


Validation report form for GS project activities			
BASIC INFORMATION			
Title of the project activity	Illoulofin PV Solar Plant – Defissol		
GS Reference Number	GS12054		
Scale of the project activity	<input checked="" type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale		
Version number of the validation report	Version 6		
Completion date of the validation report	20/11/2023		
Version number of the PDD to which this report applies	Version 5.0 dated 10/11/2023		
Project participants	Republic of Benin/Ministry of Economy and Finances in Bénin (MEF)		
Host Party	Republic Of Benin		
Applied methodologies and standardized baselines	ACM0002: Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources, Version 21.0.		
Sectoral scopes	Sectoral Scope: 1/1.2 - Energy industries (Renewable)		
SDGs targeted from the project activity	SDG7: Ensure access to affordable, reliable, sustainable and modern energy for all. SDG 8: Decent Work and Economic Growth SDG 13: Climate Action		
SDGs estimated contributions	SDGs	Estimated annual average	Units or products
	13	21,031	VERs
	7	36,705 [average of 5 years] (equivalent of 2.10% in total energy consumption)	MWh and % of renewable in total energy consumption
	8	27 workers incl. 07 women (17 full time workers)	Total number of jobs
Estimated amount of annual average GHG emission reductions or GHG removals by sinks	21,031 tCO ₂ e		
Name of VVB	Carbon Check (India) Private Ltd.		
Name, position and signature of the approver of the validation report	 Vikash Kumar Singh, Compliance Officer		

SECTION A. Executive summary

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Purpose and general description

The Project Participant Republic of Benin/Ministry of Economy And Finances in Bénin (MEF) via its representative at the National Authority to Register Carbon Projects has appointed the VVB, Carbon Check (India) Private Ltd. to perform an independent validation of the project design documents of the Gold Standard Project Activity “Illoulofin PV Solar Plant – Defissol” in the host country of Republic of Benin (hereafter referred to as “project activity”)/51/. This report summarises the findings of the validation of the project design documents, performed on the basis of Gold Standard criteria for registration, as well as criteria given to provide for consistent project operations, monitoring and reporting. This report contains the findings and resolutions from the validation and a validation opinion.

The project activity “Illoulofin PV Solar Plant – Defissol” involves installation of a new grid-connected solar power plant 25 MWp. The project is expected to consist of crystalline photovoltaic modules of 530 W DC each for a total installed capacity of 25 MW DC. The project is implemented in Republic of Benin, Department de l’Ouémé, Pobé, Onigbolo village. The project is connected to the national grid of Republic of Benin, operated by (Communauté électrique benin) CEB. The project results in emission reductions due to displacement of electricity by a renewable energy source (solar PV) that would otherwise have been provided to the grid by more GHG intensive means. The project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated by the PD in the PDD /1/ and validated by VVB that the project activity is not a likely baseline scenario.

The project is projected to reduce emission reduction 21,031 tonnes CO₂e average of 5 years. The project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project in accordance with the GS4GG requirements for additionality and in line with applied methodology Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources , ACM002 version 21.

The purpose of a validation is to have a thorough and independent assessment of the proposed project activity against the applicable Gold standard requirements, in particular, the project’s baseline, monitoring plan and the project’s compliance with relevant GS4GG criteria. The stipulated requirements and assumptions are validated to confirm that the project design, as documented, is sound, reasonable and meets the identified criteria.

Location

The project activity “Illoulofin PV Solar Plant – Defissol” is located in the Département de l’Ouémé, Pobé, Onigbolo village, Republic Of Benin. The geographical coordinates for the location of the project activity are: Latitude : between[7°10’4.74” and 7°10’51.43” North, Longitude: between 2°39’59.07” and 2°40’35.08 East].

Scope of the validation

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD /01/ is reviewed against the relevant criteria (see above) and decisions by the Gold standard secretariat including the approved baseline and monitoring methodology /B01/. The validation team based on the recommendations in the GS “Validation and Verification Standard” v1.0, and GS4GG “Principles and Requirements”, version 1.2 employed a rule-based approach, focusing on the identification of significant risks for project implementation and the generation of GS4GG VERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

While carrying out the validation of the Design Certification, CCIPL determines if the project activity complies with the requirements of the applicability conditions of the selected methodology /B01/, guidance issued by the

Gold Standard to assess the claims and assumptions made in the PDD /01/ without limitation on the information provided by the project participants.

The Validation team confirms the contractual relationship signed /51/ between the VVB, Carbon Check (India) Private Ltd. and the Project Participant, Ministry of Economy and finance/Republic of Benin. The team assigned to the validation meets the Carbon Check (India) Private Ltd.'s internal procedures including the Gold Standard for Global Goals requirements for the team composition and competence. The projects team has conducted a thorough contract review as per GS4GG and Carbon Check procedures and requirements.

Validation methodology

The validation has been performed as described in the GS VVS and constitutes the following steps:

- Document review of data and information (PDD/01/, the relevant documents including the reference to information relating to projects or technologies similar to the proposed project activity, review based on the approved methodology /B01/ being applied, suitability of assumptions, the appropriateness of formulae, and accuracy of calculations).
- Cross checks between information provided in the PDD/01/ and information from other sources.
- Follow up actions for cross checking data and procedures through onsite audit assessment.
- Reference to available information
- Issuance of Validation Report.

Validation Process

The validation consists of the following four phases:

- I. A desk review of the project design documents.
 - A review of data and information.
 - Cross checks between information provided in the PDD/01/ and the information from sources with all the necessary means without limitations to the information provided by the project proponent.
 - Confirmation of the Onsite audit dates and Validation work plan.
- II. Onsite audit and follow-up interviews with the project stakeholders
 - Interviews with relevant stakeholders in the host country, such as personnel with knowledge of the activity design and implementation.
 - Cross checks between information provided by interviewed personnel (i.e., by checking sources or other interviews) to ensure that no relevant information has been omitted.
 - Take necessary steps to maintain, avoid bias and undue influence from Project Developer(s) in selection of stakeholders and interviews.
- III. Reference to available information relating to projects or technologies similar projects under validation and review based on the approved methodology/B01/ being applied of the appropriateness of formulae and accuracy of calculations.
- IV. The resolution of outstanding issues and the issuance of the final validation report and opinion.

The report is based on the assessment of the PDD/01/ undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, Onsite audit, and stakeholder interviews, review of the applicable/applied methodology /B01/ and its underlying formulae and calculations.

This report contains the findings and resolutions from the validation and a validation opinion on the proposed project thus confirming the project design as document meets the stated requirements and identified criteria.

The validation protocol describes a total of 24 findings which include:

- 19 Corrective Action Requests (CARs);
- 05 Clarification Requests (CLs);
- 00 Forward Action Requests (FARs);

All CARs and CLs are closed during the validation process.

Conclusion

Carbon Check (India) Private Ltd. concludes the validation of the Design Certification with a positive-opinion and that the Project Activity "Illouloufin PV Solar Plant – Defissol" in Republic Of Benin, as described in the

PDD/01/, meets all applicable Gold standard requirements including requirements of methodology, tools and guidelines.

The selected baseline and monitoring methodology /B01/ is applicable to the project and correctly applied. Carbon Check (India) Private Ltd. therefore recommends the project to the Gold Standard for GS4GG.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader/ Technical Expert	IR	Sharma	Harish	CC IPL	X	X	X	X
2.	Assessor	IR	Bankar	Siddhant ¹	CC IPL	X			X
3.	Local Expert	IR	Tekapso	Leslie	CC IPL	X	X	X	
4.	Trainee Assessor	IR	Kumar	Pankaj	CC IPL	X			

B.2. Technical reviewer and approver of the validation report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	C.	Indumathi	CC IPL
2.	Approver	IR	Singh	Vikash Kumar	CC IPL

SECTION C. Means of validation

C.1. Desk/document review

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List of all documents reviewed or referenced during the validation is provided in Appendix-3.

C.2. On-site inspection

On-site inspection has been conducted for the validation of the PA:

The on-site audit was performed by the validation team of CC IPL from 23/05/2023 – 24/05/2023 and the following activities were performed:

- i. A review of the data and information presented to verify completeness and consistency in accordance with GS Principals and requirements v1.2.
- ii. A review of the project description and monitoring methodology, paying particular attention to the applicability conditions of the methodology and baseline and additionality-related requirements.

¹ Mr. Siddhant Bankar has done desk review and validation findings.

- iii. A review of the monitoring plan and the project's compliance with relevant GS criteria.
- iv. A review of calculations and assumptions made in determining the GHG data and emission reductions.
- v. Cross-check a sample of a project (Questionnaire, operation surveys/interviews)

Furthermore, VVB has considered the Site Visit and site Audit Requirements and Procedures, version 2.0 for conducting the audit. In accordance with the requirements provided in §3.1.1(b) of the Site Visit and site Audit Requirements and Procedures, version 2.0 /B04/, VVB determined that a physical site visit is required for the given project. It was determined based on §4.1.1 of the Site Visit and site Audit Requirements and Procedures, version 2.0 that a physical site visit is mandatory.

C.3. Interviews

The validation team has carried out on-site interviews in order to assess the information included in the PDD/01/. During the desk review, the relevant records were checked and compared with the information provided in the PDD/1/, the relevant evidence and interview with the PP representative were used to validate the information. The validation team based on above justification confirms that the validation based on desk review on-site visits and interviews are sufficient for the purpose of validation.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Teulon	Aymeric	ORI Partners Ltd	23/05/2023 – 24/05/2023	<ul style="list-style-type: none"> •Discussion on the project design and the roles and responsibilities of different organizations •Proposed Technology to be used in the project activity including the type of solar panels, inverters, transformers etc. •EPC contract and Operation and Maintenance Contract •Discussion on project funding and involvement of any ODA •Letter of approval and authorization. •ESIA requirements 	Harish Sharma, Leslie Tekapso
2.	Nia	Youmby	Neolec	23/05/2023 – 24/05/2023	<ul style="list-style-type: none"> •Discussion on the project design and the roles and responsibilities of different organizations •Discussion on project funding and involvement of any ODA •Proposed Technology to be used in the project activity including the type of solar panels, inverters, transformers, Measurement instruments, Logbook, Technical specification data: Technical documents , Data management and reporting, Quality control, Calibration plan and records (if 	Harish Sharma, Leslie Tekapso

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					any), Documented procedures related to GHG monitoring. Job descriptions for positions involved in GHG monitoring. Start of process operation (acceptance report), Logbook inspection.	
3.	Vivien	Agbakou	SBPE	23-05-2023	<ul style="list-style-type: none"> • Discussion on the project design and the roles and responsibilities of different organizations • Local Stakeholder Consultation, • Compensation for land acquisition, • Sustainable Development, Employment Opportunities 	Harish Sharma, Leslie Tekapso
4.	Joel	Houngue	SBPE	23-05-2023	<ul style="list-style-type: none"> • Discussion on the project design and the roles and responsibilities of different organizations • Letter of approval and authorization. • ESIA requirements 	Harish Sharma, Leslie Tekapso
5.	Emmanuel	Darboux	SBPE	23-05-2023	<ul style="list-style-type: none"> • Local Stakeholder Consultation, • Compensation for land acquisition, • Sustainable Development, Employment Opportunities 	Harish Sharma, Leslie Tekapso
6.	Mérit	Degan	SBPE	23-05-2023	<ul style="list-style-type: none"> • Metering details and ex-ante ER calculations • Electricity metering details including the type of meter proposed to be installed and host country regulatory requirements on metering and calibration of electricity meters, Verification/ re-calibration requirements and procedure, Substation details for the proposed connection. 	Harish Sharma, Leslie Tekapso
7.	Mariamou	Talon	RMT	23-05-2023	HSE	Harish Sharma, Leslie Tekapso
8.	Brahim Oumar	WANE	RMT	23-05-2023	Proposed Technology to be used in the project activity including the type	Harish Sharma,

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					of solar panels, inverters, transformers, Measurement instruments, Logbook, Technical specification data: Technical documents , Data management and reporting, Quality control, Calibration plan and record Substation details for the proposed connection.	Leslie Tekapso
9.	Sofiène	Khiari	RMT	23-05-2023	Proposed Technology to be used in the project activity including the type of solar panels, inverters, transformers, Measurement instruments, Logbook, Technical specification data: Technical documents , Data management and reporting, Quality control, Calibration plan and record Substation details for the proposed connection.	Harish Sharma, Leslie Tekapso
10	Adébeyi	Tolaché	District chief (Issaba)	23-05-2023	•Local Stakeholder Consultation,	Harish Sharma, Leslie Tekapso
11	Soulé	Djabi	Village chief (Illoulofin)	23-05-2023	•Compensation for land acquisition,	Harish Sharma, Leslie Tekapso
12	Souley	Otchadé	Village chief (Onigbolo)	23-05-2023	•Local Stakeholder Consultation,	Harish Sharma, Leslie Tekapso
13	Michel	Fachola	PAP/Land owner	23-05-2023	•Compensation for land acquisition,	Harish Sharma, Leslie Tekapso

C.4. Sampling approach

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Sampling is not applicable to the project activity.

SECTION D. Validation findings

D.1. Description of project activity

Means of validation	Purpose and general description of the project activity:
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The project activity 'Illoulofin PV Solar Plant – Defissol is a 25 MWp solar photovoltaic grid-connected renewable energy power plant. The project results in emission reductions due to displacement of electricity by a renewable energy source (solar photovoltaic) that would otherwise have been provided by grid mix. The project is connected to the national grid of Republic of Benin. The total installed capacity for the project activity is 25 MWp.

With reference to clause 4.1.42 of GS4GG principles and requirement version 1.2, the start date of the project is 03/08/2020 /4/ and Stakeholder Consultation (1st round) has been conducted before the project start date i.e., 04/06/2019 to 17/06/2019, as per PDD/1/. Therefore, the project is regular project. Technology of the project activity:

The type of module proposed to be installed is 530 Wp Jinko Solar JKM530M-72HL4-V. The module is a mono-crystalline photovoltaic module. 47,212 units of Jinko Solar JKM340PP-72H-V (530 Wp) are installed in the project activity. The total installed capacity has been checked through the commissioning certificate, installation and supply agreement i.e EPC contract/53/ and same is validated through onsite audit by checking the plant layout diagram and validating the same through rated plates of the major equipment and Manufacturer's specifications /17/ and the has been provided in the PDD/01/. Other details of the solar module as checked from the manufacturer specifications /17/ are:

Module Characteristics	Characteristics
Make	Jinko Solar
Model	JKM530M-72HL4-V
Module Power	530 W _p
Number of modules	47,212
Total Power	25 MW _p

The solar facility consists of inverters of make Huawei Technologies, model SUN2000-185KTL-H1. Moreover, transmission/ evacuation of the electricity done through HTB evacuation system via an underground HTA line of 20 KV over 3 km and a step-up transformer 20/161 KV - 50 MVA at Onigbolo CEB substation.

Scenario existing prior to the implementation of the project activity.

The project is a greenfield project activity and consists of the installation of a new solar photovoltaic power plant at a site which was not inhabited or developed in any way, and where no renewable power plant was operated prior to the implementation of the project activity. The project activity supplies electricity to the SBEE-CEB grid (TSO).

Project Location:

The project is located in the Republic of Benin, Département de l’Ouémé, Pobé, Onigbolo village. GPS Coordinates: Latitude: between [7°10'4.74” and 7°10'51.43” North, Longitude: between 2°39'59.07” and 2°40'35.08 East].

Start Date of the project activity:

GS4GG clause 4.1.39 (principles and requirement)/B04/ states “The Project start date is the earliest date on which the Project Developer has committed to expenditures related to the implementation of the Project. This does not include the purchase or option to purchase the land upon which a Project is intended to take place.” The start date of the project activity is 03/08/2020, that is when the EPC contract/53/ was signed with contractors and thus earliest date when the real action on the project begins. The EPC document is termed as a confidential document by PP and has been evidenced to the VVB during site visit to validate the assumptions.

