

**GOLD STANDARD FOR THE GLOBAL GOALS (GS4GG)
REPORT
-
VERIFICATION**



Project Title: Sapphire 49.5 MW Wind Farm Project
Monitoring Period: 01/01/2021 to 31/12/2022
GS project ID: 11307
Internal ID: BELL_GS_VER_19123
Customer: SAPPHIRE WIND POWER CO. LTD.
Date: 28/03/2024
Revision: 03

SUMMARY			
Reference No.	Date (first version)	Version No.	Date (last version)
BELL_GS_VER_19123	11/10/2023	03	28/03/2024
GS4GG Verification			
GS4GG Certified Product (sought):		GHG Emission Reductions	
GS4GG SDG Impact Statement (sought):		Not Applicable	
General Information			
Client	SAPPHIRE WIND POWER CO. LTD.		
Project Title	Sapphire 49.5 MW Wind Farm Project		
Project Participants	SAPPHIRE WIND POWER CO. LTD.		
Project Location	7-A/K, MAIN BOULEVARD, FULBERG II, LAHORE, Islamic Republic of Pakistan		
Contact Person	FAHD NAEEM		
Monitoring Period:	01/01/2021 to 31/12/2022		
GS4GG Version: 1.2 Current Methodology Version: ACM0002 Version 20.0		GS4GG Sectoral Scope: 2 UNFCCC CDM Sectoral Scope: 1 Technical Area: 1.2	
Initial Monitoring Report Version: 1 Date: 06/10/2023		Final Monitoring Report Version: 1.6 Date: 28/03/2024	
Key Project Information & Project Design Document (PDD) Date: 17/03/2022, version: 3.2			
Estimated values (ex-ante) for each SDG: SDG 13: 61,998 tCO ₂ e/year SDG 7: 137,500 MWh/year SDG 8: 20 jobs			
Actual achieved values for each SDG during this monitoring period: SDG 13: 111,455 tCO ₂ e SDG 7: 223,873 MWh SDG 8: 20 jobs			
Selected Sustainable Development Goals (SDGs): SDG7; SDG8; SDG13			
Verification Summary			
LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by SAPPHIRE WIND POWER CO. LTD. to perform the second periodical verification of Sapphire 49.5 MW Wind Farm Project (GS Ref. No. 11307) applying the methodology ACM0002 version 20.0.			
The management of SAPPHIRE WIND POWER CO. LTD. is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.			
A desk review and follow up have been conducted to verify the data submitted in the monitoring report. Applus+ Certification confirms the following has been reviewed:			
(a) The Key Project Information & Project Design Document (PDD) for the crediting period, including the monitoring plan and the corresponding validation report:			

- (b) Monitoring report(s);
- (c) Former Verification Report(s);
- (d) The applied monitoring methodology ACM0002, v21;
- (e) Relevant decisions, clarifications and guidance from the CMP;
- (f) The GS4GG Version 1.2 and related Annex.

All information and references relevant to the project activity's resulting in emission reductions.

The project is a new-built wind power project. The total installed capacity of the project is 52.8 MW involves the installation and operation of 33 wind turbines of 1,600 kW. The purpose of the project activity is to utilize wind power to generate electricity. The project will contribute to the reduction of GHG emission by displacing part of the electricity from National Transmission & Dispatch Company Limited (NTDC) electricity grid which is dominated by fossil fuel-fired power plants.

Applus+ Certification confirms that the project is implemented in accordance with the validated and registered Key Project Information & Project Design Document (PDD).

The monitoring plan complies with the applied methodologies and the GS4GG Version 1.2, the monitoring has been carried out in accordance with the monitoring plan. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ Certification confirms that the implementation of the project has resulted in 111,455 tCO₂e emission reductions during period 01/01/2021 to 31/12/2022.

ASSESSMENT TEAM		
Team Members	Type of Resource ¹	Organization (for OEs)
Lead Auditor: Raúl González Mitre	EI	NA
Auditor: NA	-	NA
Technical Expert: Raúl González Mitre	EI	NA
Technical Reviewer: N Premjit Singh	IR	NA

¹ IR (Internal Resource); EI (External Individual); OE (Outsourced Entity)

