>Electricity outputs will be electronically stored and reading recorded on a record sheet by the Technical/Engineering/ Maintenance Department under the Plant Manager's authority.</p> <p>Cross check of measurement results with records for sold electricity.</p> <p>A test and calibration of the meters will be carried out in line with manufacturer's specification. In line with PPA the calibration shall be done by accredited laboratory in line with industry practice.</p>																			
Purpose of data	Calculation of baseline emissions																			
Additional comment	-																			

B.7.2. Sampling plan

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Not applicable.

B.7.3. Other elements of monitoring plan

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in line with the applied methodology ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 19.0):

"All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. 100% of the data should be monitored if not indicated otherwise in the tables of Section 6.1 of ACM0002 Ver. 19. All measurements should be conducted with calibrated measurement equipment according to relevant industry standards".

Therefore, the quantity of net electricity generation supplied by the project plant to the grid will be reliably monitored through two calibrated electricity meters installed at delivery sub-station and cross-checked with sales invoices.

The key parameters and responsibilities for monitoring:

Parameter	Responsibility
<ul style="list-style-type: none"> Overall project management 	The project participant and/or consultant
<ul style="list-style-type: none"> Responsibilities for data collection, reporting, and archiving 	Project participant/Management company
<ul style="list-style-type: none"> Calibration of electricity meters 	Project participant/ Management company
<ul style="list-style-type: none"> Routine maintenance & trouble-shooting procedures 	Project participant/ Management company

SECTION C. Start date, crediting period type and duration

C.1. Start date of project activity

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In accordance with the CDM Project Standard (Version 2.0) and the CDM Glossary of Terms, the Start Date of the project shall be when the project reaches financial close and the first equipment orders are placed. This is estimated to be 15/09/2019.

C.2. Expected operational lifetime of project activity

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25 years and 00 months

C.3. Crediting period of project activity

C.3.1. Type of crediting period

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The project activity will use a renewal crediting period.

C.3.2. Start date of crediting period

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01/12/2019

C.3.3. Duration of crediting period

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7 years and 00 months

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

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In line with the provisions of the CDM Project Standard (Version 2.0), the project participant carried out an analysis of the environmental impacts of the proposed project covering the main phases of the project. The results of this analysis are presented below:

Phase 1 - The negative impacts during the *preparation phase* on:

- Physical environment considered to be negligible to minor.
- Biological environment considered to be negligible to minor.

- Human environment considered to be negligible, except permanent loss of income or livelihood that has minor to moderate significance.
- Job opportunities and stimulating economic activities and the development of new skills likely to deliver a positive impact of moderate importance.

Phase 2 - The negative impacts during the *construction phase* on:

- Physical environment considered to be negligible to minor, except moderate significance of modification of soil type.
- Biological environment are considered negligible to minor, except for the modification of the environments and ecosystems which present an impact of moderate significance.
- Human environment considered negligible to minor significance except the inflow of workforce and people seeking work and business opportunities, and the densification of the population, which have a moderate significance.
- The construction or improvement of the infrastructure and public service, the employment opportunities, the economic activities stimulation and the development of new skills are considered as positive impacts from minor to major significance.

Phase 3 - The negative impacts during the *operational phase* on:

- Physical environment were considered to be negligible to minor.
- Biological environment were considered to be negligible to minor.
- Human environment were considered to be negligible to minor.

D.2. Environmental impact assessment

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Requirements to manage environmental impacts related to this PV project are determined at both the national and international level. Côte d'Ivoire Environmental Framework Law (Law n° 96-766 of 3 October 1996 on the Environmental Code) states (Article 39) that: "any project which may have significant impact on the environment should undertake a preliminary impact study." – sets out the scope, content and procedure required to determine whether an environmental impact assessment is necessary according to the following classifications:

- Category A: projects that can have very negative impacts, generally irreversible, unprecedented, usually affect an area broader than the site covered by the project;
- Category B: projects whose negative impacts on the environment and the population are less severe than those of the category A projects;
- Category C: projects whose negative impacts are not significant on the environment.