	<p>Crediting period and estimated Emission Reductions The project activity has a twice renewable crediting period of 5 years, starting from 12/07/2022 (power plant commissioning date)/45/.</p> <p>Double Counting</p> <p>As per 3.1.1.(c) of the Principles and Requirement Ver 1.2 /B04/, "in order to avoid double counting the Project shall not be included in any other voluntary or compliance standards programme unless approved by Gold Standard (for example through dual certification). Also, if the Project Area overlaps with that of another Gold Standard or other voluntary or compliance standard programme of a similar nature, the project shall demonstrate that there is no double counting of impacts at design and performance certification (for example use of similar technology or practices through which the potential arises for double counting or misestimation of impacts amongst projects). Validation team through online search confirms that as of now, the given project activity is not registered under any other voluntary or compliance standards programme. Furthermore, validation team team has conducted the onsite visit and confirms that Project activity area doesn't overlaps with that of another Gold Standard or other voluntary or compliance standard programme of a similar nature.</p>
Findings	CL 05 and CAR 12 & 13 had been raised in this regard and have been resolved.
Conclusion	The validation team confirms the project description of the project contained in the PDD/01/ to be complete and accurate. The PDD complies with the applied methodology; ACM0002 version 21.0, GS4GG VVS (version 1), principles and requirements, version 1.2 /B04/ and template guidance.

D.2. Application and selection of methodologies and standardized baselines

D.2.1. Application of methodologies and standardized baselines

Means of validation	<p>The project applies the Approved consolidated baseline and monitoring methodology ACM0002, version 21.0/B01/. The applied methodology version is the latest version of the methodology at the time of the validation. Applicability criteria for the baseline methodology/B01/ are assessed by the validation team by means of document review and interview. The project activity meets all the applicability conditions as provided in the methodology, ACM0002 version 21/B01/. A complete assessment of each of the methodology applicability conditions has been provided below:</p>	
	Applicability criteria as per methodology /B01/	Means of Validation
	<p>This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <ul style="list-style-type: none"> (a) Install a Greenfield power plant; (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). 	<p>The project activity is a greenfield grid-connected (connected to SBEE-CEB grid (TSO).) renewable power generation project and involves generation of electricity through a solar photovoltaic power plant. The details of the project activity have been confirmed from the from Installation agreement, EPC Contract/53/ and commissioning documents/45/, through the interviews with the PP and stakeholders during onsite audit.</p>
	The methodology is applicable under the following conditions:	

	<p>(a) 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, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</p>	<p>The project activity includes renewable power plant of the type of solar power plant and involves construction and operation of a solar photovoltaic power plant of 25 MWp capacity. The details of the project activity have been confirmed from the from Installation agreement/53/and through the interviews.</p>
	<p>(b) 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.</p>	<p>The project activity does not involve any capacity additions, retrofits, rehabilitations or replacements of any plant as the project is a greenfield activity in place where there existed no project before the installation of the project activity. validation team has confirmed the same through Local stakeholder interviews and topographical survey records/54/.</p>
	<p>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 (7), is greater than 4 W/m²; or (c) The project activity results in new single or multiple</p>	<p>This para of the methodology is not applicable to the project type, since there is no hydro power plant involved in the project activity. This has been confirmed during onsite audit.</p>

	<p>reservoirs and the power density, calculated using equation (7), is greater than 4 W/m²; or</p> <p>(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 (7), is lower than or equal to 4 W/m², all of the following conditions shall apply:</p> <p>(i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²;</p> <p>(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p> <p>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be:</p> <p>a. Lower than or equal to 15 MW; and</p> <p>b. Less than 10 per cent of the total installed capacity of integrated hydro power project.</p>	
	<p>In the case of integrated hydro power projects, project proponent shall:</p>	
	<p>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</p>	<p>This para of the methodology is not applicable to the project type, since there is no hydro power plant involved in the project activity.</p>
	<p>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</p>	<p>This para of the methodology is not applicable to the project type, since there is no hydro power plant involved in the project activity.</p>

	<p>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 of five years prior to the implementation of the CDM project activity.</p>	
	The methodology is not applicable to:	
	<p>(a) 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; (b) Biomass fired power plants/units.</p>	<p>The project activity is a greenfield solar photovoltaic power project and does not 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. Also, as the project activity is a solar photovoltaic power project, it does not involve biomass fired power plant.</p>
	<p>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”.</p>	NA
	<p>In addition, the applicability conditions included in the tools referred to below apply.</p>	<p>Please refer below for assessment of the applicability conditions of the tool used in the project activity.</p>
	Standardized Baseline: Grid emission factor for West African Power Pool, version 1.0	
	<p>The scope of this standardized baseline covers the grid emission factors for the electricity system of the WAPP. It was derived using the ex-ante data vintage option of the version 07.0 of the “TOOL07: Tool to calculate the emission factor for an electricity system”</p>	<p>The proposed project activity is a grid connected solar PV project activity located in Republic of Benin, and thus the grid emission factor for the electricity system of WAPP. Republic Of Benin is listed as one of the countries listed in the § 1 of the Standardized baseline: Grid emission factor for West African Power Pool, version 1.0/B03/.</p>

	<p>(hereinafter referred to as the “grid tool”) based on 2017–2019 data vintage.</p>	
	<p>Clean Development Mechanism (CDM) project activity and programmes of activity (hereinafter referred as project activity) may apply this standardized baseline under the following conditions: (a) (b) (c) The project activity is implemented in any one of the WAPP member countries i.e. Benin, Burkina Faso, Côte d’Ivoire, Ghana, Mali, Niger, Nigeria, Senegal and Togo and is connected to the WAPP; The CDM approved methodology that is applied to the project activity requires the determination of CO2 emission factor(s) through the application of the grid tool; The project activity uses the ex-ante options for both the operating margin and build margin grid emissions factors, as described in the grid tool, and therefore no monitoring or recalculation of the emission factor during the crediting period is required.</p>	<p>The proposed project activity fulfils the conditions stated: (a) The project activity is implemented in Republic of Benin, a country listed in the para 1 of the ASB0034 Grid emission factor for West African Power Pool,, version 01.0/B03/. The project is connected to the project electricity system of Republic of Benin (SBEE-CEB grid (TSO). (b) The methodology ACM0002, version 21 lists tool to calculate grid emission factor under §13 and § 22 of the methodology/B01/. (c) The project activity uses ex ante option for the grid emission factor and the parameter has been listed in the section B.6.2 of the PDD/01/.</p>
	<p>The latest approved and valid values of this standardized baseline are the only values of the CO2 emission factor(s) that shall be applied for the CDM project electricity system in the WAPP member countries.</p>	<p>The standardized baseline is the latest version available for the host country, Republic of Benin.</p>
	<p>Tool for the demonstration and</p>	<p>assessment of additionality, version 7.0.0</p>
	<p>The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.</p>	<p>The project participants have not proposed a new methodology for the project activity. This has been confirmed based on the review of the PDD/01/.</p>
<p>Once the additionally tool is included in an approved methodology, its application by project participants using</p>	<p>The additionality tool is included in the methodology, ACM0002 Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources,</p>	

	<p>this methodology is mandatory.</p>	<p>version 21.0/B01/ and thus the tool is being used by the project participants in the PDD/01/.</p>
	<p>Tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, version 3.0</p>	
	<p>If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption:</p> <p>(a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer.</p> <p>(b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid; or</p> <p>(c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer can be provided with electricity from the captive power plant(s) and the grid.</p>	<p>The emissions are calculated for electricity consumption and Scenario A is applicable as the electricity is consumed from the grid. The electricity is purchased from the grid and measured by bidirectional meters. This has been confirmed based on the review of the site layout provided in the PDD/01/ and as evidenced during onsite audit.</p>
	<p>This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project</p>	<p>The tool has been referred for electricity generated in the project scenario, and Scenario I is applicable as the electricity is supplied to the grid. The electricity is supplied to the grid and measured by bidirectional meters. This has been confirmed based on the review of the site layout</p>

	<p>scenarios applies to the recipient of the electricity generated:</p> <p>(a) Scenario I: Electricity is supplied to the grid.</p> <p>(b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or</p> <p>(c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.</p>	<p>provided in the PDD/01/ and the Installation Agreement/53/.</p>
	<p>This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO2 emissions.</p>	<p>The project activity is a grid connected renewable power solar PV plant and is not a captive power plant. This has been confirmed based on the review of the site layout provided in the PDD/01/ and the Installation Agreement.</p>
Findings	No findings have been raised on this section of the VR.	
Conclusion	Based on document review, interviews and on-site assessment, the validation team confirmed that the application of the baseline methodology is transparent and conservative, and confirms that the chosen baseline and monitoring methodology i.e. ACM0002 version 21.0/B01/ is applicable to the project activity. The description in section B.2 of the PDD/01/ has been provided in accordance with the § 7.12 of the GS VVS for project activities, version 1.0/B04/.	

D.2.2. Deviation from methodology and/or methodological tool

Means of validation	DR, I
Findings	No findings have been raised on this section of the VR.
Conclusion	There are no deviations from methodology and methodological tools applicable for the project activity in accordance with the § 7.12 of GS VVS for project activities (version 1.0)/B04/.

D.2.3. Clarification on applicability of methodology, tool and/or standardized baseline

Means of validation	DR, I
Findings	CAR 6 findings have been raised on this section of the VR and has been resolved.
Conclusion	There is CAR on applicability of methodology and methodological tools applicable for the project activity in accordance with the § 7.12 of GS VVS for project activities (version 1.0)/B04/. PP clarified that the project activity is the installation of a new grid connected renewable solar power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant). The same has been validated by the validation team through the assessment of EPC contract, Commissioning Documents and onsite audit.

D.2.4. Project boundary, sources and GHGs

Means of validation	<p>As per the § 22 of the methodology ACM0002, version 21.0/B01/, “<i>The spatial extent of the project boundary includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to.</i>”</p> <p>The spatial extent of the project has been represented through a diagram in section B.3 of the PDD/01/. Spatial extent of the project boundary encompasses:</p> <ul style="list-style-type: none"> • Project activity site, where the electricity is being produced.
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	<ul style="list-style-type: none"> the grid that the power plant is connected to, SBEE-CEB grid (TSO). <p>The sources of greenhouse gas identified in the PDD/01/ are deemed to be appropriate and assessed below:</p> <table border="1"> <thead> <tr> <th>Emissions</th> <th>GHGs involved</th> <th>Justification / Explanation</th> </tr> </thead> <tbody> <tr> <td>Baseline emissions</td> <td>CO₂</td> <td>Main emission source, CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. This is emitted from the electricity generation by fossil fuel-fired power plants connected to the SBEE-CEB grid (TSO).</td> </tr> <tr> <td>Project emissions</td> <td>NA</td> <td>Project emission is taken as zero as the project is a renewable energy (solar photovoltaic) project.</td> </tr> <tr> <td>Leakage</td> <td>NA</td> <td>As per the applied methodology /B01/, no leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction.</td> </tr> </tbody> </table>	Emissions	GHGs involved	Justification / Explanation	Baseline emissions	CO ₂	Main emission source, CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. This is emitted from the electricity generation by fossil fuel-fired power plants connected to the SBEE-CEB grid (TSO).	Project emissions	NA	Project emission is taken as zero as the project is a renewable energy (solar photovoltaic) project.	Leakage	NA	As per the applied methodology /B01/, no leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction.
Emissions	GHGs involved	Justification / Explanation											
Baseline emissions	CO ₂	Main emission source, CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. This is emitted from the electricity generation by fossil fuel-fired power plants connected to the SBEE-CEB grid (TSO).											
Project emissions	NA	Project emission is taken as zero as the project is a renewable energy (solar photovoltaic) project.											
Leakage	NA	As per the applied methodology /B01/, no leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction.											
Findings	CL 5 findings have been raised on this section of the VR.												
Conclusion	<p>The validation team was able to confirm that all the identified emission sources which are impacted by the project activity are addressed by the approved methodology /B01/ and can be seen in the Table provided in the section B.3 of the PDD/01/.</p> <p>The validation team confirms that the project boundary and selected sources, sinks and reservoirs are justified for the project.</p> <p>The project boundary has been correctly defined in section B.3 of the PDD/01/ which includes the spatial extent of the project power plant and all power plants connected physically to the project electricity system (SBEE-CEB grid TSO). Furthermore, validation team based on site interviews and sectoral expertise confirms that all sources and gases as required by the applied baseline and monitoring methodology have been considered in the PDD/01/. This is in conformance with § 7.3 of GS VVS, version 1.0/B04/.</p>												

D.2.5. Baseline scenario

Means of validation	DR, I
Findings	No findings have been raised on this section of the VR.
Conclusion	<p>According to the § 24 of the methodology, ACM0002 version 21.0/B01/: "If the project activity is the installation of a Greenfield power plant, the baseline scenario is 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 "TOOL07: Tool to calculate the emission factor for an electricity system"."</p> <p>As the project would be a grid connected renewable power project, the baseline scenario is the electricity delivered to the grid by the project activity. The emission factor for the SBEE-CEB grid (TSO) transmission system connected to WAPP would be used for the project activity.</p> <p>Validation team confirms that the baseline scenario opted by the project activity is in accordance with the requirements of the applied methodology/B01/ and is justified and reflect the actual on ground situation.</p> <p>Hence, the project boundary is defined in accordance with §7.3 of GS4GG VVS (version 1) /B04/.</p>

	4	<p>(d) Host Country Requirements: Projects shall be in compliance with applicable Host Country's legal, environmental, ecological and social regulations.</p>	<p>The project has been initiated by the Government of the Republic of Benin (which is the host country) and is therefore in compliance with applicable Host country's legal, environmental, ecological and social regulations.</p>	<p>The justification for the eligibility of the project activity has been provided in accordance with the Renewable Energy A Requirements/B04/. The applicable project activity is scale project activity</p>
	5	<p>(e) Contact Details: As part of the Project Documentation the Project Developer shall provide (i) name and (ii) contact details of all Project Participants; AND in case of an organisation (iii) the legal registration details and (iv) documentation by the governing jurisdiction that proves that the entity is in good standing (defined as being a legal or other appropriate entity registered in or allowed to operate within the required jurisdiction and with no evidence of insolvency or legal/criminal notices placed against it or any of its Directors). Gold Standard retains the right (at its own discretion) to refuse use of the Standard where reputational concerns are highlighted.</p>	<p>(i) Emeric Tokoudagba (SBPE) Adidjatou Hassan Zanouvi (National Authority/MEF)</p> <p>ii)etokoudagba@sbpe.bj AHASSAN@finances.bj</p> <p>iii) Société Béninoise de Production d'Électricité Immeuble situé en face du collège des Soeurs de Saint-Augustin, quartier Gbédomidji Saint Michel Cotonou - Bénin</p> <p>Ministère de l'Economie et des Finances de la République du Benin 368 avenue du Pape Jean Paul II, 01 BP 302 Cotonou, BJ</p> <p>iv) both entities are national government public institutions, therefore the good standing is de facto.</p>	<p>The justification for the eligibility of the project activity has been provided in accordance with the Renewable Energy A Requirements/B04/. The applicable project activity is scale project activity</p>
	6	<p>(f) Legal Ownership: Full and uncontested legal ownership of any Products that are generated under Gold Standard Certification, (for example carbon credits) shall be demonstrated. Where such ownership is transferred from project beneficiaries this must be demonstrated transparently and with full, prior and informed consent (FPIC).</p> <p>Note that for certain Project types there is a requirement for full and uncontested legal land title/tenure to be demonstrated. These are contained within specific Activity or Product Requirements. All projects shall immediately report to Gold Standard any land title/tenure disputes arising.</p>	<p>As both commissioned and managed by the Republic of Benin, the full legal ownership of any Products that are generated under Gold Standard Certification is guaranteed. The legal ownership of the products generated through GS certification is the Ministère de l'Economie et des Finances de la République du Bénin via its representative at the National Authority to Register Carbon Projects.</p>	<p>The justification for the eligibility of the project activity has been provided in accordance with the Renewable Energy A Requirements/B04/. The applicable project activity is scale project activity</p>
	7	<p>(g) Other Rights: As well as legal title and ownership, the Project Developer shall also demonstrate where required uncontested legal rights and/or permissions concerning changes in use of</p>	<p>NA</p>	