ABBREVIATIONS	
ACM	Approved Consolidated Methodology
Applus+ Certification / Applus+	LGA Technological Center, S.A. (Applus+)
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CL / CR	Clarification Request
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GS4GG (or GS)	Gold Standard for Global Goals
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
NEPRA	National Electric Power Regulatory Authority
NTDC	National Transmission and Despatch company
NGO	Non-Governmental Organization
NTDC	National Transmission & Dispatch Company Limited
SDG	Sustainable Development Goal
TAC	Gold Standard Technical Advisory Committee
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
SN	Serial Number
UNFCCC	United Nations Framework Convention for Climate Change
VVB	Validation and Verification Body
VT	Verification Team
VVS	Validation and Verification Standard
WAPDA	Water & Power Development Authority

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1. INTRODUCTION

1.1 Objective

LGAi Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by SAPPHIRE WIND POWER CO. LTD. to perform the second periodical verification of Sapphire 49.5 MW Wind Farm Project (GS Ref. No. 11307) applying the methodology ACM0002 Version 20.0. Gold Standard projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Gold Standard CERs.

The objective of the verification work is to comply with the GS4GG Version 1.2. According to this assessment Applus+ Certification shall:

- Ensure that the project activity has been implemented and operated as per the Key Project Information & Project Design Document (PDD) and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place;
- Ensure that the published MR and other supporting documents provided are complete, verifiable and in accordance with applicable VVS and Gold Standard requirements;
- Ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology;
- Evaluate the data recorded and stored as per the Grid connected renewable electricity generation, ACM0002 Version 20.0.

1.2 Scope

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the VVB. The verification is based on the submitted monitoring report, the validated and registered PDD as well as its validation report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB, The GS4GG Version 1.2 and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the GS4GG Version 1.2 and related rules and guidance.

Based on the requirements in the Validation and Verification Standard for project activities version 01.0 as well as the GS4GG Version 1.2, Applus+ Certification has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification considers both quantitative and qualitative information on emission reductions. The verification also considers the monitoring of sustainable parameters.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 Description of the project activity

Project activity:	Sapphire 49.5 MW Wind Farm Project Gold
Standard registration number:	3511

Project Participants: SAPPHIRE WIND POWER CO. LTD (Project Owner)
 Location of the project: 7-A/K, MAIN BOULEVARD, FULBERG II, LAHORE,
 Islamic Republic of Pakistan
 CDM registration date: 14/11/2012
 GS registration date: 07/02/2022
 1st GS crediting period 22/11/2015 - 21/11/2025
 Remote audit for 1st Monitoring period 11/04/2022
 under GS (02/08/2019 – 31/12/2020)

Sapphire 49.5 MW Wind Farm Projec. (hereafter referred to as "the project" or "the project activity") is located at 7-A/K, Main Boulverda, Fulberg II, Lahore, Islamic Republic of Pakistan, within a narrow cooridor, spanned by the following coordinates:

	Longitude	Latitude
1.	67°51'48.33" E	25°07'18.40" N
2.	67°51'48.03" E	25°07'10.59" N
3.	67°54'40.46" E	25°06'20.95" N
4.	67°56'01.05" E	25°05'35.46" N
5.	67°57'53.13" E	25°05'03.55" N
6.	67°58'08.95" E	25°05'28.90" N

The project is a new-built wind power project. The total installed capacity of the project is 52.8 MW involves the installation and operation of 33 wind turbines of 1,600 kW. The purpose of the project activity is to utilize wind power to generate electricity. The project will contribute to the reduction of GHG emission by displacing part of the electricity from National Transmission & Dispatch Company Limited (NTDC) electricity grid which is dominated by fossil fuel-fired power plants.

2. **METHODOLOGY**

Applus+ Certification's approach to the verification is a two-stage process.

In the 1st stage, Applus+ Certification completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

Applus+ Certification used a periodical Verification Checklist which, based on the risk-based assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

In the 2nd stage, using the Verification Checklist, Applus+ Certification verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit (if applicable) and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

2.1 **Appointment of the assessment team**

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage
Raúl González Mitre	LA/TE	1	1.2
N Premjit Singh	TR	1	1.2

The curricula vitae of the VVB's validation team members are provided below:

Raul G. Mitre, PhD, is a professional with more than 16 years of experience in climate change, specialized in Monitoring, Reporting and Verification (MRV) evaluating more than 300 projects in more than 20 countries all over the globe.

Raul has a degree in Industrial Administration, specializing in productivity and quality from the National Polytechnic Institute of Mexico. He holds a Master's degree in Quality Management from the University La Salle of México City, a Master's degree in Project Management from the University Ramon Llull of Barcelona, a postgraduate degree in Integrated Management Systems from the University of Wismar in Germany, an MBA from the University La Salle of Andorra and a PhD in Sustainability with the Pan American Center for Higher Education University in Mexico.