At the international level, the International Finance Corporation (IFC) also introduces the same levels of classification for the purposes of determining suitability for financing. The Project owner determined that the project is a Category B project. Therefore an environmental impact analysis is required and has been carried out. The Environmental and Social Impact Analysis, completed in October 2017 by consultant 2DCONSULTING,

SECTION E. Local stakeholder consultation

E.1. Modalities for local stakeholder consultation

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The terms of reference made by the National Environment Agency, paragraph III.8 – Participation Publique and paragraph IV – Duree de l'étude, define the consultation methodology of the stakeholders.

The public consultation methodology consisted of several working sessions with stakeholders. It was conducted as follows:

1st phase a reconnaissance and framing visit on 31 August 02 September 2016 to identify the human, environmental and social issues likely to be impacted by the Project. During this phase, Project stakeholders were identified. They consist of the immediate vicinity of the Project site, the local authorities of the Project area and the administrative structures concerned by the Project.

During the 2nd phase, consisted in sending letters to stakeholders identified in Phase 1 followed by several telephone interviews, in preparation for the public consultation meeting planned for Korhogo Prefecture and the village of Binguébougou to gather their views and concerns on the project. In the case of Korhogo Prefecture, a list of stakeholders to be convened was attached to the mail. As for the chieftaincy of Binguébougou, the Binguébougou Development Mutual and others, telephone exchanges were the main means of informing the holding of the public consultation meeting. These first two (2) entities were the focal points for disseminating information to other stakeholders. This stage took place from July 20 to 27, 2017; en plus, certains entretiens individuels ont été réalisés avec les parties prenantes absentes à la réunion de consultation publique qui s'est tenue à la préfecture de Korhogo.

The meeting and individual interviews related to the public consultation were conducted on the basis of semi-directive interview guides and direct field observations for data collection. One of the techniques, namely that relating to the public consultation meeting, was to provide the stakeholders, after the exchange session, questionnaires so that they mentioned their concerns. The structures encountered come from the public sector, the private project site, local authorities and local communities.

PHASES	PUBLIC PARTICIPATION ACTIONS	TYPE OF PUBLIC PARTICIPATION <i>(passive / interactive / with material incentives / information / consultation / functional)</i>	COMMUNICATION CHANNEL USED <i>(Oral / written / visual)</i>	DATES	SUPPORT DOCUMENT <i>(PV, attendance list, photos, etc.)</i>
Before the ESIA	Meeting with administrative and traditional authorities	Interactive	Oral	31/08/2016 to 02/09/2016	Discharge of letters addressed to administrative and village authorities.
During the ESIA	Meeting with public sector structures	Interactive	Oral and written	22/05/2017 to 15/06/2017	Questionnaires, attendance list, minutes
	Meeting with private sector structures	Interactive	Oral and written		
	Meeting with the neighborhood of the Project site	Interactive	Oral and written		
After the ESIA	To be conducted by Korhogo Solar if necessary				

The meeting and individual interviews related to the public consultation were conducted on the basis of semi-directive interview guides and direct field observations for data collection. One of the techniques, namely that relating to the public consultation meeting, was to provide the stakeholders, after the exchange session, questionnaires so that they mentioned their concerns. The structures encountered come from the public sector, the private project site, local authorities and local communities.

The scope of local stakeholder consultation is the neighborhood of the site (about 3 km), the farmers of the site, the administrative authorities of the region.

(a) List of Identified group of stakeholders directly impacted and local authorities relevant:

Stakeholders directly impacted	local authorities relevant
the farmers of the site:	
SILUE MOUSSA	
SILUE SIENTIONHONTANA	
SORO VALY	
SORO DRISSA	Korhogo Sub-prefecture
DAGNOGO AMADOU	sub-prefecture of Binguébougou
COULIBALY SIRIKI	
SORO ZANA DIT LASSINA	BINGUEBOUGOU VILLAGE
SORO PEGUA	
SORO ISSA	Chief of Binguébougou Village landowner.
SORO FATOGOMA	
KONE GNINNEMA	
KONE MAMADOU	
KONE ISSOUF	
SORO N'GOLO	
KONE FATOGOMA	
TENENA SILUE	
Residents of the village of Binguébougou	

(b) List particular Stakeholders invited:

N°	Stakeholders	TYPE OF STAKEHOLDERS			
		Public sector	Private sector	Territorial communities	Local communities
1	Prefecture of Korhogo Area	<input type="checkbox"/>			
2	Korhogo Sub-prefecture	<input type="checkbox"/>			
3	Regional Directorate of Petroleum, Energy and Renewable Energy Development of Korhogo	<input type="checkbox"/>			
4	Regional Directorate of Planning and Development of Korhogo	<input type="checkbox"/>			
5	Regional Directorate of Health, Environment and Sustainable Development of Korhogo	<input type="checkbox"/>			
6	Regional Directorate of Construction, Housing and Urban Sanitation of Korhogo	<input type="checkbox"/>			
7	Korhogo Health District	<input type="checkbox"/>			
8	Regional Directorate of Water and Forests of	<input type="checkbox"/>			

N°	Stakeholders	TYPE OF STAKEHOLDERS			
		Public sector	Private sector	Territorial communities	Local communities
	Korhogo				
9	Regional Directorate for Agriculture and Rural Development of Korhogo	<input type="checkbox"/>			
10	Departmental Directorate of Health and Public Hygiene of Korhogo	<input type="checkbox"/>			
11	Regional Directorate of Industry and Mining Korhogo	<input type="checkbox"/>			
12	Regional Direction North of ANADER	<input type="checkbox"/>			
13	Regional Direction of the Ivorian Company of Electricity of Korhogo	<input type="checkbox"/>			
14	CI-Energy	<input type="checkbox"/>			
15	Regional Directorate of Customs of Korhogo	<input type="checkbox"/>			
16	Brigade town of the gendarmerie of Korhogo	<input type="checkbox"/>			
17	6 th company of GSPM Korhogo.	<input type="checkbox"/>			
18	<u>Regional Council of Korhogo</u>			<input type="checkbox"/>	
19	Korhogo town hall			<input type="checkbox"/>	
20	Development Mutual Binguébougou				<input type="checkbox"/>
21	Youth Association of Binguébougou				<input type="checkbox"/>
22	Women's Association of Binguébougou (Binkadi)				<input type="checkbox"/>
23	Collective of the operators of the Binguébougou Project site		<input type="checkbox"/>		
24	Canton of Korhogo				<input type="checkbox"/>
25	Village of Binguébougou				<input type="checkbox"/>
26	Village of Nenekri				<input type="checkbox"/>
27	Village of Kategué				<input type="checkbox"/>
Total		17	1	2	7
		63%	3,7%	7,4%	26%

Stakeholders were invited by Post, radio and the village griot (it is the one who makes the announcement orally in the evening in the village.). The languages used were French in Korhogo meeting and the local language (Sénoufo) in the village meeting.

The information about the project was also sent to stakeholders is the project to build a solar power plant in the Korhogo department and more precisely in Binguébougou.

The information given during the meetings includes the project components, the stakes, the construction schedule, the lifespan, the benefits for the country and the region.

During the return of the ESIA:

The information focused on the identified impacts (negative and positive); recommended measures and monitoring of these measures. The consultation was conducted by Meeting(s), Presentation, post questionnaire and individual interview.

Date and Place of consultation:

Public consultations:

- Korhogo Prefecture August 2, 2017 from 9am to 10.30am under the presidency of Mr. SG Djande prefecture in the presence of the sub-prefect Emile Kouassi. the translation into Senufo by M. Coulibaly, representative of the canton chief.

- Village Binguébougou 2 August 2017 from 16H to 18H 50 26 participation of the mutual developing Bingubougou, the association of women, youth, and heads of villages and Binguébougou Kategué. the Senufo translation of SORO Salifou, president of the Binguébougou development mutual.

Return of the ESIA:

-Village Binguébougou of August 2, 2017 from 16H to 18H 22 under the chairmanship of the head of the village of Binguébougou attended the notability and the president of the mutual Binguébougou. The Senufo translation of SORO Salifou, president of the Binguébougou development mutual.

Public inquiry:

Korhogo prefecture opened the public inquiry on October 20, 2017 from 9:30 to 11:45 under the chairmanship of the prefect assisted by the technical adviser of the Minister of the Environment. the Senufo translation of SORO Salifou, president of the Binguébougou development mutual.