		<p>other resources required to service the Project (for example, access rights, water rights etc.). Any known disputes or contested rights must be declared immediately to Gold Standard by the Project Developer and resolved prior to further project implementation in affected areas.</p>			
8		<p>(h) Official Development Assistance (ODA) Declaration: All Project Developers applying for project activities located in a country named by the OECD Development Assistance Committee's ODA recipient list and seeking Gold Standard Certification for carbon credits shall declare the Official Development Assistance (ODA) support. The Project Developer shall follow the GHG Emissions Reduction & Sequestration Product Requirements and submit the declaration at the time of Design Certification.</p>	<p>The Republic of Benin forms part of the DAC List of ODA Recipients, Effective for reporting on 2022 and 2023 flows. The ODA declaration has been submitted to Gold Standard.</p>	<p>The justification for the eligibility of the project activity has been provided in accordance with the Renewable Energy Activity Requirements/B04/. The applicable project activity</p>	<p>scale project activity</p>
<p>The conditions provided in clauses 3.4.1 and 3.5.1 of the Renewable Energy Activity Requirements/B04/ are not applicable to the project activity.</p> <p>ELIGIBILITY PRINCIPLES</p> <p>Principle 1 – Contribution to Climate Security & Sustainable Development In accordance with clause 4.1.1 of the Renewable Energy Activity Requirements/B04/, the project activity contributes to SDG13 and SDG7 in addition to SDG8.</p> <p>Principle 2 – Safeguarding Principles In accordance with clause 4.2.1 of the Renewable Energy Activity Requirements/B04/, the Safeguarding Principles Assessment has been conducted by the PP in Appendix 1 of the PDD/01/.</p> <p>Principle 3 – Stakeholder Inclusivity In accordance with clause 4.3.1 of the Renewable Energy Activity Requirements/B04/, the project has identified and engaged relevant stakeholders and seeks expert stakeholder input where necessary in the design, planning and implementation. The details are provided in the stakeholder consultation report.</p> <p>Principle 4 – Demonstration of Real Outcomes In accordance with clause 4.4.1 of the Renewable Energy Activity Requirements/B04/, the start date has been determined as per paragraph 4.1.39 of GS4GG Principles & Requirements, version 1.2/B04/.</p> <p>In accordance with clause 4.4.2 of the Renewable Energy Activity Requirements/B04/, the project activity replicates the crediting period cycle of the GS crediting period.</p> <p>In accordance with clause 4.4.3 of the Renewable Energy Activity Requirements/B04/, the project activity shall undergo Design Certification Renewal every 5 years as per GS4GG Principles & Requirements, version 1.2/B04/.</p>					

	In accordance with the clause 4.4.4 of the Renewable Energy Activity Requirements/B04/, the baseline shall be reassessed at the time of Crediting Period Renewal following the applicable methodology/B01/ and GS4GG Principles & Requirements, version 1.2/B04/.
	Principle 5 – Financial Additionality & Ongoing Financial Need
Findings	CL01 & 03 and CAR04 had been raised in this regard and has been resolved.
Conclusion	<p>The project is registered under Gold Standard (GS) and thus financial additionality has been demonstrated as per the GS4GG procedures.</p> <p>Therefore, the proposed project activity is deemed to be eligible under gold standard GS4GG. The validation team based on the description provide above with regard to the assessment of the requirements confirms that:</p> <p>(a) All the assumptions and data used by the project participants are listed in the PDD/01/;</p> <p>(b) All documentation used are relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD/01/.</p> <p>(c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable.</p> <p>(d) The approved baseline methodology has been correctly applied to identify the most plausible baseline scenario.</p>

D.2.7. Demonstration of additionality

Means of validation	Document Review, Interview
Findings	CAR08 had been raised in this regard and has been resolved.
Conclusion	<p>The additionality of the project activity has been demonstrated in the GS-PDD in accordance with the TOOL01: Tool for the demonstration and assessment of additionality, version 07.0.0/B03/. This is in accordance with the methodology ACM0002, version 21.0/B01/.</p> <p>Step 0: Demonstration whether the proposed project activity is the first-of- its-kind This step serves for the demonstration of additionality by means of the first-of-its-kind. As this step is optional, the same is not applied by PP.</p> <p>Step 1: Identification of alternatives to the project activity consistent with current laws and regulations Define realistic and credible alternatives⁴ to the project activity(s) through the following Sub-steps:</p> <p>Sub-step 1a: Define alternatives to the project activity</p> <p>According to Para. 7.7.6.4.2. of VVS version 02.0 (CDM-EB93-A05-STAN), the identification of alternatives is not required since the baseline scenario has already been prescribed in the applied methodology ACM0002 version 21.0.</p> <p>As per para 5.2.1 of the applied methodology “If the project activity is the installation of a Greenfield power plant with or without a BESS as described under paragraph 4(a) or paragraph 5(a), the baseline scenario is electricity delivered to the grid by the project activity that 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 TOOL07.”</p> <p>Sub-step 1b: Consistency with mandatory laws and regulations</p> <p>Validation team evaluated that the baseline i.e. electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources for the project activity is in compliance with mandatory legislation and regulations and nothing restrict the baseline scenario.</p>

Step 2: Investment analysis

The assessment of step 2 requires validation team to determine whether the proposed project activity is not:

- (a) The most economically or financially attractive; or
- (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

Validation team has taken account of the latest version of the “Guidelines on the assessment of investment analysis”, while assessing the step 2.

Sub-step 2a: Determine appropriate analysis method

Step 2a require to “Determine whether to apply simple cost analysis, investment comparison analysis or benchmark analysis (Sub-step 2b). If the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III).”

Sub-step 2b: Option I. Apply simple cost analysis

This step requires to document the costs associated with the CDM project activity and the alternatives identified in Step 1 and demonstrate that there is at least one alternative which is less costly than the project activity. Since the proposed project will generate other financial/economic benefits than CDM related income, the simple cost analysis method (Option I) is not appropriate.

Sub-step 2b: Option II. Apply investment comparison analysis

The investment comparison analysis method (Option II) is only applicable to projects whose alternatives are similar investment projects. Instead, if the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate. Therefore, the benchmark analysis (Option III) is applied.

Sub-step 2b: Option III. Apply benchmark analysis

Assessment of the financial/economic indicator (WACC),

Project developer had demonstrated that the financial returns of the proposed CDM project activity would be insufficient to justify the required capital investment as per CDM Validation and Verification Standard for project activities, version 02.0. In the PDD Version 05, PP has adopted a conservative approach to identify the benchmark for the project activity. The project is generating revenue in terms of power generated from the Wind power plant being used for sell to grid. Thus simple cost analysis (Option I) is not appropriate. Hence out of 2 options, investment comparison analysis (Option II) benchmark analysis (Option III), benchmark analysis is used for the project activity as per project type and decision-making context. Therefore, the Expected return on project is considered appropriate benchmark. Accordingly, the post-tax Project IRR has been considered as the relevant financial indicator for the project activity which is acceptable to the assessment team.

The IRR calculation compares the real IRR with a real benchmark which in both cases takes out the effects of general price increases due to inflation. The benchmark is

determined following the Weighted Average Cost of Capital (WACC) method, based on parameters that are standard in the market since the Greenfield project activity could be undertaken by other promoters.

The Weighted Average Cost of Capital (WACC) is calculated as follows:

$$WACC = re \times We + rd \times Wd \times (1 - Tc)$$

Where:

re = Cost of equity (-)

We = Percentage of financing that is equity (-)

rd = Cost of debt (-)

Wd = Percentage of financing that is debt (-)

Tc = Corporate tax rate (-)

Cost of debt is assumed as the commercial lending rate of the host country Benin, since the benchmark is based on parameters that are standard in the market, and no documented cost of debt financing of comparable projects (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned) is available. The Benin average commercial lending-debit rate from West African States' Central Bank statistics chosen, reflecting $r_d = 9\%^2$.

Cost of equity is determined among the default values for the expected return on equity provided in [Appendix of the Guidelines on the Assessment of Investment Analysis](#)³ (Benin – Group 1), thus $r_e = 13.25\%$. However, for this project no equity has been involved in the financing, thus $We = 0\%$

The applicable corporate tax is taken as per the Project financing assumptions displayed above, $T = 30\%$.

$$WACC = re \times We + rd \times Wd \times (1 - Tc) = 13.25\% \times 0\% + 9\% \times 100\% \times (1 - 30\%)$$

The calculated⁴ WACC results in 6.30%, higher than the Project IRR of 3.64% in the absence of the CDM.

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III): (WACC Vs Project IRR)

Moreover, the financial indicator selected by the PP is correct based on the fact that firstly tool do not restrict the PP to either use project IRR or Equity IRR and secondly the project don't involve any equity component as the debt constitute the 100% of the project cost therefore factually the equity IRR is not relevant in such situation. Hence, PP selected the appropriate indicator based on the actual loan debt composition of the project. The same is thus acceptable to the Validation team.

Item	Value	Unit	Source
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² <https://www.bceao.int/sites/default/files/2021-10/Conditions%20de%20banque%20juin%202021%20-%20Conditions%20d%C3%A9bitrices.pdf>

³ https://cdm.unfccc.int/Reference/catalogue/document?doc_id=000003848

Installed capacity	25	MW	Feasibility Study /06/
Annual net power generation	37	GWh	Feasibility Study /06/
Installation costs	29.88	Million EUR	Feasibility Study /06/
Annual O&M costs	0.565	Million EUR	Feasibility Study /06/
Renewal	10.81	Million EUR	Feasibility Study /06/
Investment horizon	25	Years	Feasibility Study /06/
Expected power price	89.02	€/MWh	Long Term Energy Contract/50/
Income tax	30%	%	General Tax Code/25/

Validation team checked the project IRR calculation and found that input assumptions used for the calculation of project IRR are applicable at the time of investment decision of the project and thus is in accordance with the relevant guideline of the tool, also, the financial analysis is based on parameters that are standard in the market, considering the specific characteristics of the project type.

Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)

Sensitivity analysis: The Guidance on Investment analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation. The project developer has identified Plant Load Factor (PLF), Project cost, Electricity tariff and O&M cost as critical assumptions. These critical parameters constitute more than 20% of either total project costs or total project revenues. The sensitivity analysis reveals that even under more favourable conditions, the IRR without CDM revenue would not cross the benchmark return as given in the following table: Sensitivity Analysis:

Project IRR without CDM	Benchmark
3.64%	6.30%

Variation in	-10%	Normal	+10%	Breaching
Project Cost	2.12%	3.64%	5.53%	-14%
O&M	4.05%	3.64%	3.21%	-70%
Tariff	2.45%	3.64%	4.77%	+25%
PV Production	2.45%	3.64%	4.77%	+25%

Through the assessment of EPC contract/4/ validation team has found that as the project cost is already occurred therefore the reduction in project cost is not possible. Furthermore, taking the inflation into account it is high unlikely that for O&M cost to decrease up to 70%. The tariff is also derived from long-term govt. contracts, making it highly improbable to increase by 25%. Lastly as the PV Production figures are estimated on the basis of PVsyst simulation taking into account the actual irradiation received at site and with the consideration of all probable losses, furthermore, as the plant is operational now and the PV Production for a complete year stood less than the estimated.

	<p>Taking the above assessment into consideration assessment team concludes that the IRR is robust to the sensitive parameters, and the results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, Tariff Rate, PV Production, The IRR is significantly lower than the benchmark. Therefore, It is evident from the results given above; the project remains additional even under the most favorable conditions. Assessment team also confirmed the breaching values for individual parameters and thus confirms that the project is still additional.</p> <p>Step 3: Barrier analysis For the project activity opting for investment analysis, barrier analysis is optional. Therefore, the PP has not opted the Barrier Analysis.</p> <p>Step 4: Common practice analysis</p> <p>Validation team has assessed the common practice analysis of PP referring to section B.5 of the PDD. The validation team has been assessed from the secondary research of different sources,.</p> <p>Benin_Africa_RE_SP.pdf (irena.org)</p> <p>A critical analysis of the energy situation in the Benin Republic and its evolution over the last decade - ScienceDirect</p> <p>Energy_profile_Benin.pdf (zvei.org)</p> <p>Validation team through its primary and secondary research and through the interviews during on site assessment, confirms that the project activity is first of its kind and before the commissioning of the project there existed no activity with relevant scale, capacity, technology, and measure. However, PP has voluntarily chosen the investment analysis to demonstrate the additionality.</p>
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D.2.8. Sustainability assessment (Safeguarding Principles & Requirements)

Means of validation	As per GS4GG Safeguarding principles and requirements version 1.2 of October 2019, all projects shall conform to the Gold Standard for the Global Goals Safeguarding Principles & Requirements. The assessment is done as follows:				
	Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/ no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)	Validation Team Assessment
	Principle 1. Human Rights				

	<p>1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights</p> <p>2. The Project shall not discriminate with regards to participation and inclusion</p>	<p>Yes</p> <p>No</p>	<p>1. The Project is not in conflict with the economic livelihood or other issues of the local community. Thus, the Project does not cause any human rights abuse and respects internationally proclaimed human rights issues.</p> <p>2. The Republic of Benin is a member of the United Nations and the African Union. On 14 October, Benin was elected as a member of the UN Human Rights Council for the period 2022-2024 (source Amnesty International). In addition, the project is compliant with the AFD and EU's social and environmental requirements. As part of the Environmental and Social Study, Discussion groups with a limited number of participants (Focus Group) were organized with each category of affected people, separately (farmers/breeders, traders, young people, elders, women). Women were consulted in separate groups. The list of Focus Groups can be provided upon request.</p>	<p>Not required</p>	<p>The project activity 'Illoulofin PV Solar Plant – Defissol' involves installation of a new grid-connected solar photovoltaic power plant. Compliance with the mandatory requirement is provided in Appendix 1 of the PDD/01/. Republic of Benin has ratified UN Human Rights Conventions . No mitigation measures are applicable to the principle.</p>	
<p>Principle 2. Gender Equality</p>						

	<p>1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women</p> <p>2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work</p> <p>3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)</p>	<p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>(1) The project will improve the condition of women in the region. The absence of electricity is a major obstacle to the social and economic development of the population, particularly women and girls. Indeed, due to the traditional division of labour between women and men in Beninese society, girls and women are responsible for collecting firewood for household needs. This has a considerable impact on the time and health of women and girls as opposed to men and boys. In addition, the project created jobs for women as mentioned in the SDG8 sections (Point 2). Furthermore, the stakeholder meetings and reviews included a Gender Equality and Human Rights Specialist at Center for International Cooperation in Health & Development. (https://santemonde.org/) based in Quebec, Canada: Dr Hortense Lokossou.(Point 4) Benin's commitment to participate in the achievement of sustainable development is strengthened by the partnership established with the Sustainable Development Solutions Network (SDSN), an</p>	<p>Not required</p>	<p>The project will improve the condition of women in the region. Benin is the first African country to benefit from a detailed analysis by the Sustainable Development Solution Network (SDSN). Announced and presented during the United Nations' 2022 High Level Political Forum (HLPF22). The compliance with the Gender Equality been demonstrated by the PP in the Appendix 1 of the PDD/01/. The women representatives for the stakeholders were interviewed by the validation team during the site audit. No mitigation measures are applicable to the principle.</p>
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			<p>organisation mandated by the United Nations Secretary-General, recognized for its independent analysis and expertise.</p> <p>Through this partnership, Benin is the first African country to benefit from a detailed analysis by the Sustainable Development Solution Network (SDSN). Announced and presented during the United Nations' 2022 High Level Political Forum (HLPF22), the publication of this report is a continuation of the efforts implemented by the Government of Benin since 2016 to include the 2030 Agenda at the heart of its development policy. The 2030 agenda includes. Environmental and Social assessments are regulated by a national Decree (Decret-EIES-2017) on the organization of environmental and social assessment procedures, which formalizes several aspects like the introduction of gender and climate change.(Point 3)</p>		
Principle 3. Community Health, Safety and Working Conditions					