He is also an international auditor of ISO 9001 (quality), ISO 14001 (environment), ISO 45001 (occupational safety), ISO 37001 (anti-bribery), ISO 50001 (energy), ISCC (International Sustainability Carbon Standard and RSB (Roundtable of Sustainable Biomaterials)).

Dr. N Premjit Singh has a PhD in Mechanical Engineering (Thesis: Design and development of a square parabolic dish system with a concentrated photovoltaic (CPV) module for performance improvement) from the Indian Institute of Technology (IIT) Madras, Chennai, India, awarded in 2021. M.Tech in Energy Technology, Tezpur University, Napaam, India (2007), and B.Tech in Mechanical Engineering (2005), NERIST, Nirjuli, India. He has extensive experience of about 7 years with VVB's, including UNFCCC CDM and other carbon related schemes (e.g., VCS, GS, GCC), and 5 years + in research projects, renewable energy, and energy audits. In Applus+ since March 2023, he has been the Product Assurance Manager for CDM/VCS/GS4GG/GCC Department to ensure the quality of the performance of different assessments, coordinate the global team for technical reviews, and identify the training needs for the auditors and technical reviewers to improve the quality of reports.

He holds experience as a Lead Auditor, Validator and Verifier for GHG mitigation projects and programmes of activities in Sectoral Scope 1.2 (Renewables) and 3.1. (Energy Demand) and is qualified as per Applus+ procedures as Lead Auditor, Validator, Verifier, Technical Expert for SS/TA 1.2. and Technical Reviewer.

Dr. N Premjit Singh is based in Gurugram, India.

2.2 Document review

The Monitoring Report version 1 was submitted to VVB before the verification activities started. The MR was assessed based on all the relevant documents. The aim of the assessment in the desk review was to:

- verify the completeness of the data and the information presented in the MR;
- check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD and Passport, verify that the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid;
- evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of documents reviewed is available in chapter 6 of this report.

2.3 On site assessment and follow up interviews

The Verification team performed an on-site assessment on 10th of October, 2023. The audit team has conducted several activities during on site assessment:

- A complete desk review of the MR, as well as all applicable country legal requirement and supportive evidences have been checked by the verification team.
- To check implementation, project boundary, current situation, monitoring and metering equipment, monitoring procedures, calibration etc.
- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in MR and supporting documents.
- An assessment of the implementation and operation of the GS project activity as per the registered GS PDD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- A check of the installed monitoring equipment (energy meters) including performance and observations of monitoring practices against the requirements of the registered GS PDD and the selected methodology;
- A review of installed equipment such as turbine and generators, including technical data of installed nameplates.
- Visit of control room to assess energy generation data and any disruption in process generation.
- Visit of project boundaries such as power house, control room, channel and any other relevant element for the project activity.
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

Interviews were performed on site. The objective of the assessment is to:

- confirm the implementation and operation of the project;
- review the data flow for generating, aggregating and reporting the monitoring parameters;
- confirm the correct implementation of procedures for operations and data collection;
- cross-check the information provided in the MR documentation with other sources;
- check the monitoring equipment against the requirements of the PDD, Passport and the approved methodology, including calibrations, maintenance, etc.;
- review the calculations and assumptions used to obtain the GHG data and ER;
- identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

The following persons were interviewed during on site assessment:

Interviewed Personnel	Function	Organization
Tasawar Hussain	Operations	General Electric
Amir Farooqi	Independent Monitoring Consultant	Arch Associates
Muhammad Tahir	Operations	Sapphire Wind Power Company
Zeeshan Wali	Operations	Sapphire Wind Power Company

Fahd Naeem	Project Development & Operations	Sapphire Wind Power Company
Muneeb ur Rehman	Operations	Sapphire Wind Power Company
Umar Sharif	Operations	Sapphire Wind Power Company
Ijaz Ali	Operations	Sapphire Wind Power Company
Faizan Waris	HSE	Sapphire Wind Power Company
Jawahar Lal	Administration	Sapphire Wind Power Company
Osama Shahid	HSE	General Electric
Asif Bhatti	Medical Staff	Agha Khan Hospital
Ali Umer Khan	Electrical Engineer	Sachal Energy Development (Pvt) Ltd
Moeed Saleem	Electrical Engineer	Sachal Energy Development (Pvt) Ltd

During on site assessment, it has been confirmed that no human settlement is located in the surrounding of the project activity. Furthermore, there are no monitoring parameters related to human settlements. Interviews were performed to stakeholders independent from the PP, such as General Electric employees (operation of the project activity) and medical staff from Agha Khan Hospital, located in the project activity boundaries. Moreover, interviews were also performed to personnel from other wind project located not far from the project activity. No contradictory information nor negative opinion has been received. Finally, the project activity has shown all relevant approvals and licenses^{15, 16, 17, 18/} to demonstrate the project is aligned with local legislation and requirements. It is Verification Team opinion that the interviews performed on site are sufficient to demonstrate that correct operation and behavior of the project activity.