- EIES validation meeting with interministerial committee under the direction of the National Environment Agency and in the presence of representatives from all concerned ministries, and obtaining the environmental approval decree on December 26, 2017.

E.2. Summary of comments received

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There were 27 comments received. No adverse comments were received.

For the List of comments from stakeholders (The comments were received by interview and on completed forms) refer to appendix 6.

E.3. Consideration of comments received

>>

Answers to comments and complains from Stakeholders:

1/ The canton chief asks for employment for young people and the acceleration of the compensation of the operators of the site.

The project will follow the hiring procedure that will be proposed in the ESIA.

Compensation of farmers will be done before any activities on the site. it will therefore be a priority.

2/ The village of Nenekri has also declared itself the owner of the site

Exchanges between the Poro canton (the chief) ancestral owner of the site, the Binguébougou and Nenekré chieftaincies, allowed to designate the village of Binguébougou as sole owner of the site, accepted by the village of Nenekré.

SECTION F. Approval and authorization

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The host country Letter of Approval (LoA) has been delivered on December 20th 2018.

Appendix 1. Contact information of project participants

Organization name	Nova Power (developer)
Country	Morocco
Address	254 Lot Moutawakkil- Dar Bouazza – Casablanca
Telephone	+212 522 965673 / +212 661 177249
Fax	
E-mail	mohamed.habbal@novapower.ma
Website	
Contact person	Mohamed Habbal

Organization name	Korhogo Solaire (project owner)
Country	Côte d'Ivoire
Address	Immeuble EDEN, 01 BP 12662 Abidjan 01, Abidjan, Plateau, Cote d'Ivoire
Telephone	+225 07800204
Fax	
E-mail	mohamed.habbal@novapower.ma
Website	
Contact person	Mohamed Habbal

Organization name	Côte d'Ivoire Energies (CI-ENERGIES) (government's representative)
Country	Côte d'Ivoire
Address	01 BP 1345 Abidjan 01, Cote d'Ivoire
Telephone	+22520206201
Fax	
E-mail	atraore@cinergies.ci
Website	
Contact person	Amidou Traore

Appendix 2. Affirmation regarding public funding

No public findings and/or official development assistance (ODA) from Parties included in Annex I to the Convention were provided for the project.

Appendix 3. Applicability of methodologies and standardized baselines

N/A

Appendix 4. Further background information on ex ante calculation of emission reductions

N/A

Appendix 5. Further background information on monitoring plan

N/A

Appendix 6. Summary report of comments received from local stakeholders

N°	Stakeholders	Avis recueillis			Reasons evoked and answer provided (if applicable)
		Favorable opinion	Favorable subject	Refusal	
1	Prefecture of Korhogo Area	✓			The project will fill the energy needs of the population
2	Korhogo Sub-prefecture	<input type="checkbox"/>			The project is innovative, namely renewable energies.
3	Regional Directorate of Petroleum, Energy and Renewable Energy Development of Korhogo		<input type="checkbox"/>		Although the Project is job-creating, the protection of rare species must be taken into account
4	Regional Directorate of Planning and Development of Korhogo				The Project will lead to the growth and diversification of energy sources.
5	Regional Directorate of Health, Environment and Sustainable Development of Korhogo		<input type="checkbox"/>		Validation of the EIES in interministerial commission.
6	Regional Directorate of Construction, Housing and Urban Sanitation of Korhogo	<input type="checkbox"/>			the Project will bring more to the development of populations
7	Korhogo Health District	<input type="checkbox"/>			Have a prior authorization
8	Regional Directorate of Water and Forests of Korhogo	<input type="checkbox"/>			The Project will allow the availability in quantity and quality of electricity.
9	Regional Directorate for Agriculture and Rural Development of Korhogo		<input type="checkbox"/>		Effective implementation of the Project taking into account compensation of site operators.
10	Departmental Directorate of Health and Public Hygiene of Korhogo		<input type="checkbox"/>		Take measures to protect populations in terms of safety and health.
11	Regional Directorate of Industry and Mining Korhogo	<input type="checkbox"/>			The project will lower the cost of electricity and thus make industries more competitive.
12	Regional Direction North of ANADER	<input type="checkbox"/>			Several grievances in socio-economic and environmental development for neighboring villages.
13	Regional Direction of the Ivorian Company of Electricity of Korhogo	<input type="checkbox"/>			The Project will help reduce unemployment and electrify surrounding communities.
14	CI-Energy	<input type="checkbox"/>			The project is innovative.
15	Regional Directorate of Customs of Korhogo		<input type="checkbox"/>		Conduct development actions for riparian village populations in terms of