	<p>1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community</p>	<p>Yes</p>	<p>The Environmental and Social plan included an action to Develop and rigorously implement a hygiene, health and safety plan on construction sites. The plan has been controlled in the monitoring report on the implementation of the PGES (Environmental and Social Management Plan) /PAR (Resettlement Action Plan). The plan and monitoring report also includes a focus to Provide workers with personal protective equipment (gloves, helmets, nose plugs, ear plugs, safety shoes, reflective waistcoats, glasses, etc.) and ensure that they are worn. This plan also included the monitoring of the following elements:</p> <ul style="list-style-type: none"> - Compliance with noise emission standards -Develop and implement an adequate waste management plan - Covering the trucks loaded with materials - Develop and implement a rigorous hygiene, health and safety plan for the construction sites 	<p>Workplace Health & Safety trainings conducted regularly during the project operation This is monitored and audited through the PGES/PAR monitoring performed by an independent consultant.</p>	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. The Environmental and Social plan included an action to Develop and rigorously implement a hygiene, health and safety plan on construction sites. The plan has been controlled in the monitoring report on the implementation of the PGES (Environmental and Social Management Plan) /PAR (Resettlement Action Plan). The project follows these rules in order to make sure that no community exposure to increased health risks will take place and the health of workers and the community is not adversely affected. Mitigation measures are applicable for the principle and demonstrated by the PP in</p>
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				Appendix 1 of the PDD/01/.
Principle 4.1 Sites of Cultural and Historical Heritage				
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture? >>	Yes	During the stakeholder meeting, a representative (she) of the stakeholders asked for explanations concerning the existence of graves on the site since it is an agricultural zone. The monitoring report on the implementation of the PGES (Environmental and Social Management Plan) /PAR (Resettlement Action Plan) included a verification and negotiation session (presentation of the procedure) with PAPs that have declared the existence of graves on the plant site. Two graves and a voodoo are located within the project area. One grave and the voodoo were precisely located. The second grave was mentioned by a respondent but he was unable to locate it precisely.	On 11th February 2022, A verification and negotiation session (presentation of the procedure) with PAPs that have declared the existence of graves on the plant site. Subsequently, on the 15th February 2022 the Identification of the graves for their relocation in accordance with PARC recommendations was performed. This was reviewed and validated by an external auditor.	The project activity involves installation of a new grid-connected solar photovoltaic power plant. The project is not expected to alter the cultural heritage. The mitigation measures have been taken. The same shall be verified by validation team the time of the verification. Mitigation measures are applicable for the principle and demonstrated by the PP in Appendix 1 of the PDD/01/.
Principle 4.2 Forced Eviction and Displacement				

	<p>Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)? >></p>	<p>Yes</p>	<p>Two households had to be physically displaced for the project. The estimation of losses and compensation not only allows to compensate the stakeholders as fairly as possible, but also to ensure compliance with the World Bank's Environmental and Social Standard on the "Involuntary Resettlement" process, on which AFD's (Agence Francaise de Developpement) social and environmental standards are based: "Displaced persons shall be assisted in their efforts to improve, or at least restore, their livelihoods and standard of living, which shall be considered, in real terms, at the levels prevailing at the time of the pre-displacement or project implementation phase, whichever is more advantageous".</p> <p>Additional details of the mechanism and compensation process can be provided.</p>	<p>In the Environmental and Social Study, the consultant assessed the losses suffered by Stakeholders under the DEFISSOL project and the compensation to which they are entitled. The losses caused by the project are the following:</p> <ul style="list-style-type: none"> - Loss of access to land, which will only be compensated for the customary owners identified under the high voltage line as well as for the 2 households physically displaced; - Loss of crops (crops and trees) for all individual farmers; - Loss of social status of historical farmers; - Destruction of built assets (houses and granaries); - Destruction of cultural heritage. <p>The estimation of losses and compensation not only allows to compensate the stakeholders as fairly as</p>	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. The project is not expected to be Forced Eviction and Displacement. The estimation of losses and compensation not only allows to compensate the stakeholders as fairly as possible, but also to ensure compliance with the World Bank's Environmental and Social Standard on the "Involuntary Resettlement" process, on which AFD's (Agence Francaise de Developpement) social and environmental standards are based: "Displaced persons shall be assisted in their efforts to improve, or at least restore, their livelihoods and standard of living, which shall be considered, in real terms, at the levels</p>
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				<p>possible, but also to ensure compliance with the World Bank's Environmental and Social Standard on the "Involuntary Resettlement" process, on which AFD's (Agence Francaise de Developpement) social and environmental standards are based:</p> <p>"Displaced persons shall be assisted in their efforts to improve, or at least restore, their livelihoods and standard of living, which shall be considered, in real terms, at the levels prevailing at the time of the pre-displacement or project implementation phase, whichever is more advantageous".</p> <p>Additional details of the mechanism and compensation process can be provided. This process is monitored and audited as part of the "Rapport de Suivi PGES and PAR" by an</p>	<p>prevailing at the time of the pre-displacement or project implementation phase, whichever is more advantageous". The mitigation measures have been taken. Mitigation measures are applicable for the principle and demonstrated by the PP in Appendix 1 of the PDD/01/.</p>	
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				independent auditor who confirmed that the compensation and relocation process was satisfactory.		
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	Principle 4.3 Land Tenure and Other Rights		
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	<p>a. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?</p> <p>b. For Projects involving land use tenure, are there any uncertainties with regards to land tenure, access rights, usage rights or land ownership?</p> <p>>></p>	<p>Yes</p>	<p>Part of the Environmental and Social Study identified the population impacted by the projects for which an Action and Resettlement Plan was put in place.</p> <p>In view of the history of the site and the status of occupation of the land by the populations, the people eligible for compensation and support or accompanying measures in the framework of the DEFISSOL project have been divided into several categories, namely</p> <ol style="list-style-type: none"> 1. Historical farmers (only for PAPs within the perimeter of the solar power plant covered by the SBEE land title): 21 families living in the vicinity of the power plant site for several generations are recognised as historical farmers of the site, some of them still cultivating land within the project perimeter and others not. 2. Current farmers: 89 households cultivate land within the project area (109 farmers in total). 3. Customary owners (only for PAPs affected by the high-voltage line as they are not covered by the SBEE land title): 15 households are customary owners of land under the high-voltage line. located under the high-voltage line. 	<p>The losses caused by the project are the following</p> <ul style="list-style-type: none"> - Loss of access to land, which will only be compensated for the customary owners identified under the high voltage line as well as for the 2 households physically displaced; - Loss of crops (crops and trees) for all individual farmers; - Loss of social status of historical farmers; - Destruction of built assets (houses and granaries); - Destruction of cultural heritage. <p>The estimation of losses and compensation not only allows to compensate the stakeholders as fairly as possible, but also to ensure compliance with the World Bank's Environmental and Social Standard on the "Involuntary Resettlement" process, on which AFD's (Agence Francaise de</p>	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. The project is not expected to alter land tenure and other rights. Mitigation measures are applicable for the principle and demonstrated by the PP in Appendix 1 of the PDD/01/.</p>
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			<p>4. Historical occupants: 2 households live within the project perimeter or on the fence line of the solar plant.</p> <p>5. Owners of built economic property: 1 household has an attic affected by the construction of the high-voltage line.</p> <p>The Action and Resettlement Plan ensured that all impacted populations would be compensated fairly, in line with the AFD rules, good practices and guidelines produced by international reference organisations, in particular the World Bank's Environmental and Social Standard n°5 on Involuntary Resettlement. The Action and Resettlement Plan can be provided upon request</p>	<p>Development) social and environmental standards are based:</p> <p>"Displaced persons shall be assisted in their efforts to improve, or at least restore, their livelihoods and standard of living, which shall be considered, in real terms, at the levels prevailing at the time of the pre-displacement or project implementation phase, whichever is more advantageous". Additional details of the mechanism and compensation process can be provided.</p> <p>This process is monitored and audited as part of the "Rapport de Suivi PGES and PAR" by an independent auditor who confirmed that the compensation and relocation process was satisfactory.</p>	
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Principle 4.4 - Indigenous people				
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples? >>	Yes	See point 4.3		The project activity involves installation of a new grid-connected solar photovoltaic power plant. The project is not expected to alter indigenous people rights. Mitigation measures are applicable for the principle and demonstrated by the PP in Appendix 1 of the PDD/01/.
Principle 5. Corruption				
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	SBPE reports directly to the Ministry of Energy. As part of the SDG framework, the country is audited by a second party opinion on its SDG performance, including fight against corruption.	Not required	The project activity involves installation of a new grid-connected solar photovoltaic power plant. SBPE reports directly to the Ministry of Energy. As part of the SDG framework, the country is audited by a second party opinion on its SDG performance, including fight against corruption. No mitigation measures are applicable for the principle.
Principle 6.1 Labour Rights				

	<p>1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions</p> <p>2. Workers shall be able to establish and join labour organisations</p> <p>3. Working agreements with all individual workers shall be documented and implemented and include:</p> <p>a) Working hours (must not exceed 48 hours per week on a regular basis), AND</p> <p>b) Duties and tasks, AND</p> <p>c) Remuneration (must include provision for payment of overtime), AND</p> <p>d) Modalities on health insurance, AND</p>	<p>Yes</p>	<p>Benin is a member state of the International Labour Organization (ILO). The projects do not involve and is not complicit in any form of forced, compulsory or child labour. There won't be any form of labour discrimination. Labour conditions for workers will be safe. All employment will be in compliance with the national labour and occupational health and safety laws and consistent with the principles and standards embodied in the ILO conventions. In addition, the projects are subject to the Monitoring of the affirmative action policy for women and local residents. The use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures was put in place, monitored and audited by an external consultant. The on site ambulance, first aid station and procedure was also reviewed with the VVB.</p>	<p>Not required</p>	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. Republic Of Benin is a member state of the International Labour Rights Organization (ILO). No mitigation measures are applicable for the principle.</p>
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	<p>e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND</p> <p>f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave.</p> <p>4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)</p> <p>5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures</p>					
Principle 6.2 Negative Economic Consequences						

	<p>1. Does the project cause negative economic consequences during and after project implementation?</p> <p>>></p>	No	<p>The project activity is a renewable solar power generation project and generates various employment opportunities for the locals throughout its lifetime. Thus, there are no negative economic consequences during and after project implementation.</p>	Not required	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. Republic Of Benin is a member state of the International Labour Rights Organization (ILO). No mitigation measures are applicable for the principle.</p>
	Principle 7.1 Emissions				
	<p>Will the Project increase greenhouse gas emissions over the Baseline Scenario?</p> <p>>></p>	No	<p>The project reduces Greenhouse Gas (GHG) emissions and fossil fuel usage compared to the baseline scenario.</p>	Not required	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. The project's main purpose is to Greenhouse Gas (GHG) emissions and fossil fuel usage compared to the baseline scenario. The project shall involve the supply of electricity to the grid. No mitigation measures are applicable to the principle.</p>
Principle 7.2 Energy Supply					

	<p>Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?</p> <p>>></p>	No	<p>The project activity is a grid connected renewable energy based Solar power generation project. There is no use of Wood or Biomass in the project activity. On the contrary the project generates renewable energy and supplies to the grid. Hence, it's not required to be monitored.</p>	Not required	<p>The project activity is a grid connected renewable energy based Solar power generation project. There is no use of Wood or Biomass in the project activity. On the contrary the project generates renewable energy and supplies to the grid. Hence, it's not required to be monitored. No mitigation measures are applicable to the principle.</p>	
Principle 8.1 Impact on Natural Water Patterns/Flows						

	<p>Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity? >></p>	<p>No</p>	<p>The project being a solar power project thus there is no impact of water resources. The hydrographic network in the project area is almost non-existent. There are a few quasi-permanent streams such as the Itchèko, Itché, Iwin, Ebé, Idi and Ikpori. There are also a few reservoirs during the rainy season. Pobè has very little irrigation and fishing is virtually non-existent.</p>	<p>Not required</p>	<p>The project being a solar power project thus there is no impact of water resources. The hydrographic network in the project area is almost non-existent. There are a few quasi-permanent streams such as the Itchèko, Itché, Iwin, Ebé, Idi and Ikpori. There are also a few reservoirs during the rainy season. Pobè has very little irrigation and fishing is virtually non-existent. No mitigation measures are applicable to the principle.</p>	
<p>Principle 8.2 Erosion and/or Water Body Instability</p>						

	<p>a. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?</p> <p>b. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?</p> <p>>></p>	No	<p>There is absence of a sensitive ecological area (Reserve Forest area) in the core area of the project. Earthworks will be carried out using excavation and manual clearing techniques throughout the site. The manual technique will preserve the topsoil and make it easier for grass to regrow after the work has been completed. This regrowth will be used during the operational phase, as it will limit the amount of dust raised during strong winds. The soil will not be levelled or compacted.</p>	Not required	<p>There is absence of a sensitive ecological area (Reserve Forest area) in the core area of the project. Earthworks will be carried out using excavation and manual clearing techniques throughout the site. The manual technique will preserve the topsoil and make it easier for grass to regrow after the work has been completed. This regrowth will be used during the operational phase, as it will limit the amount of dust raised during strong winds. The soil will not be levelled or compacted. No mitigation measures are applicable to the principle.</p>
Principle 9.1 Landscape Modification and Soil					

	<p>Does the Project involve the use of land and soil for production of crops or other products? >></p>	No	The project does not imply landscape and soil modification.	Not required	The project activity involves installation of a new grid-connected solar photovoltaic power plant. The project does not imply landscape and soil modification.
Principle 9.2 Vulnerability to Natural Disaster					
<p>Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions? >></p>	No	The project is not susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	Not required	The project is not susceptible to or leads to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions. No mitigation measures are applicable to the principle.	
Principle 9.3 Genetic Resources					
<p>Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)? >></p>	No	The solar plant does not affect the herbal life.	Not required	The project activity is a grid connected renewable energy based Solar power generation project. The solar plant does not affect herbal life. No mitigation measures are applicable to the principle.	
Principle 9.4 Release of pollutants					

	<p>Could the Project potentially result in the release of pollutants to the environment?</p> <p>>></p>	No	<p>According to the EIES, The negative environmental impacts identified are generally localised and insignificant. The Agence Béninoise pour l'Environnement (ABE) is involved in the prior approval of the EIES and the monitoring of environmental impacts during the project.</p>	Not required	<p>The project activity is a grid connected renewable energy based Solar power generation project. According to the EIES, the negative environmental impacts identified are generally localised and insignificant. The Agence Béninoise pour l'Environnement (ABE) is involved in the prior approval of the EIES and the monitoring of environmental impacts during the project. No mitigation measures are applicable to the principle.</p>
	Principle 9.5 Hazardous and Non-hazardous Waste				
	<p>Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?</p> <p>>></p>	No	<p>All hazardous and non-hazardous wastes will be disposed of as per the local regulations.</p>	Not required	<p>The project activity is a grid connected renewable energy based Solar power generation project. All hazardous and non-hazardous waste will be disposed of as per the local regulations. No mitigation measures are applicable to the principle.</p>
Principle 9.6 Pesticides & Fertilisers					

	Will the Project involve the application of pesticides and/or fertilisers? >>	No	Not applicable for solar power plants.	Not required	The project activity is a grid connected renewable energy based Solar power generation project. This principle is not applicable for solar power plants. No mitigation measures are applicable to the principle.
	Principle 9.7 Harvesting of Forests				
	Will the Project involve the harvesting of forests? >>	No	The project does not involve harvesting of forest. EIES study confirms that project activity does not involve harvesting of forest.	Not required	The project does not involve harvesting forests. EIES study confirms that project activity does not involve harvesting of forest. No mitigation measures are applicable to the principle.
Principle 9.8 Food					

	<p>Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives? >></p>	<p>No</p>	<p>The project does not have any impact on the quantity or nutritional quality of food available. However it is worth mentioning that as part of the Defissol project, local farmers have been offered training on compost management, to help them improve the yield of their crops with environmentally friendly techniques.</p>	<p>Not required</p>	<p>The project activity is a grid connected renewable energy based Solar power generation project. The project does not have any impact on the quantity or nutritional quality of food available. However, Defissol project, local farmers have been offered training on compost management, to help them improve the yield of their crops with environmental ly friendly techniques. No mitigation measures are applicable to the principle.</p>
Principle 9.9 Animal husbandry					
<p>Will the Project involve animal husbandry? >></p>	<p>No</p>	<p>Not applicable for solar project</p>	<p>Not required</p>	<p>Not applicable for solar project</p>	
Principle 9.10 High Conservation Value Areas and Critical Habitats					
	<p>Not required</p>		<p>Not required</p>		

	<p>Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified? >></p>		<p>No forest land is involved in this project. There is no direct threat to wild species. Nevertheless, measures must be taken to avoid all forms of man animal conflict. One example is the PV fence has been adapted to allow small spaces for local species to pass through as part of their natural habitat.</p>		<p>The project activity is a grid connected renewable energy based Solar power generation project. No forest land is involved in this project. There is no direct threat to wild species. PV fencing has been adapted to allow small spaces for local species to pass through as part of their natural habitat. No mitigation measures are applicable to the principle.</p>
Principle 9.11 Endangered Species					
	<p>a. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? b. Does the Project potentially impact other areas where endangered species may be present through transboundary affects? >></p>	<p>No No</p>	<p>The EIES study revealed that there were no endangered species found in the project boundary.</p>	<p>Not required</p>	<p>The project activity involves installation of a new grid-connected solar photovoltaic power plant. As per EIES study there were no endangered species found in the project boundary. No mitigation measures are applicable to the principle.</p>
Findings	Car 14 had been raised in this regard and has been resolved.				
Conclusion	The validation team has carried out on site interviews to cross check the safeguarding principal assessment conducted by the PP. GS validation team has also reviewed the initial GS local stakeholder consultation report and GS4GG PDD /01/ and found that the PP has assessed all the required critical safeguarding principles in project activity.				