The PP has requested a deviation with regard to on site visit requirements. The deviation request has been approved by the GS on 15/11/2023. Doing this, it can be confirmed by the VVB that no monitoring gaps exists within the monitoring period. Furthermore, it can also be confirmed by the VVB that all monitoring approaches are correct and conservative for the calculation of emission reductions. Moreover, the PP has correctly documented the deviation request in the last version of the MR. Hence, the VVB hereby confirms that all assumption stated in the deviation request has been met and the project complies with the conditions established in the deviation request from. No discrepancies were identified.

2.4 Quality of evidences

Sufficient evidence covering the full verification period in the required frequency is available to verify the figures stated in the final MR. The source of the evidences will be discussed in section 3 of this report. Specific cross-checks have been done in cases that further sources were available. The monitoring report's figures were checked by the assessment team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology.

2.5 Reporting of findings

As an outcome of the verification process, the assessment team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request

(CAR). A CAR is issued, where:

- a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

The assessment team shall raise a Clarification Request (CR) if information is insufficient or not clear enough to determine whether the applicable GS requirements have been met.

All CARs and CRs raised during verification shall be resolved prior to submitting a request for issuance.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period.

All CARs, CRs and FARs for this verification period are included in chapter 4 of the report.

2.6 Internal Quality Control

As a final step of verification, the final documentation including the verification report have to undergo an internal quality control by the Technical Reviewer. Each report has to be finally approved either by the VVS's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the GS Registry along with the relevant documents.

3. VERIFICATION FINDINGS

In the following sections, the results of the verification are stated. The verification results related to the project performance as documented and described in the Key Project Information & Project Design Document (PDD), the previous verification report and any evidence provided by the PP. The verification findings for each verification subject are presented below.

3.1 FARs from Validation / Previous Verification

FARs from validation has been addressed in Appendix 1.

3.2 Project Implementation in accordance with the registered Project Design Document

The project activity was fully implemented according to the description presented in the registered PDD and Passport. The assessment team confirms, through the on site visit that all physical features of the proposed project activity including data collecting systems and storage have been implemented in accordance with the registered PDD.

The technical features of the equipment have been verified by the assessment team during on site visit by checking nameplate of main equipment which is detailed listed below:

Parameter	Value
Total project capacity	52.8 MW
Type	1.6-82.5
No. of units	33
No. of blades	3
Rated power [kW]	1,600
Rotor diameter [m]	82.5
Swept area [m ²]	5346
Blade length [m]	40.2
Rotor speed [rpm]	9-18.7
Hub height [m]	80
Manufacturer	General Electric

The project activity was in normal operational during the monitoring period and the same has been confirmed during site visit interviews. No abnormal situations or events which affect the operation of the project activity has been reported nor identified.

No unusual activities observed during the monitoring period and plant was undergone scheduled as well as emergency maintenance as per the recommendation of the manufacturers. Applus+ Certification confirms that none of the data affects the additionality, scale or applicability of the project. There's no post registration change has been occurred during this monitoring period.

The amount of GS-VERs achieved during the present monitoring period are lower than the estimated value in the PDD. This is not in control of the PP. due to the lower PLF during the monitoring period.

During the onsite visit, the verification team confirmed that there is a grievance mechanism in place. There is a comment book which anybody can use. Furthermore, for any reason, anybody can talk directly to the line manager to express any concern. These mechanisms are accessible to any employee. There are no communities surrounding the project activity as this project is

located in a remote area. By checking grievance records at site & submitted by PP, it was able to confirm there are no comments received from any employee for the present monitoring period towards project activity.

3.3 Compliance of the Monitoring Plan with the Monitoring Methodology

The monitoring plan is in accordance with the approved methodology ACM0002 version 20.0, applied by the proposed GS project activity. No deviation, correction or permanent change to the monitoring plan has been requested.