N°	Stakeholders	Avis recueillis			Reasons evoked and answer provided (if applicable)
		Favorable opinion	Favorable subject	Refusal	
					building sanitary infrastructure and employment.
16	Brigade town of the gendarmerie of Korhogo		<input type="checkbox"/>		The Project must participate in the development of the region.
17	6 th company of GSPM Korhogo.		<input type="checkbox"/>		Need the safety notice to be better informed and well equipped in case of disaster on the site.
18	Regional Council of Korhogo	<input type="checkbox"/>			The Project will address electricity issues in the Poro region given population and economic growth.
19	Korhogo town hall	<input type="checkbox"/>			Purging customary rights and compensation of affected populations. Employment of riparian village populations
20	Development Mutual Binguébougou	<input type="checkbox"/>			The project will bring a plus to the development of the village and especially the quality of electricity will be at the rendezvous.
21	Youth Association of Binguébougou	<input type="checkbox"/>			The project is a source of development for the village and especially for young people.
22	Women's Association of Binguébougou (Binkadi)	<input type="checkbox"/>			The women have some grievances in the development of the village of Binguébougou whose Project could satisfy.
23	Collective of the operators of the Binguébougou Project site	<input type="checkbox"/>			They agreed to give up their land in return for compensation. The project could bring them other socio-economic benefits.
24	Canton of Korhogo	<input type="checkbox"/>			The canton played its influence in carrying out the project in Binguébougou. However, he wants the use and the acceleration of the compensation of the farmers. The project will follow the hiring procedure that will be proposed in the ESIA. Compensation of farmers will be done before any activities on the site. it will therefore be a priority.
25	Village of Binguébougou	<input type="checkbox"/>			The project will bring happiness to the people
26	Village of Nenekri		<input type="checkbox"/>		Respond to certain grievances of the village in the context of the realization of certain development projects and especially to redefine the ownership of the Project site of which Nenekri is the true owner, according to them. In exchanges between the Poro canton (the chief) ancestral owner of the site, the Binguébougou and Nenekré chieftaincies, allowed to designate the village of Binguébougou as sole owner of the

N°	Stakeholders	Avis recueillis			Reasons evoked and answer provided (if applicable)
		Favorable opinion	Favorable subject	Refusal	
					<i>site, accepted by the village of Nenekré</i>
27	Village of Kategué	<input type="checkbox"/>			It's a good project that people are expecting a lot.
Total		19	8	0	
		70,37%	29,63%	0%	

Appendix 7. Summary of post-registration changes

N/A

Document information

Version	Date	Description
11.0	31 May 2019	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); Make editorial improvements.
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: <ul style="list-style-type: none"> Improve consistency with the “CDM project standard for project activities” and with the PoA-DD and CPA-DD forms; Make editorial improvement.
09.0	24 May 2017	Revision to: <ul style="list-style-type: none"> Ensure consistency with the “CDM project standard for project activities” (CDM-EB93-A04-STAN) (version 01.0); Incorporate the “Project design document form for small-scale CDM project activities” (CDM-SSC-PDD-FORM); Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the “Standard: Applicability of sectoral scopes” (CDM-EB88-A04-STAN) (version 01.0).

<i>Version</i>	<i>Date</i>	<i>Description</i>
06.0	9 March 2015	Revision to: <ul style="list-style-type: none"> • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.
05.0	25 June 2014	Revision to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project activity in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for CDM project activities" (EB 66, Annex 8).
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.

Decision Class: Regulatory
 Document Type: Form
 Business Function: Registration
 Keywords: project activities, project design document