	<p>validation team has determined whether an upfront assessment against the Safeguarding Principles had been carried out and the project has been implemented in accordance with the requirements set out in Safeguarding Principles and Requirements.</p> <p>CC IPL confirms that conservative approach has been applied by PP to demonstrate sustainable development of the project activity which is in line with GS4GG requirements.</p>
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D.2.9. Estimation of emission reductions or net anthropogenic removals

Means of validation	<p>The steps taken and the equations and parameters applied in the PDD/01/ to calculate the project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected methodology including the applicable tool(s).</p> <p>Quantification of baseline emissions:</p> <p>As per § 47 of the methodology, ACM002, version 21/B01/, baseline emissions are calculated using the following equation:</p> $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ <p>Where:</p> <p>BE_y = Baseline emissions in year y (t CO₂/yr)</p> <p>$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)</p> <p>$EF_{grid,CM,y} = 0.573$ tCO₂ equiv/MWh (Source of data is Standardized Baseline ASB0034-2021 Grid emission factor for West African Power)</p> <p>$EF_{grid,CM,y}$ is combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “TOOL07: Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)</p> <p>As per § 49 of the methodology, ACM0002, version 21/B01/, the project activity is the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity, it verifies the case of a Greenfield renewable energy power plant of the ACM0002 methodology Version 21.0 whereby:</p> $EG_{PJ,y} = EG_{facility,y}$ <p>$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)</p> <p>$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)</p> <p>Calculation of $EF_{grid,CM,y}$</p> <p>Based on Standardized Baseline ASB0034-2021 Grid emission factor for West African Power, the applicable grid emission factor value to calculate the emission reductions of the PV power plant project is 0.573 tCO₂/MWh. The value has been used as applicable to the Wind and solar power generation project activities.</p> <p>Quantification of project emissions:</p> <p>As per § 36 of the methodology/B01/, for most renewable power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions</p>
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that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PEGP_{,y} + PEHP_{,y}$$

Where:

PE_y = Project Emissions in year y (tCO₂e/yr)

$PE_{FF,y}$ = Project Emissions from Fossil Fuel consumption in year y (tCO₂/yr)

$PEGP_{,y}$ = Project Emissions from the operation of dry, flash steam or binary Geothermal power Plants in year y (t CO₂e/yr)

$PEHP_{,y}$ = Project Emission from water reservoirs of Hydro power Plants in year y (tCO₂e/yr)

No project emissions are expected as the project activity only involves renewable electricity generation from the solar power plant without fossil fuel consumption, and according to para 36 of ACM0002 “for all renewable energy power generation activities, emissions due to the use of fossil fuels for the backup generator can be neglected, hence $PE_{FF,y} = 0$.

Project emission from the operation of dry, flash steam or binary geothermal power plants ($PEGP_{,y}$). Project is a solar power plant hence inapplicable and $PEGP_{,y} = 0$.

Emissions from water reservoirs of hydro power plants ($PEHP_{,y}$). Project is a solar power plant hence inapplicable and $PEHP_{,y} = 0$.

Quantification of leakage:

As per section 5.6 of the methodology, ACM0002 version 21/B01/, no leakage emissions have been identified for the project activity.

Summary of net GHG emission reductions or removals:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (t CO₂e/yr)

BE_y = Baseline emissions in year y (t CO₂/yr)

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

The total emission reductions calculated for the crediting period are 105,158 tCO₂e. and 21,031tCO_{2e} per year.

Ex ante estimation of SDG Impact:

	Value/Result	Source/reference
Total installed capacity	25 MW	Feasibility report

	Net electricity delivered to the grid (EG_{PJ,y})	36,705 MWh/yr ⁵ [average of 5 years]	ER sheet EG _{PJ,y} = EG _{facility,y}
	Baseline emission factor of WAPP grid (EF_{grid,CM,y})	0.573 tCO ₂ e/MWh	Section B.6
	Baseline emissions (BE_y)	21,031 tCO ₂ e/year	ER sheet Section B.6 BE _y = EG _{PJ,y} · EF _{grid,CM,y}
	Project emissions (PE_y)	0 tCO ₂ e	Section B.6
	Emission reductions (ER_y)	21,031 tCO ₂ e	ER _y = BE _y – PE _y
Findings	CAR 19 had been raised in this regard and has been resolved.		
Conclusion	<p>Validation team confirms that all relevant assumptions and data are listed in the project description, including their references and sources and that all data and parameter values used in the project description are considered reasonable in the context of the project and all estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description.</p> <p>Validation team confirms that the methodology/B01/, standardized baseline and applied tool/B03/ have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals.</p>		

D.2.10. Monitoring plan

Means of validation	DR, I					
Findings	CAR 14 findings have been raised on this section of the VR and has been resolved.					
Conclusion	<p>The monitoring plan presented in the PDD /01/ complies with the requirements of the applied monitoring methodology ACM0002, version 21/B01/. PP has determined the following parameters to be monitored ex-post for the project activity.</p> <p>The ex-ante monitoring parameters are summarised in the table below:</p>					
	SDGs	Parameter	Data unit	Value	Description	VT Assessment
	13	EF _{grid,CM,y}	tCO ₂ equiv/MWh	0.573	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”	PP has used EF _{grid,CM,y} value from Standardized Base ASB0034-2021 emission factor for V African Po Validation team found value acceptable.
	The ex-post monitoring parameters are summarised in the table below:					
	SDGs	Parameter	Data unit	Value	Description	Monitoring frequency
13	(EG _{PJ,y})	MWh/year of renewable energy [average of 5 years]	36,705	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation	Continuous monitoring	PP has used (EG _{PJ,y}) value from Direct measurement of the parameter from the meter

				n of the project activity”		Validation team finds value in line with PDD/01/.
07	Renewable energy supplied to the national grid from the grid-connected solar PV power plant	Renewable energy share in the total final energy consumption (presented in MWh/year and in % of renewable energy in the global energy mix.)	36,705	Electricity supplied to the national grid. This parameter is monitored for the calculation of estimation of the SDG 7.2.1. Renewable energy share in the total final energy consumption	Continuous monitoring	PP has used the value directly measures from the main meter installed at CEB substation. One backup meter is also installed. On meter installed at the dispatch side of the powerplant. Both dispatch and backup meter can be used in the event of malfunctioning of the main meter. Validation team finds value in line with PDD/01/.
08	Jobs created	Number	27	Refers to total jobs generated as a result of the project.	At least annually	On the basis of onsite visit, Validation team finds value in line with PDD/01/.

Safeguarding Principles that will be monitored

PRINCIPLES	MITIGATION MEASURES ADDED TO THE MONITORING PLAN	Validation Team Assessment
Principle 2. Gender Equality	Favouring the recruitment of women, as audited by the Rapport de suivi PGES and PAR. The stakeholder meetings and reviews included a Gender Equality and Human Rights Specialist at Center for International Cooperation in Health & Development. (https://santemonde.org/) based in Quebec, Canada: Dr Hortense Lokossou	The validation team finds gender equality principle assessment is in line with safeguard principle/B04/

	<p>Principle 3. Community Health, Safety and Working Conditions</p>	<p>The Environmental and Social plan included an action to Develop and rigorously implement a hygiene, health and safety plan on construction sites. The plan has been controlled in the monitoring report on the implementation of the PGES (Environmental and Social Management Plan) /PAR (Resettlement Action Plan). The plan and monitoring report also includes a focus to Provide workers with personal protective equipment (gloves, helmets, nose plugs, ear plugs, safety shoes, reflective waistcoats, glasses, etc.) and ensure that they are worn. This is audited by an external consultant through the Rapport de suivi PGES and PAR</p>	<p>The validation team finds gender equality Community Health, Safety and Working Conditions principle assessment is in line with safeguard principle/B04/</p>
	<p>Principle 4.3 Land Tenure and Other Rights</p>	<p>This process is monitored and audited as part of the “Rapport de Suivi PGES and PAR” by an independent auditor who confirmed that the compensation and relocation process was satisfactory.</p>	<p>The validation team finds Land Tenure and Other Rights principle assessment is in line with safeguard principle/B04/</p>
<p>The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected solar power project/ unit being implemented in Bénin. The monitoring plan, which will be implemented by the project participant describes the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving. The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant.</p> <p>The monitoring plan as provided in the PDD /01/ includes The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant.</p> <p>Monitoring team:</p> <ul style="list-style-type: none"> • Responsibilities of Site In charge (PP): Overall functioning and maintenance of the project activity, the Site in charge shall coordinate with the O&M operator. • Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters. • Responsibilities of Shift In-charge: Responsibility for day-to-day data collection and maintains day to day monitored data. <p>Mismatch in Monitoring Period and the Billing Period :</p> <p>In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid is calculated from: $D = (A/B)*C$ A = Difference of number of days which are not matching of billing period and monitoring period. B = Number of days of the billing period/month which was not matched with the monitoring period.</p>			

	<p>C = Net Electricity supplied to the grid for that given billing period/ month. The calculated value after apportioning would be used for calculation of emission reductions during that period.</p> <p>Emergency preparedness:</p> <p>The project activity is not resulting in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.</p> <p>In the unlikely event of failure of both Main meter &/or Check meter installed at sub-station, where both the faulty meters are required to repair or replaced simultaneously, the meters shall be replaced immediately by the spare meter kept available at the site.</p> <p>Personnel training:</p> <p>In order to ensure a proper functioning of the project activity and a proper monitoring of emission reductions, the staff is trained. The plant helpers are trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.</p> <p>The monitoring plan is assessed to be appropriate for the technology type proposed to be installed in the project activity. The validation team, through document review and interviews with the relevant stakeholders, has reviewed the procedures. The information provided has allowed the validation team to confirm that the proposed monitoring plan is feasible within the project design and PP has defined the roles and responsibility for reliable unbiased monitoring for identified each of the monitoring parameters. The relevant points of monitoring plan were discussed with the PP during the site interviews. This is deemed appropriate in accordance with the requirement of § 13.15 of GS VVS (version 1.0) /B04/</p>
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D.3. Start date, crediting period type and duration.

Means of validation	DR, I
Findings	CAR 12 & 13 had been raised in this regard and have been resolved.
Conclusion	Start date for the project activity is 03/08/2020 based on the signing of the EPC contract for the project activity /53/. The expected operating lifetime of the project is 25 years based on the power purchase agreement /33/. The chosen crediting period for the project activity is 15 years starting from 12/07/2022 or the date of submission of the PDD for GS registration (whichever is later). The commissioning date of project is 12/07/2022. This is deemed appropriate in accordance with the requirement of § 13.6.1 of GS VVS (version 1.0) /B04/

D.4. Environmental impacts

Means of validation	DR, I
Findings	No findings have been raised on this section of the VR.
Conclusion	<p>The validation team reviewed the PDD/01/ and confirms that environmental impact analysis has been done in conformity with prevailing legislation in the Host Country, Republic of Benin. The environmental and Social Impact Assessment (ESIA) report /13-1/ has been provided to the validation team. The ESIA approval has also been provided to the validation team/13-2/.</p> <p>The environmental impacts and the mitigation measures have been provided in the section D.2 of the PDD/01/.</p> <p>This is deemed appropriate in accordance with the requirement of § 7.7.5 of GS VVS (version 1.0) /B04/</p>

D.5. Local stakeholder consultation

Means of validation	DR, I
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Findings	No findings have been raised on this section of the VR.
Conclusion	<p>The validation team reviewed the PDD/01/ and confirms that the Local stakeholder invitations have been carried out orally by project representatives and via signs on communal places. Project presentation occurred from the 4th to the 17th of June 2019 (including focus groups). Feedback meetings occurred on the 17th of July until the 3rd of August 2019 within 3 locations: Illoulofin, Onigbolo, Kadjola. The Continuous Input / Grievance Expression as follows:</p> <p>The Village Monitoring Committees (VMC) and The Communal Monitoring Committee (CMC), either by providing a letter or making a verbal complaint. The VMC or CMC can relay a complaint from a community member or group, either by writing it down in a letter or by expressing it verbally to an SBPE representative in charge of complaints handling. Once the complaint has been forwarded to SBPE, it is registered to enter the processing system.</p> <p>The Consultant identified that SBPE already has a landline number to call for complaints and grievances. This is displayed in the main SBPE building in Cotonou. For each call, the SBPE agent is required to fill in the complaint form and collect all the required data. In order to avoid telephone costs for the complainant, the SBPE representative must call him/her back and thus ensure that the complaint is free of charge. Dedicated Telephone line for grievances</p> <p>The validation team interviewed some local stakeholders during the site audit and confirms the stakeholder consultation conducted by PP on 23/05/2023 and 24/05/2023. The validation team confirms that the process for conducting the local stakeholders meeting is adequate and credible.</p> <p>This is deemed appropriate in accordance with the requirement of § 12.9 of GS VVS (version 1.0) /B04/</p>

D.6. Contributions to Sustainable Development Goals (SDGs)

Means of validation	DR, I
Findings	CAR 2 findings have been raised on this section of the VR and has been resolved
Conclusion	<p>The validation team reviewed the PDD/01/ and confirms that SDGs contributions included in the project activity.and the monitoring of SDG parameters are already assessed in sec D.2.10.</p> <p>Validation team interviewed some local stakeholders during the site audit and confirms the SDGs benefited PP. The validation team confirms that SDGs are well implemented.</p>

SECTION E. Internal quality control

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The final validation report before being submitted to the client is subjected to an independent technical review to confirm that all validation activities has been completed according to the pertinent CCIPL procedures. The technical review is performed by a technical reviewer qualified in accordance with the CCIPL's qualification procedure.