3.4 Completeness of Monitoring

GHG parameters:

The verification of monitoring parameters are in accordance with the monitoring plan described in the registered PDD; the emission reductions (ER) achieved during the current monitoring period are already verified under CDM Verification. Please refer to verification report of CDM for more details.

Parameter not monitored:

There are not parameters fixed ex ante,

Parameter title	Data	Source
EF _{grid,OM,y}	0.7393	Calculated ex-ante as per Tool to calculate the emission factor for an electricity system, as 3-year generation-weighted average of latest three years, 2011, 2012, 2013, data obtained from Pakistan Energy Yearbook published by Ministry of Petroleum & Natural Resources, Hydrocarbon Development Institute of Pakistan.
EF _{grid,BM,y}	0.2673	
EF _{grid,CM,y}	0.6213	Calculated based on EF _{grid,CM,y} and EF _{grid,BM,y}

Applus+ Certification has verified the defaulted figures which are not monitored in crediting period and confirmed that the figures are consistent with their sources.

Below data has been verified against the data sources and the registered PDD for the crediting period:

Parameter title	Data	Source
EF _{grid,OM,y}	0.5343	Calculated ex-ante as per Tool to calculate the emission factor for an electricity system, as 3-year generation-weighted average of latest three years, 2011, 2012, 2013, data obtained from Pakistan Energy Yearbook published by Ministry of Petroleum & Natural Resources, Hydrocarbon Development Institute of Pakistan.
EF _{grid,BM,y}	0.4102	
EF _{grid,CM,y}	0.5033	Calculated based on EF _{grid,CM,y} and EF _{grid,BM,y}

Applus+ Certification has verified the defaulted figures which are not monitored in crediting period and confirmed that the figures are consistent with their sources.

3.5 SDG Outcomes Monitoring

The verification of the data/parameters required by the monitoring plan is provided as follows:

Relevant SDG Indicator	SDG 7 – Affordable and Clean Energy																																					
Data/parameter:	EG _{facility,y}																																					
Unit	MWh																																					
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y																																					
Measured/calculated/default	Calculated																																					
Source of data	Energy Meter Reading (EMR) Sheet																																					
Value(s) of monitored parameter	<table><tr><th>Year</th><th>MWh</th></tr><tr><td>01/01/2021 – 31/12/2021</td><td>121,545.51</td></tr><tr><td>01/01/2022 – 31/12/2022</td><td>102,327.60</td></tr><tr><td>TOTAL</td><td>223,873.11</td></tr></table>				Year	MWh	01/01/2021 – 31/12/2021	121,545.51	01/01/2022 – 31/12/2022	102,327.60	TOTAL	223,873.11																										
Year	MWh																																					
01/01/2021 – 31/12/2021	121,545.51																																					
01/01/2022 – 31/12/2022	102,327.60																																					
TOTAL	223,873.11																																					
Monitoring equipment	Electricity meters																																					
Measuring/reading/recording frequency:	Measured continuously, recorded monthly																																					
Calculation method (if applicable):	The Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (EG _{facility,y}) is the difference between the quantity of electricity supplied by the project plant/unit to the grid (EG _{export,y}) and the quantity of electricity delivered to the project plant/unit from the grid (EG _{import,y}): EG _{facility,y} = EG _{export,y} - EG _{import,y}																																					
QA/QC procedures:	Monitoring equipment are tested and maintained in accordance with the relevant technical codes. <table><tr><th rowspan="2">Data</th><th colspan="2">Line 1</th><th colspan="2">Line 2</th></tr><tr><th>Main meter*</th><th>Backup meter</th><th>Main meter*</th><th>Backup meter</th></tr><tr><td>ID</td><td>M11</td><td>M12</td><td>M21</td><td>M22</td></tr><tr><td>Brand & Model</td><td>ISKRA MT 860</td><td>ISKRA MT 860</td><td>ISKRA MT 860</td><td>ISKRA MT 860</td></tr><tr><td>Serial Number</td><td>41601054</td><td>72440419</td><td>41601050</td><td>72440423</td></tr><tr><td>Accuracy Class</td><td>0.2S</td><td>0.2S</td><td>0.2S</td><td>0.2S</td></tr><tr><td>Type</td><td>Bi-Directional</td><td>Bi-Directional</td><td>Bi-Directional</td><td>Bi-Directional</td></tr></table> * Government property Calibration frequency is determined in the NEPRA Grid Code 2005 (Section				Data	Line 1		Line 2		Main meter*	Backup meter	Main meter*	Backup meter	ID	M11	M12	M21	M22	Brand & Model	ISKRA MT 860	ISKRA MT 860	ISKRA MT 860	ISKRA MT 860	Serial Number	41601054	72440419	41601050	72440423	Accuracy Class	0.2S	0.2S	0.2S	0.2S	Type	Bi-Directional	Bi-Directional	Bi-Directional	Bi-Directional
Data	Line 1		Line 2																																			
	Main meter*	Backup meter	Main meter*	Backup meter																																		
ID	M11	M12	M21	M22																																		
Brand & Model	ISKRA MT 860	ISKRA MT 860	ISKRA MT 860	ISKRA MT 860																																		
Serial Number	41601054	72440419	41601050	72440423																																		
Accuracy Class	0.2S	0.2S	0.2S	0.2S																																		
Type	Bi-Directional	Bi-Directional	Bi-Directional	Bi-Directional																																		

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	m, page 165) which calibration shall be conducted periodically, on a schedule to be determined by the authority (NTDC).				
	Calibration frequency is given as follow:				
	Meter/ Dates	Line 1		Line 2	
		Main meter*	Backup meter	Main meter*	Backup meter
	ID	M11	M12	M21	M22
	SN	41601054	72440419	41601050	72440423
	Calbration	15/01/2020	15/01/2020	15/01/2020	15/01/2020
	Calbration	03/11/2022	03/11/2022	03/11/2022	03/11/2022
The calibration of the measurement equipment was performed based on the schedule determined by NTDC. The calibration certificates are signed by the mentioned authority. The next calibration is scheduled in year 2024. Hence, no calibration gaps are identified. The testing and calibration was performed according to national regulation. No discrepancies were identified.					
Purpose of data:	Emission reduction calculation and SDG claim				
Additional comments:	Not applicable				
Means of verification:	Energy Meter Reading (EMR) Sheet based on electricity meters are checked to determine the net electricity generated by the project activity. Either energy export and import were directly checked in the raw data evidence ^{11/} . Furthermore, invoices covering the monitoring period were also checked. No discrepancies were identified				

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter:	Emission reductions achieved by the project
Unit	tCO ₂ e
Description	Emission reductions achieved by the project
Measured/calculated/default	Calculated
Source of data	ER sheet
Value(s) of monitored parameter	2021: 60,128 2022: 51,327 TOTAL: 111,455
Monitoring equipment	Not applicable
Measuring/reading/recording frequency:	Annually
Calculation method (if applicable):	The calculation is based on the CDM methodologies ACM0002 and the calculation process is verified by third party VVB.

QA/QC procedures:	The emission reduction calculation is based on the CDM methodology and certified by VVB and approved by CDM EB
Purpose of data:	ER calculation and SDG claim.
Additional comments:	Not applicable
Means of verification:	By checking Energy Meter Reading (EMR) Sheet and ER sheet, it is able to confirm Emission reductions achieved by the project is well calculated and in line with the requirement of CDM and GS, please refer to CDM verification report for details.

Relevant SDG Indicator	SDG 8 – Decent work and Economic Growth
Data/parameter:	Number of jobs created
Unit	Not applicable
Description	Number of jobs created
Measured/calculated/default	Calculated
Source of data	- Monitoring survey with workers - Certificate of workers
Value(s) of monitored parameter	20 skilled permanent jobs are created during project implementation and operation, including account, administration, operation department internal audit, and security (unskilled). All workers are satisfied with the payment and they are paid above the minimum salary of Pakistan. All the 20 jobs created are for men, no women workers are involved in this project. As described during local stakeholder consultation, women were not approached directly due to cultural limitations and the local community doesn't allow interaction of their women folk with the urban females as well. So, in order to communicate the project details, local male community was asked to give the project details in their respective homes and share the concerns of women if any regarding the project. Also, local customs and cultural restrictions don't allow women to attend any public gatherings and work in the project.
Monitoring equipment	Not applicable
Measuring/reading/recording frequency:	Monitored Annually
Calculation method (if applicable):	Questionnaires were delivered to staffs and asked whether they got income from working for the project and whether they are satisfied with the payment. Staffs gave feedback by filling out questionnaire anonymous. Labour certifications of worker staffs have been checked as well.
QA/QC procedures:	Interview with operation worker staffs will be carried out by a third party during onsite verification.
Purpose of data:	SDG claim
Additional comments:	Not applicable

Means of verification:	By checking questionnaires and workers certifications, interviews with worker staffs, it is able to confirm work staffs of the project were satisfied with the payment. At least 20 work positions were provided by the project activity.
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For the calculation of the EF the following parameters have been checked:

Parameter title	Data	Source
$FC_{i,y}$	Several values are considered	The source is Pakistan Energy Yearbook 2020 & 2021. This parameter is calculated according to the description in the registered PDD. No discrepancies were identified.
$NCV_{i,y}$	Several values are considered	The source is IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC. This parameter is calculated according to the description in the registered PDD. No discrepancies were identified.
$EF_{CO_2,y}$	Several values are considered	The source is IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC. This parameter is calculated according to the description in the registered PDD. No discrepancies were identified.
EG_y	Several values are considered	The source is Pakistan Energy Yearbook 2020 & 2021. This parameter is calculated according to the description in the registered PDD. No discrepancies were identified.
$\eta_{m,y}$	Several values are considered	The source is the Tool to calculate the emission factor of an electricity system, V7. This parameter is calculated according to the description in the registered PDD. No discrepancies were identified.
$EF_{grid,CM,y}$	0.4947	For year 2021, calculated based on $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$
	0.5016	For year 2022, calculated based on $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$

Regarding the Safeguarding Principle the following parameters have been checked:

Relevant SDG Indicator	Safeguarding Principle 3 – Community Health, Safety and Working Conditions
Data/parameter:	The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy
Unit	Not applicable
Description	Measures taken to eliminate safety hazards related to the project implementation
Measured/calculated/default	Project logbook or interview with workers

Source of data	Monitoring survey with workers
Value(s) of monitored parameter	Not applicable
Monitoring equipment	Not applicable
Measuring/reading/recording frequency:	Once per monitoring period
Calculation method (if applicable):	Not applicable
QA/QC procedures:	Parameter will be monitor via monitoring survey with workers
Purpose of data:	SDG impact claim
Additional comments:	Not applicable
Means of verification:	By checking questionnaires and interviews with worker staffs, it is able to confirm work staffs of the project were satisfied with the safety conditions on site. There are no injuries to workers occurred during the monitoring period.

Relevant SDG Indicator	Safeguarding Principle 9.1 – Landscape Modification and soil
Data/parameter:	Soil condition
Unit	Not applicable
Description	General soil erosion and sediment control measures would include: - Keep open areas of excavation to a minimum; - Maintain sediment control structures along drainage lines to prevent the transport of sediment from the site; - Stockpiles of materials should be located away from drainage lines and formed with sediment control structures placed immediately down slope; - Control drainage in areas of construction areas using a water truck;
	- Minimization of traffic in construction zones and use of a dedicated parking area, i.e. site compound; - Revegetate disturbed areas i.e. around turbine foundations as soon as practical.
Measured/calculated/default	Not applicable
Source of data	Monitoring survey with workers
Value(s) of monitored parameter	Not applicable
Monitoring equipment	Not applicable
Measuring/reading/recording frequency:	Once per monitoring period
Calculation method (if applicable):	Not applicable
QA/QC procedures:	Monitoring survey with workers
Purpose of data:	SDG impact claim
Additional comments:	Not applicable

Means of verification:	By checking monitoring survey with workers and interviews on site with employees, it is able to confirm general soil erosion and sediment control measures has been taken during both construction and operation phase.
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Relevant SDG Indicator	Safeguarding Principle 9.4 – Release of pollutants
Data/parameter:	Other pollutant
Unit	Not applicable
Description	In order to reduce dust emissions during project implementation, the following dust suppression measures stipulated and implemented: - Frequent watering of exposed area or worksite of excavation to maintain surface wet, if necessary and practical; - Imposition of speed controls for vehicles and unpaved site roads; - Well-maintained diesel-powered mechanical equipment to avoid black smoke emissions; - Shut-down of diesel-powered mechanical equipment or trucks inside the worksites when they are not in operation.
Measured/calculated/default	Not applicable
Source of data	Monitoring survey with workers
Value(s) of monitored parameter	Not applicable
Monitoring equipment	Not applicable
Measuring/reading/recording frequency:	Once per monitoring period
Calculation method (if applicable):	Not applicable
QA/QC procedures:	Workers are allowed to provide feedback anonymous.
Purpose of data:	SDG impact claim
Additional comments:	Not applicable
Means of verification:	By checking monitoring survey with workers and interviews on site with employees, it is able to confirm dust suppression measures have been taken during both construction and operation phase.