SECTION F. Validation opinion

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Carbon Check (India) Pvt. Ltd. has performed validation of the project activity "Illoulofin PV Solar Plant – Defissol" in Republic of Benin, with regard to the relevant requirements for GS CER activities.

The review of the project design document and the subsequent follow-up interviews have provided CCIPL with sufficient evidence to determine the fulfilment of the stated criteria.

The project correctly applies the approved baseline and monitoring methodology “ACM0002, version 21.0”.

The project activity ‘Illoulofin PV Solar Plant – Defissol’ involves installation of a new grid-connected solar photovoltaic power plant. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the “Illoulofin PV Solar Plant – Defissol” are estimated to be on average 21,031 tCO₂e per year over the selected 5 years twice renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions and of the sustainable development indicators. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is CCIPL’s opinion that the project participants are able to implement the monitoring plan.

In conclusion, it is CCIPL’s opinion that the project activity “Illoulofin PV Solar Plant – Defissol” in Republic of Benin, as described in the PDD, version 5.0 of 13/09/2023 meets all relevant GS4GG requirements for the GS CER and all relevant host Party criteria and correctly applies the baseline and monitoring methodology “ACM0002, version 21.0”.

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private. Limited.
CEB	Communauté électrique benin
CL	Clarification Request
CO ₂	Carbon Dioxide
CO _{2e}	Carbon dioxide equivalent
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GS4GG	Gold Standard for Global Goals
MoV	Means of Verification
MP	Monitoring Plan
PDD	Project Design Document
PE	Project Emissions
PP(s)	Project Participant
SBEE	Société Béninoise d'Energie Electrique
SBPE	Société Béninoise de Production d'Électricité
SDG	Sustainability Development Goal
SMP	Sustainability Monitoring Plan
SS(s)	Sectoral Scopes
VER	Voluntary Emission Reductions
VVB	Validation and Verification Body
VVS	Validation and verification standard

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Harish Sharma

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC 14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

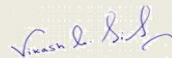
- | | | | |
|---|--|---|--|
| <input checked="" type="checkbox"/> Validator | <input checked="" type="checkbox"/> Verifier | <input checked="" type="checkbox"/> Team Leader | <input checked="" type="checkbox"/> Technical Expert |
| <input type="checkbox"/> Technical Reviewer | <input type="checkbox"/> Health Expert | <input type="checkbox"/> Gender Expert | <input type="checkbox"/> Plastic Waste Expert |
| <input checked="" type="checkbox"/> SDG+ | <input checked="" type="checkbox"/> Social no-harm(S+) | <input checked="" type="checkbox"/> Environment no-harm(E+) | <input type="checkbox"/> CCB Expert |
| <input type="checkbox"/> Financial Expert | <input checked="" type="checkbox"/> Local Expert for India | | |

in the following Technical Areas:

- | | | | | |
|--|--|----------------------------------|---|----------------------------------|
| <input checked="" type="checkbox"/> TA 1.1 | <input checked="" type="checkbox"/> TA 1.2 | <input type="checkbox"/> TA 2.1 | <input checked="" type="checkbox"/> TA 3.1 | <input type="checkbox"/> TA 4.1 |
| <input type="checkbox"/> TA 4. n | <input type="checkbox"/> TA 5.1 | <input type="checkbox"/> TA 5.2 | <input type="checkbox"/> TA 7.1 | <input type="checkbox"/> TA 8.1 |
| <input type="checkbox"/> TA 9.1 | <input type="checkbox"/> TA 9.2 | <input type="checkbox"/> TA 10.1 | <input checked="" type="checkbox"/> TA 13.1 | <input type="checkbox"/> TA 13.2 |
| <input type="checkbox"/> TA 14.1 | <input type="checkbox"/> TA 15.1 | | | |

Issue Date
1st January 2023

Expiry Date
31st December 2023



Mr. Vikash Kumar Singh
Compliance Officer



Mr. Amit Anand
CEO



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Indumathi C

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|--|--|---|--|
| <input checked="" type="checkbox"/> Validator | <input checked="" type="checkbox"/> Verifier | <input checked="" type="checkbox"/> Team Leader | <input checked="" type="checkbox"/> Technical Expert |
| <input checked="" type="checkbox"/> Technical Reviewer | <input type="checkbox"/> Health Expert | <input type="checkbox"/> Gender Expert | <input type="checkbox"/> Plastic Waste Expert |
| <input checked="" type="checkbox"/> SDG+ | <input checked="" type="checkbox"/> Social no-harm(S+) | <input checked="" type="checkbox"/> Environment no-harm(E+) | <input type="checkbox"/> CCB Expert |
| <input checked="" type="checkbox"/> Financial Expert | <input checked="" type="checkbox"/> Local Expert for India and Sri Lanka | | |

in the following Technical Areas:

- | | | | | |
|--|--|----------------------------------|---|---|
| <input checked="" type="checkbox"/> TA 1.1 | <input checked="" type="checkbox"/> TA 1.2 | <input type="checkbox"/> TA 2.1 | <input checked="" type="checkbox"/> TA 3.1 | <input type="checkbox"/> TA 4.1 |
| <input type="checkbox"/> TA 4. n | <input type="checkbox"/> TA 5.1 | <input type="checkbox"/> TA 5.2 | <input type="checkbox"/> TA 7.1 | <input type="checkbox"/> TA 8.1 |
| <input type="checkbox"/> TA 9.1 | <input type="checkbox"/> TA 9.2 | <input type="checkbox"/> TA 10.1 | <input checked="" type="checkbox"/> TA 13.1 | <input checked="" type="checkbox"/> TA 13.2 |
| <input type="checkbox"/> TA 14.1 | <input type="checkbox"/> TA 15.1 | | | |

Issue Date
1st January 2023

Expiry Date
31st December 2023



Mr. Vikash Kumar Singh
Compliance Officer



Mr. Amit Anand
CEO

Appendix 3. Documents reviewed or referenced.

No.	Provider	Documents
/01/	CME	<ul style="list-style-type: none"> V1.3_T-PreReview_V1.3-Project-Design-Documents version 05 dated: 10/11/2023 V1.3_T-PreReview_V1.3-Project-Design-Documents v4 15/10/2023 V1.3_T-PreReview_V1.3-Project-Design-Documents v3 15/10/2023
/02/	CME	<ul style="list-style-type: none"> DEFISSOL Emission Reduction ex-ante Calculation version 8, dated: 10/11/2023. DEFISSOL Emission Reduction ex-ante Calculation version 7, dated: 15/10/2023
/03/	CME	Declaration against no legal contests, disputes and grievances received
/04/	CME	Official Development Assistance (ODA) Declaration
/05/	CME	The contractual agreement between parties involved
/06/	CME	Project implementation schedule
/07/	CME	Investment Analysis spreadsheet
/08/	CME	Common practice analysis sheet
/09/	CME	The power purchase agreement with regional Electricity authority – for solar project
/10/	CME	Supporting document for carbon calculations
/11/	CME	Guidelines on Environmental Impact Assessment
/12/	CME	Legal regulatory notifications act rules with respect to identified E+ and S+ requirements
/13/	CME	EIA approval letter
/14/	CME	Project layout drawing
/15/	CME	List of auxiliary equipment used in the project activity
/16/	CME	Auxiliary captive equipment's layout consumption
/17/	CME	Equipment specification
/18/	CME	Document to justify the operational lifespan of a project
/19/	CME	Document to justify the technical lifespan of a project
/20/	CME	Energy meter calibration reports
/21/	CME	Energy meter test calibration reports - solar power plant
/22/	CME	Breakdown of Equipment Costs

/23/	CME	Breakdown of construction costs
/24/	CME	Bank loan agreement
/25/	CME	Depreciation rate permitted by the host country's Government
/26/	CME	Specific onsite organization chart for the project activity
/27/	CME	Electricity connection diagram to the grid showing the metering location
/28/	CME	QAQC procedures (if any)
/29/	CME	Operation and maintenance procedures
/30/	CME	Guidelines for the calibration procedures are available in the Monitoring Manual
/31/	CME	A third-party study confirming the PLF for the project activity - solar power plant
/32/	CME	Detailed project report (DPR) for the project activity - solar power plant
/33/	CME	Purchase order copies for the project activity
/34/	CME	Supportive documents to justify common practice analysis
/35/	CME	All Supportive documents for the investment analysis input values
/36/	CME	36. Debt sanction details from a financial institution(s)
/37/	CME	Completion of the Environmental Impact Assessment (EIA)
/38/	CME	Approval by National Environment Management Authority (NEMA)
/39/	CME	Approval of Power Purchase Agreement (PPA)
/40/	CME	Technical Due Diligence Report from external expert
/41/	CME	Development approval by the County Government
/42/	CME	Receipt of External Audit of the Project Financial Model
/43/	CME	The management decision to proceed (Resolution) – Investment Decision
/44/	CME	Completion of Audit of Livelihood Implementation Plan
/45/	CME	Commencement of full Commercial Operations – Operational Start Date
/46/	CME	Grounding principal diagrams
/47/	CME	Backup diesel generator
/48/	CME	Distance confirmation between Defissol and CEB
/49/	CME	Study on impact of lighting and security systems
/50/	CME	LT Contract
/51/	CME	Contract between PP and VVB
/52/	CME	Monthly generation record of the project activity
/53/	CME	EPC Contract
/54/		On site Survey Record

No.	Author	Title	References to the document	Provider
/B01/	UNFCCC	Applied baseline and monitoring methodology, “Grid-connected electricity generation from renewable sources”, ACM0002, version 21.0	http://cdm.unfccc.int/	Publicly
/B02/	UNFCCC	Methodological Tool: 1. TOOL01: Tool for the demonstration and assessment of additionality, version 07.0.0 2. TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, version 3.0 4. TOOL07: Tool to calculate the emission factor for an electricity system, version 07.0 5. Tool24: Common practice, version 3.1	http://cdm.unfccc.int/	Publicly
/B03/	UNFCCC	Standardized baseline ASB0034: Grid emission factor for West African Power Pool, version 01.0 (Entry into force 24/03/2021)	http://cdm.unfccc.int/	Publicly
/B04/	Gold Standard for Global Goals	1. GS4GG Principles and Requirements, version 1.2 dated 23/10/2019 2. GS4GG Renewable Energy Activity Requirements, version 1.3 dated 14/01/2021 3. GS4GG Stakeholder Consultation and Engagement Guidelines, version 1.2, dated 23/10/2019 4. GS4GG Safeguarding Principles & Requirements, version 1.2, 09/10/2019 5. GS4GG Validation/Verification Body Requirements, version 2.0, dated 14/01/2021	https://www.goldstandard.org/	Publicly

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1 CLs from this validation

CL ID	1	Section no.	KPI	Date: 25/05/2023
Description of CL				
It is found that in general description CME is representing "Beninoise d'Energie Electrique (SBEE)" as the project owner, however, in KPI table "Republic of Benin/Ministry of Economy And Finances" has been represented as the project owner, CME shall clarify the role of different entities transparently and the information shall be consistently mentioned in the Design Document.				
Project participant response				Date: 09/06/2023
<p>At the time of the project feasibility study and impact study design between 2017 and 2020, the main governing body for national electricity production and distribution was SBEE (Société Béninoise d'Energie Electrique). In 2021, a national electricity production company was set up (Société béninoise de production électrique (SBPE)) to manage the public power stations and buy energy from independent producers before handing it over to SBEE. SBEE's mandate was subsequently focused on electricity distribution only.</p> <p>As a result, SBPE is now the Project owner of the Defissol plant when it comes to energy production which gets then handed over to SBEE at grid level for distribution.</p> <p>In December 2022 a presidential decree was adopted by the council of ministers establishing a National Authority to Register Carbon Projects. As such All carbon credits generated by projects developed in Benin are sovereign assets. Therefore SBPE handed ownership of all its carbon credits to the National Authority to Register Carbon Projects, via its representative of the "Republic of Benin/Ministry Of Economy And Finances" for monetisation and additionality financing (see document Lettre transfert actifs carbone Central PV.PDF in the dataroom).</p>				
The documentation provided by project participant				
<p>DECRET N° 2022-698 DU 07 DECEMBRE 2022 fixant les modalités d'enregistrement des projets carbone</p> <p>3.52 Lettre transfert actifs carbone Central PV.PDF</p>				
GS VVB assessment				Date: 21/07/2023
<p>The information provided by CME indicates that there have been significant governance changes in the national electricity production and distribution sector in Benin between 2017 and 2022. Initially, the Société Béninoise d'Energie Electrique (SBEE) was responsible for both electricity production and distribution. However, in 2021, the Société béninoise de production électrique (SBPE) was established to focus on electricity production, while SBEE's mandate was limited to electricity distribution.</p> <p>VVB further assessed that in December 2022, a presidential decree was adopted by the council of ministers to establish a National Authority to Register Carbon Projects in Benin. The decree stipulates that all carbon credits generated by projects in Benin are considered sovereign assets. The response indicates that SBPE has handed over ownership of all its carbon credits to the National Authority to Register Carbon Projects, specifically through its representative of the "Republic of Benin/Ministry Of Economy And Finances."</p> <p>Based on the information provided by CME, the VVB finds that the governance changes in the national electricity production and distribution sector in Benin are not detrimental to the eligibility of the Defissol plant as a carbon project. Additionally, the transfer of ownership of carbon credits to the National Authority to Register Carbon Projects aligns with international standards and regulations.</p> <p>CL #1 is closed</p>				

CL ID	2	Section no.	KPI	Date: 25/05/2023
Description of CL				
<ol style="list-style-type: none"> 1. CME shall justify how the given project activity is a regular project activity. 2. CME to fill in missing information under KPI. 				
Project participant response				Date: 09/06/2023

1. According to the GS guideline template:	
<p>"A project is regular cycle if stakeholder consultation (1st round) has been conducted before the project start date. Otherwise, it is a retroactive project." The Project start date/EPC contract date is 08.09.2020 whereas stakeholder consultation dates was as the following: <i>Project presentation: From 4 to 17/06/2019 (incl. focus groups)</i></p> <p><i>Feedback meetings: 23 & 24/07/2019 / 3 locations: Illouloufin, Onigbolo, Kadjola.</i></p> <p>As the stakeholder meetings took place in 2019, and the start date is 2020, the project is regular cycle.</p>	
2. Missing information under KPI updated as requested	
The documentation provided by project participant	
https://www3.idealsvdr.com/v3/04771087 EPC contract https://www3.idealsvdr.com/v3/04747443 DEFISSOL_PAR_RapportPrincipal_Volume1_V.7 https://www3.idealsvdr.com/v3/04747461 EIES_PGES_DEFISSOL_SBEE_V.9	
GS VVB assessment	Date: 21/07/2023
<p>1. VVB has assessed the response and documentary evidence provided by the CME and found that the stakeholder consultation took place in year 2019 whereas the EPC contract was awarded in year 2020, this follows §4.1.42 (a) of the GS4GG Principle and Requirements.</p> <p>2. KPI Table is still not filled completely.</p> <p>CL #2 is open.</p>	
Project participant response	Date: 14/09/2023
2- KPI table has been updated accordingly,	
The documentation provided by project participant	
<i>As per updated PDD sent</i>	
GS VVB assessment	Date: 04/10/2023
VVB has assessed and found that KPI table has been updated with required dates as per the template. CL #2 is closed.	

CL ID	3	Section no.	A.1.1	Date: 25/05/2023
Description of CL				
VVB's evaluation indicates that the project activity qualifies as a renewable energy project. Consequently, CME must provide justification against eligibility criteria (a) of section A.1.1, demonstrating how the project meets the criteria outlined in the "Renewable Energy Activity Requirement" of the GS.				
Project participant response				Date: 09/06/2023
Criteria has been updated: "The project involves physical action/implementation on the ground. The Solar Power Plant Project is conceived as a grid connected large solar power plant within the category of renewable energy supply. See section A.1."				
The documentation provided by project participant				
<i>PDD Version 1.3</i>				
GS VVB assessment				Date: 21/07/2023
VVB has assessed that the justification against eligibility criterion has been updated by the CME. The project is a ground mounted solar power project supplying power to the national grid this fulfils the applicability criteria (a) of section 3.1.1 of GS4GG Principles & Requirements and is in line with §2,1,2(b) of Renewable Energy Activity Requirement Version 1.4 and applicability condition §4 (a) of the applied methodology ACM0002 version 21.				
CL #3 is closed.				

CL ID	4	Section no.	A.3	Date: 25/05/2023
Description of CL				
VVB has assessed the section A.3 of the PD and finds that the evacuation point is not clear, CME shall clarify whether the final metering point is at Project Substation (S/S), CEB S/S or at SBEE grid.				
Project participant response				Date: 09/06/2023
CEB is the TSO so indeed the powerplant will eventually feed the HT-B lines managed by CEB but in between the project has an HTB evacuation system via an underground HTA line of 20 KV over 3 Kilometers and a step-up transformer 20/161 KV - 50 MVA at Onigbolo CEB substation.				
The documentation provided by project participant				
Meters on this SDL https://www3.idealsvdr.com/v3/04771083 meter is called "Comptage DEFISSOL" in the Delivery station (=Poste de Livraison") Followed by a 3320m HVA sub grounded line connected to CEB grid https://www3.idealsvdr.com/v3/04766963 : Evacuation line plan				
GS VVB assessment				Date: 21/07/2023
The metering point still not clear, CME shall clearly mention the metering point, providing the location of billing meter. CL #2 is open.				
Project participant response				Date: 13/09/2023
The metering point is now provided at the Transformer level (Grid substation) and PDD updated accordingly				
The documentation provided by project participant				
Picture here: https://drive.google.com/drive/folders/1uf_CsC_VEFm_MFONYi4ZXU_wah527jiR?usp=sharing DEFISSOL-DG-SE-001- Schéma unifilaire général Défissol.png				
GS VVB assessment				Date: 04/10/2023
VVB has assessed the response and related section A.3 of the PDD. PP has transparently mentioned the metering location as CEB grid substation. CL #4 is closed.				

CL ID	5	Section no.	B.3	Date: 25/05/2023
Description of CL				
CME shall clarify why the CO2 emissions from PV Solar Power plant in the project scenario has been excluded from project boundary?				
Project participant response				Date: 09/06/2023
"No CO2 emissions are emitted from the project activity" has been clearly stated in the GHGs for the project scenario. Also added the following conclusion: "Hence the project boundary includes the Solar Project activity, sub-station, grid and the power plants connected to grid. The proposed project activity will evacuate power to the SBEE-CEB grid (TSO)."				
The documentation provided by project participant				
PDD Version 1.3				
GS VVB assessment				Date: 21/07/2023
The backup and auxiliary power source i.e. grid and DG set is potential source of CO2 emission from the project activity, Therefore, need to be included in the project boundary. CL#5 is open.				
Project participant response				Date: 13/09/2023
Auxiliary power source and backup genset are very minor sources of CO2 emission from the project activity but should not be included as per methodology. This has been updated more explicitly in the PDD section B.3. Project boundary				
The documentation provided by project participant				
PDD Version 1.3				

GS VVB assessment	Date: 04/10/2023
VVB has assessed that as per §5.4.1 of applied methodology ACM0002 version 21.0 paragraph 37 “For all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected”. Considering this CL 05 is closed.	

Corrective action required (CARs)

Table 2 CARs

CAR ID	1	Section no.	KPI	Date: 25/05/2023
Description of CAR				
<ol style="list-style-type: none"> 1. CME shall correct the indexing of the Key Project Information in line with the PDD template. Moreover, CME shall use the latest version 1.3 of the GS PDD. 2. CME shall delete the extra information provided in the blue text box of the template. As per template guideline the blue text box shall be deleted upon completion of the design document. 3. In key project information table, CME shall <ol style="list-style-type: none"> a) Correct the version number of the PD as it should start from version 1. The next version shall be version 2. b) If applicable, shall update the other requirements applied. c) Shall mention the applied methodology and its version. 				
Project participant response				Date: 09/06/2023
<ol style="list-style-type: none"> 1. Indexing of the Key Project Information has been updated to “1” as per the CAR. The PDD template used has now been updated to version 1.3. 2. Blue box has been deleted 3. <ol style="list-style-type: none"> a. Version corrected to 2 b. Updated as part of the clarification points c. Methodology and version have been mentioned 				
Documentation provided by project participant				
<i>PDD version 1.3 submitted</i>				
GS VVB assessment				Date: 21/07/2023
<ol style="list-style-type: none"> 1. PP has corrected the indexing of the key project information in line with the PDD template. 2. The extra information provided in the blue text box has been deleted. 3. In the key project information table, PP has updated the version of the PDD, methodology name and version. 				
CAR # 1 is closed.				

CAR ID	2	Section no.	Table-1	Date: 25/05/2023
Description of CAR				
<ol style="list-style-type: none"> 1. To be corrected Value in Table 1 2. The information required in Table 1 - Estimated Sustainable Development Contribution shall be detailed in the table in line with the heading. CME may refer to the template guide for filling Table 1 				
Project participant response				Date: 09/06/2023
Information in Table 1 has been updated in line with the requirements, using the template guide.				
Documentation provided by project participant				
<i>PDD Version 1.3</i>				
GS VVB assessment				Date: 21/07/2023

It is found that the value has been updated in table 1 of the revised PD, however, the SDG target, impact and units are not mentioned correctly in table 1, CME shall use the SDG impact tool to correctly identify and report the relevant SDG target and impact for the project activity. CAR#2 is open	
Project participant response	Date: 13/09/2023
Updated the SDG impact/target to 13.2, 7.2, 8.5.1 respectively and assessed the value (in %) for SDG Impact 7.2 A: estimation of total demand (=internal prod+imports) B: estimation of PV prod alone Renewable energy share in the total final energy consumption → $R = A / B$	
The documentation provided by project participant	
see new PDD Calculation is here: <i>Production totale Bénin_vNia.xlsx</i> https://drive.google.com/drive/folders/1uf_CsC_VEFm_MFONYi4ZXU_wah527jiR?usp=sharing	
GS VVB assessment	Date: 04/10/2023
VVB has assessed the updated PDD and found that the targets and impacts have been correctly identified and the units are in line with the SDG impact tool. CAR # 2 is closed.	

CAR ID	3	Section no.	A.1	Date: 25/05/2023
Description of CAR				
It is found that the name of Entity is changed from SBEE to SBIE, CME shall update the PD as per latest name and provide the notification regarding the name change for the validation of VVB				
Project participant response				Date: 09/06/2023
Please refer to CL.1 for detailed explanation of the restructuring of the National Energy production and distribution companies in Benin, which is now correctly reflected in the PDD.				
Documentation provided by project participant				
<i>PDD Version 1.3</i>				
GS VVB assessment				Date: 21/07/2023
The Entity name has been updated to SBPE which is consistent with the documents submitted and assessment of CL1. However, as the section A.1 is a short summary of the information in sections A.2, A.3, B.3 & B.4, CME shall update the section with the required information. CAR#3 is open.				
Project participant response				Date: 13/09/2023
A.1 section is now a concatenation of A2, A.3, B.3 & B.4 in the PPD				
The documentation provided by project participant				
see new PDD				
GS VVB assessment				Date: 04/10/2023
VVB has assessed the updated PDD and found the section A.1 in line with the PDD template guidance. CAR#3 is closed.				

CAR ID	4	Section no.	A.1.1 & A.1.2	Date: 25/05/2023
Description of CAR				
<ol style="list-style-type: none"> 1. CME shall refer to the correct version of GS4GG Principles and Requirements throughout the PDD. 2. CME must refer to the latest version of GS4GG "RENEWABLE ENERGY ACTIVITY REQUIREMENTS" throughout the design document. 3. In section A.1.1, under eligibility criteria (d), CME shall mention the name of the Host Country. 4. In section A.1.1, under eligibility criteria (e), CME shall mention the legal registration detail of the Project Developer. 				

5. In section A.1.1, under eligibility criteria (f), CME shall mention the name of the entity that has full and uncontested legal ownership of the products generated through GS certification.	
Project participant response	Date: 09/06/2023
1. Requested changes made 2. Requested changes made 3. Requested changes made 4. Requested changes made 5. Requested changes made	
Documentation provided by project participant	
PDD Version 1.3	
GS VVB assessment	Date: 21/07/2023
1. CME has corrected the version of GS4GG Principles and Requirements version 1.2 in section A.1.1 of the PD. 2. Renewable Energy Activity Requirement V1.4 is now referred in the updated PD. 3. Host country Republic of Benin has been updated under eligibility criteria (d) of section A.1.1 of the PD. 4. The contact details of the representative of the project developer have been updated as per the requirement of Template filling guide, the developer is a government entity. 5. "Republic of Benin/Ministry Of Economy And Finances" has full and uncontested legal ownership of the products generated through GS certification. The same has been updated under eligibility criteria (f) of section A.1.1 of the PD.	
CAR#4 is closed.	

CAR ID	5	Section no.	A.5	Date: 25/05/2023
Description of CAR				
CME shall update section A.5, with the following information. i. Indicate whether the project activity receives public funding. If any public funding is received, provide information on the sources of the public funding. ii. For carbon credit projects taking place in countries on the OECD Development Assistance Committee's ODA recipient list a signed Official Development Assistance (ODA) Declaration is required.				
Project participant response				Date: 09/06/2023
Information has been provided in the PDD in section A.5				
Documentation provided by project participant				
PDD Version 1.3				
GS VVB assessment				Date: 21/07/2023
CME confirmed that no ODA has been received for the project activity and the ODA declaration has also been submitted. Section A.5 has been updated accordingly to reflect the same information. CAR#5 is closed.				

CAR ID	6	Section no.	B.2	Date: 25/05/2023
Description of CAR				
CME shall evaluate the applicability condition 4 of section 2.2 of the applied methodology.				
Project participant response				Date: 09/06/2023
One criteria below was missing and has been added to the PDD in section B.2 :				

- The project activity is installation of a new grid connected renewable solar power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant)

Documentation provided by project participant	
<i>PDD Version 1.3</i>	
GS VVB assessment	Date: 21/07/2023
VVB has assessed that the missing applicability condition has been updated and justified in the revised PD. CAR#6 is closed.	

CAR ID	7	Section no.	B.5 (Table 8)	Date: 25/05/2023
Description of CAR				
<ol style="list-style-type: none"> 1. All assumptions like Installation cost, O&M Cost and Renewable cost have been sourced from the EPC contract and O&M contract. CME shall update the assumption available during the time of decision-making period. 2. As represented, CME has opted for option three i.e. benchmark analysis, it is not clear why LOCE is computed by CME. 				
Project participant response				Date: 09/06/2023
<ol style="list-style-type: none"> 1. Please note that all assumptions mentioned in the above comment Installation cost, O&M Cost and Renewable cost have been sourced from the preliminary study (document 3.6 “Projet PV DEFISSOL - Rapport d'étape 2 vfinale” in the data room, as opposed to the EPC and O&M contract. Therefore, as the preliminary study is concomitant to the decision making period it is compliant with the request. 2. LCOE has been removed to avoid double counting the cost and revenues. We only included the CAPEX + OPEX + Renewal as costs and used the “transfer price” between SBPE and SBEE which is in practice the energy that is bought from abroad through long term contracts. 				
Documentation provided by project participant				
<ol style="list-style-type: none"> 1. document 3.6 “Projet PV DEFISSOL - Rapport d'étape 2 vfinale” in the data room 2. Averaged price from long term contracts with interconnected countries (Nigeria + Ghana) has been used but a more generic term (“energy reselling price”) has been used in the PDD as those prices are highly sensitive information and should not be public nor hinted. Information can however be shared with the VVB on a need to know basis. 				
GS VVB assessment				Date: 21/07/2023
<ol style="list-style-type: none"> 1. VVB has assessed that the assumptions have now been referred from the Preliminary study and the input values used in investment analysis were valid and applicable at the time of the investment decision taken by the CME. This is in line with §10, Tool 27, “Investment Analysis” version 12. 2. VVB assessed that the LCOE analysis has been removed from the Financial Worksheet and IRR has been computed for benchmark analysis. 				
CAR is #7 Closed.				

CAR ID	8	Section no.	B.5	Date: 25/05/2023
Description of CAR				
If there is no other activity within the output range of +/-50%, then why the CME is using stepwise approach. Moreover, CME shall provide documentary evidence or data to support the claim.				
Project participant response				Date: 09/06/2023

<p>There is no other activity as Défissol is the first of its kind in Bénin (cf. <i>Feasibility study</i>). Hence, following steps are not relevant for a stepwise approach i.e. the proposed project activity is not regarded as “common practice”. In conclusion of the overall additionality demonstration, the proposed project activity is deemed additional.</p>	
<p>Documentation provided by project participant <i>Feasibility study slide 7 - first of its kind project</i></p>	
<p>GS VVB assessment</p>	<p>Date: 21/07/2023</p>
<p>VVB has assessed from the secondary research different sources. Benin Africa RE SP.pdf (irena.org) A critical analysis of the energy situation in the Benin Republic and its evolution over the last decade - ScienceDirect Energy profile Benin.pdf (zvei.org) 448 kWh</p> <p>VVB through its primary and secondary research and through the evidence provided by PP, confirms that the project activity is first of its kind and before the commissioning of the project there existed no activity with relevant scale, capacity, technology, and measure. However, PP has voluntarily chosen the investment analysis to demonstrate the additionality.</p> <p>CAR #8 is closed.</p>	

CAR ID	9	Section no.	B.5.1	Date: 25/05/2023
Description of CAR				
CME shall demonstrate the prior consideration of ER revenue in relevant part of section B.				
Project participant response				Date: 09/06/2023
Section 5.1 of the document updated with the relevant demonstration as requested				
Documentation provided by project participant				
<i>PDD Version 1.3</i>				
GS VVB assessment				Date: 21/07/2023
The response is not in line with the requirement of §4.1.49, Principles and Requirements, Version 1.2.				
CAR#9 is open.				
Project participant response				Date: 13/09/2023
updated to N.A				
The documentation provided by project participant				
<i>See new PDD</i>				
GS VVB assessment				Date: 04/10/2023
VVB assessed that PP has updated section justifying that the demonstration of prior consideration is not applicable to the regular projects. As the given project is regular hence the prior consideration is not applicable to the project, this is in conformity with per para (a) of §4.1.49, Principles and Requirements, Version 1.2. CAR #9 is closed.				

CAR ID	10	Section no.	B.5.2	Date: 25/05/2023
Description of CAR				
In section B.5.2, CME shall provide a short narrative that demonstrates how the revenue from Gold Standard certification is material to the ongoing sustainability of the project.				
Project participant response				Date: 09/06/2023
Section 5.2 of the document updated with the relevant demonstration as requested				
Documentation provided by project participant				
<i>PDD Version 1.3</i>				
GS VVB assessment				Date: 21/07/2023
The section B.5.2 is only applicable to the project undergoing renewable certification and hence not applicable to the given project.				
CAR#10 is closed.				

CAR ID	11	Section no.	B.6	Date: 25/05/2023
Description of CAR				
<ol style="list-style-type: none"> 1. CME shall update the SDG ID in SDG goal outcome table. 2. CME has selected the SDG target 13.1, however, VVB Has found that the indicator is not relevant to the selected parameter. CME shall update the same in a revised version of the PDD. 3. CME has selected SDG target 7.2, however, the selected indicator is not relevant to SDG 7.2, CME shall update it appropriately. 				
Project participant response				Date: 09/06/2023
<ol style="list-style-type: none"> 1. Updated as requested. 2. Updated to 13.2 as per the SDG tool provided by GS 3. Referring to the SDG impact tool from Gold Standard (430_V1.1_IQ_SDG-Impact-tool, tab "BA", cells R:S4) for SDG goal 7.2: User should provide details of quantity of net electricity generation that is produced and fed into the grid and/or consumed internally as a result of the implementation of the project activity. Disaggregation of data on consumption of renewable energy by resource and end-use sector could provide insights into other dimensions of the goal, such as affordability and reliability. For solar energy, it may also be useful to disaggregate between grid and off-grid capacity. Data Unit (cell S4 in SDG impact tool tab BA): MWh The unit and details required are therefore aligned with GS SDG tools requirements 				
Documentation provided by project participant				
<i>PDD Version 1.3 for point 3: 430_V1.1_IQ_SDG-Impact-tool.xlsx</i>				
GS VVB assessment				Date: 21/07/2023
<ol style="list-style-type: none"> 1. SDG ID of the SDG Goal outcome table has been updated. Point is closed. 2. The SDG indicator for SDG 13 is still not correct, CME shall update the indicator as per the SDG tool version 1.2. 3. CME has selected SDG target 7.2, however, the selected indicator is still not relevant to SDG 7.2, CME shall update it appropriately. Similarly for SDG 8 too the most relevant target and SDG impact indicator need to be updated as per the SDG tool version 1.2. 				
CAR#11 is open.				
Project participant response				Date: 13/09/2023
updated the SDG target/indicator to 13.2 / 13.2.2 - 7.1 / 7.2.1 - 8.5 / 8.5.1				
The documentation provided by project participant				
see new PDD section B.6				
GS VVB assessment				Date: 04/10/2023
<ol style="list-style-type: none"> 2. The SDG indicator for SDG 13 has now been updated to 13.2.2 under SDG target 13.2, As the indicator is relevant to the project type and is line with the project tool, point is closed. 3. Similarly, SDG 7 and 8 too has been updated with the most relevant target and SDG impact indicator as per the SDG tool version 1.2. <p>CAR #11 is closed.</p>				

CAR ID	12	Section no.	C.1	Date: 25/05/2023
Description of CAR				
As per GS4GG Principle 4., the start date is "the earliest date on which the Project Developer has committed to expenditures related to the implementation of the Project" As per GS4GG Principle 4, Justify if the project is regular, or retroactive. CME shall correct the start date in section C.1.1 and shall ensure the KPI table matches it.				
Project participant response				Date: 09/06/2023
Date has been updated to reflect the date of the contract signature for the complete installation of the plant.				

Documentation provided by project participant	
3.36. Contrat EPC Defissol	
GS VVB assessment	Date: 21/07/2023
VVB assessed that CME updated the start date however, the justification if the project is regular, or retroactive is missing. CME shall update the same as per the requirement of Template Guide. CAR #12 is open	
Project participant response	Date: 13/09/2023
Stakeholder Consultation (1st round) has been conducted before the Project Start Date therefore the project is regular	
The documentation provided by project participant	
see new PDD section C.1	
GS VVB assessment	Date: 04/10/2023
VVB assessed the updated PDD and found that the section C.1.1 has been updated with the relevant information. CAR #12 is closed.	

CAR ID	13	Section no.	C.2.1	Date: 25/05/2023
Description of CAR				
<ol style="list-style-type: none"> CME shall represent the Expected operational lifetime of the project in the relevant section of the PDD and shall submit the documentary proof of the same. Further, the Crediting period start date shall be corrected accordingly in section C. It is found that crediting period has been selected for 1 year, CME shall correct the length of crediting period as applicable 				
Project participant response				Date: 09/06/2023
Provided documentation, mainly hardware technical specification and guarantees.				
Documentation provided by project participant				
https://www3.idealsvdr.com/v3/04786513 updated emission reduction sheet https://www3.idealsvdr.com/v3/04767012 Technical spec HV transformer https://www3.idealsvdr.com/v3/04748052 Technical spec PV module https://www3.idealsvdr.com/v3/04767011 Technical spec PV inverter https://www3.idealsvdr.com/v3/04771087 EPC contract that include the "Insurance" part https://www3.idealsvdr.com/v3/04748053 Maintenance documents				
GS VVB assessment				Date: 21/07/2023
<ol style="list-style-type: none"> VVB assessed that the start date of the crediting period is mentioned as 19-07-2022 which is the powerplant commissioning date. Five years crediting period renewable up to two times has been opted by CME. CAR#13 is closed.				

CAR ID	14	Section no.	D.1	Date: 25/05/2023
Description of CAR				
Safeguarding Principal Assessment to be done for all safeguarding principles of Appendix 1. CME shall complete the table of assessment for each safeguarding principle with the justification of relevance or risk mitigation and monitoring plan.				
Project participant response				Date: 09/06/2023
Tables of assessment have been updated with justification as per the CAR requirement				
Documentation provided by project participant				
PDD Version 1.3				
GS VVB assessment				Date: 21/07/2023
Safeguarding Principal Assessment has been updated in appendix 1. Also, ongoing monitoring has been included in the section D.1. CAR 14 is closed.				

CAR ID	15	Section no.	D.2	Date: 25/05/2023
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Description of CAR	
CME shall explain if there is any policy that aligns the project with Gender Equality and existing country policies. Also, explain how the project has contributed to gender equality during the construction and operational phase.	
Project participant response	Date: 09/06/2023
Section D.2 has been updated to highlight the alignment of country and project policies with regards to Gender equality and how the project has contributed to gender equality.	
Documentation provided by project participant	
<i>PDD Version 1.3</i>	
GS VVB assessment	Date: 21/07/2023
VVB assessed that the section D.2 has been updated to highlight the alignment of project with policies and contribution to the gender equality. However, the explanation to question 1 is not addressing the requirement of the specific question. CAR is open	
Project participant response	Date: 13/09/2023
Added the following to the PDD: <i>"The Defissol project also aims at hiring local workforce, ensuring women are hired with a direct monitoring of equal pay among gender for similar roles/skills."</i>	
The documentation provided by project participant	
<i>see new PDD section D.2</i>	
GS VVB assessment	Date: 04/10/2023
VVB has assessed the updated response against Q1 in section D.1. The response reflects the few pertinent gender sensitive issue of the host country that has been outlined in the gender policy for the project like equal job opportunity and equal pay to the women among genders for similar roles/skills. CAR # 15 is closed.	

CAR ID	16	Section no.	D.2	Date: 25/05/2023
Description of CAR				
CME to provide a declaration against no legal contests/disputes and grievances received during the current monitoring period.				
Project participant response				Date: 09/06/2023
Declaration submitted				
Documentation provided by project participant				
<i>Declaration absence de plaintes Defissol-1</i>				
GS VVB assessment				Date: 21/07/2023
The declaration against no legal contests/disputes and grievances received during the current monitoring period has been submitted. CAR #16 is closed.				

CAR ID	17	Section no.	D.2	Date: 25/05/2023
Description of CAR				
VVB has assessed that the source of the electricity tariff assumed in the financial worksheet is not clear. CME shall update the sale price available during the decision-making date. Also, the PPA needs to be submitted for validation.				
Project participant response				Date: 09/06/2023
We use the "transfer price" between SBPE and SBEE which is in practice the energy that is bought from abroad through long term contracts.				
Documentation provided by project participant				
<i>Link to Long term contracts</i> https://www3.idealsvdr.com/v3/11131129 <i>Recap here:</i> https://www3.idealsvdr.com/v3/04783849				
GS VVB assessment				Date: 21/07/2023
VVB assessed that the average of long-term electricity sale contract has been considered for the electricity tariff. The CME has submitted the long-term electricity sale contract between SBPE and				

SBEE. However, in financial worksheet the exchange rate of Euro applicable at the time of decision making need to be provided in the assumptions to arrive the exact tariff. The CAR #17 is open.	
Project participant response	Date: 13/09/2023
2021's USD/XOF rate has been used to reflect the electricity long term tariffs. Long Term tariff is now 85.77 EUR/MWh vs. 93.27 EUR/MWh previously.	
The documentation provided by project participant	
See new calculation: Long term contract recap v3.xlsx https://drive.google.com/drive/folders/1uf_CsC_VEFm_MFONYi4ZXU_wah527jir?usp=sharing	
GS VVB assessment	Date: 04/10/2023
VVB has assessed the response and found that the average long term exchange rate doesn't pertains to the decision-making time-period. CAR is open.	
Project participant response	Date: 04/10/2023
The file below will amend the USD-XOF exchange rate taking into account the EPC contract date as the valuation date of both long term contracts (Nigeria + Ghana). Energy reselling price is now 89.02 €/MWh.	
The documentation provided by project participant	
Long term contract recap v4.xlsx https://drive.google.com/open?id=1-1CsTQOgjYwb_fQPCF8imsgFv-8-fRYF&usp=drive_fs	
GS VVB assessment	Date: 15/10/2023
VVB assessed the revision, the exchange rate considered is in line with the decision making period. CAR 17 is closed.	

CAR ID	18	Section no.	D.2	Date: 25/05/2023
Description of CAR				
It is found that the LCOE and Project outflows like CAPEX and OPEX have been considered concomitantly due to which there is a double counting of expenses/outflow. CME shall correct the financial worksheet by avoiding double counting.				
Project participant response				Date: 09/06/2023
Financial worksheet has been amended accordingly. We only included the CAPEX + OPEX + Renewal as costs and used the "transfer price" between SBPE and SBEE which is in practice the energy that is bought from abroad through long term contracts. Loan repayment has been added also				
Documentation provided by project participant				
Link to Financial sheet: https://www3.idealsvdr.com/v3/04783854				
GS VVB assessment				Date: 06/09/2023
<ol style="list-style-type: none"> VVB has assessed the revised financial sheet and found that still the project cost and loan repayment both has been considered in cash-flow for the computation of IRR, this is the double counting of project cost and is compliance with §13, Investment Analysis (Tool 27) "The cost of financing expenditures (i.e. loan repayments and interest) shall not be included in the calculation of project IRR." The fair value of any project activity assets at the end of the assessment period shall be included as a cash inflow in the final year. The fair value should be calculated in accordance with local accounting regulations where available, or international best practice. It is expected that such fair value calculations will include both the book value of the asset and the reasonable expectation of potential profit or loss on the realization of the assets. Interest Payment should be added back to estimate net project cashflow in IRR calc sheet. CME shall submit the source of annual lease expense considered in P&L statement of financial worksheet. As assessed by VVB in the Preliminary Feasibility Report, the Net generation already includes the 2% LID loss which is a one-time loss and 0.4% annual degradation. Therefore, the CME shall use the generation estimates in line with the Feasibility Report. 				

6. It is found that the project has a future expansion plan with an extension of similar capacity. CME to clarify whether "land + stakeholder management and impact cost" is combined for the total project capacity including future expansion or for the existing capacity only.

CAR #18 is open.

Project participant response **Date: 13/09/2023**

1. sheet has been updated accordingly
2. sheet has been updated accordingly.
3. sheet has been updated accordingly.
4. Annual lease expense has been corrected to 0
5. We used the assumption of the feasibility report (37 GWh/year Prod + 0.4% degradation factor and excluding the 2% LID effect).
6. Updated the assumptions
 - a. "Maitrise foncier" cost has been divided in 2. Maitrise foncier means Land registration and management . As the land will be used for the other project the conservative assumption was to divide this cost in two between the projects.
 - b. "EIES + PGES + Etude sol + Topo" cost has been divided in 2. EIES means Environmental and Social impact studies, PGES means Environmental and Social Management Plan, to ensure the execution of the recommendations of the EIES, Etude sol means Soil analysis and Topo means topography. All these studies will benefit Defissol and the other potential projects in the same area. Therefore it has been assumed that these costs should be divided in two between the two projects.
 - c. "AMO" cost (means construction project management cost) these cost will be **only** supported by Défissol alone, as it is the costs relating to the project management for the construction of the Defissol project. Any additional project would require another project management cycle throughout the construction process for similar costs, and therefore cannot be split. This AMO section could be reflected in a separate section, however it has been decided to remain consistent with the presentation format of the preliminary study which showed a,b,c in the same sub-section.

The documentation provided by project participant

https://drive.google.com/drive/folders/1uf_CsC_VEFm_MFONYi4ZXU_wah527jiR?usp=sharing
 justification calculation sub-CAR #1-2-3-4-6
 See new financial sheet with updated assumptions
 Update Final_Costs & interests_IRR_Defissol_25MW_using template Version20230910 Aym.xlsx
 justification calculation PV Prod, sub-CAR #5
 DEFISSOL Emission Reduction ex-ante Calculation v5.xlsx

GS VVB assessment **Date: 04/10/2023**

1. VVB has assessed the revised financial sheet and found that loan repayment has been added back as an inflow to the net cashflow for the computation of IRR, this is complied with §13, Investment Analysis (Tool 27) "The cost of financing expenditures (i.e. loan repayments and interest) shall not be included in the calculation of project IRR." Point is closed.
2. The salvage value amounting 10% of project activity assets initial value has now been included as a cash inflow in the final year at the end of the assessment period. Point is close.
3. VVB assessed that the Interest Payment now has been added back to estimate net project cashflow in IRR sheet. Point is closed.
4. VVB has assessed the updated IRR sheet and found that annual land lease expense has now been set as Zero. Point is closed.
5. The response is not in line with the query. The LID loss is already considered in the PVsyst estimates therefore can't be deducted again. Annual degradation loss is also included in the first-year

estimate of PVsyst therefore same can't be deducted from the net generation figure of first year. Moreover, the generation estimates used in ER worksheet and financial worksheet are not consistent. Point is Open.

6. PP has clarified and VVB crosschecked that the a) "Maitrise foncier" i.e., land Management cost and B) "EIES + PGES + Etude sol + Topo" i.e. Environmental, social impact, soil investigation and topographical study cost has now been divided into two as per the consideration of feasibility report.

CAR is partially open.

Project participant response	Date: 04/10/2023
The file below will amend the LID effect AND ALSO the degradation factor for year 1.	
The documentation provided by project participant	
DEFISSOL Emission Reduction ex-ante Calculation v6.xlsx https://drive.google.com/open?id=1-1CsTQOgjYwb_fQPCF8imgFv-8-fRYF&usp=drive_fs	
GS VVB assessment	Date: 15/10/2023
5. VVB assessed that the additional LID and annual degradation for first year has now been removed from the generation estimates. CAR 18 is closed.	

CAR ID	19	Section no.	D.2	Date: 25/05/2023
Description of CAR				
VVB assessed the Emission Factor calculation worksheet and found that CME only computed the operating margin. CME shall provide the calculations for build margin to finally compute the combined margin. Also, assumptions for the selection of energy data from particular regions should be clarified.				
Project participant response				Date: 09/06/2023
The BM build margin have been added to calculate the CM combined margin. Assumptions regarding the PV profile is based on feasibility study.				
Documentation provided by project participant				
https://www3.idealsvdr.com/v3/04780944 : forecasted PV production study				
GS VVB assessment				Date: 21/07/2023
VVB assessed that as the given standalone project falls in purview of WAPP which is a connected grid system, therefore, CME shall use the Grid Emission Factor for the West African Power Pool. CAR #19 is open.				
Project participant response				Date: 13/09/2023
We used the default Standardized baseline combined margin for WAPP (0.573 tCOe/MWh). The value has been updated in the PDD, ER sheet, SDG Tool				
The documentation provided by project participant				
https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210325112041972/ASB0034-2021.pdf https://drive.google.com/drive/folders/1uf_CsC_VEFm_MFONYi4ZXU_wah527jiR?usp=sharing DEFISSOL Emission Reduction ex-ante Calculation v5.xlsx				
GS VVB assessment				Date: 04/10/2023
VVB assessed that the PP has now used the default emission factor from "Standardized baseline - Grid emission factor for the West African Power Pool" Version 1. CAR # 19 is closed.				

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN); • Make editorial improvements.
03.1	11 January 2018	Editorial revision to remove an erroneously included instruction paragraph in section D.2 (Identification of project type).
03.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
02.0	22 July 2016	EB 90, Annex 3 Revision to include provisions related to automatically additional project activities.
01.0	23 March 2015	Initial publication.

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