By checking all relevant registries, the assessment team confirms there was no double counting for the project. Applus+ Certification checked all registries including VCS (<http://www.vcsprojectdatabase.org/>) and REC (<http://www.irecstandard.org/>), there is no double counting for this monitoring period for the project. Also in the MR, the project owner made a declaration that states no RECs have been issued.

In Summary, it is Applus+ Certification's opinion that the monitoring of the project owner regarding to sustainability is in line with requirement of the GS4GG Version 1.2.

3.6 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

As a result of verification of the ER calculation process, the assessment team confirmed that all the parameters required for the determination of the emission reductions have been included in the last version of the Monitoring report and ER calculation spreadsheet and are consistent with the applied methodology ACM0002 Version 20.0 and the monitoring plan contained in the registered PDD. The parameters are complete in this monitoring period.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the Monitoring Report Version 3 and ER calculation spreadsheet. See below for the detailed data:

Emission reductions: $ER = BE_y - PE_y$

Baseline emissions: $BE_y = EG_{facility,y} * EF_{grid,CM,y}$

Where:

BE_y	Baseline emission in year y (tCO ₂ e)
$EG_{facility,y}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)
$EF_{grid,CM,y}$	Combined margin CO ₂ emission factor of the WAPDA grid in year y (tCO ₂ /MWh)
$EF_{grid,CM,2021} =$	0.4947 tCO ₂ /MWh
$EF_{grid,CM,2022} =$	0.5016 tCO ₂ /MWh

For year 2021: $BE_y = EG_{facility,2021} * EF_{grid,CM,2021}$

$$BE_y = 121,545.51 \text{ MWh} * 0.4947 \text{ tCO}_2/\text{MWh} = 60,128 \text{ tCO}_2\text{e}$$

For year 2022:

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

$$BE_y = 102,327.60 \text{ MWh} * 0.5016 \text{ tCO}_2/\text{MWh} = 51,327 \text{ tCO}_2\text{e}$$

The total emission reductions during this monitoring period are 111,455 tCO₂e.

Project emissions: The project is a wind power project, no fossil fuel will be consumed according to the methodology ACM0002, then, according to registered PDD, $PE_y = 0 \text{ tCO}_2\text{e}$

Leakage: According to ACM0002 version 20.0, if energy generating equipment is transferred from another activity, leakage is to be considered. As a newly built project, the equipment of the project are all new but the equipment transfer from other activities. Then this part of leakage should be considered as zero. In summary, leakage is 0 tCO₂e.

Emission reductions: $ER = BE_y - PE_y = 111,455 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} = \mathbf{111,455 \text{ tCO}_2\text{e}}$

The ER calculation spreadsheet clearly and transparently describes the calculation of emission reductions. The ER calculation spreadsheet is indicated with the issuing date and revision number. The assessment team re-produced the calculation process and confirmed that the methods and formulae used to obtain the baseline, project and leakage emissions are appropriate. The calculation has been done in accordance with the methods and formulae described in the

registered monitoring plan and applicable methodology.

The reported data have been cross-checked against other sources available as explained above in section 3.4 of the report.

The assessment team confirms that all the assumptions, emission factors and default values (ex-ante values) from PDD have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

The value obtained in current monitoring period is 111,455 tCO₂e which are lower than the values stated in the registered PDD 123,996 tCO₂e.

3.7 Management and Operational System

The responsibilities of data measurement, collection, verifying, archiving etc. have been clearly defined in the Project Operation Manual. The data related to ER calculation as well as data monitoring, collection process etc. have been internally reviewed by the management of the Monitoring team regularly. The responsibility of each function is consistent with the monitoring plan in the registered PDD.

The information flow of each parameter has been verified by the assessment team via interviewing with responsible personnel and checking with the Project Operation Manual.

It's verified during on site verification, the monitoring procedure as well as the internal quality management and control procedures are stipulated in the Project Operation Manual. The procedures are issued and approved by the top management. The monitoring personnel have been interviewed by the assessment team and it's confirmed that the monitoring is implemented as per the procedure. Also, the training record and work certificate has been checked by the assessment team and it is confirmed that the monitoring personnel are get sufficient train to perform the monitoring.

All the data and documents, either hard copies or electric copies, will be kept for two years after the end of the crediting period or the last issuance of GS ERs for this Project, whichever occurs later.

4. REFERENCES

LIST OF DOCUMENTS	
S. No.	Document/Evidence/Reference/Web link, Version, Date
01	PDD Version 3.2, 17/03/2022
02	GS Validation Report by CTI, version 3.0, 17/03/2022
03	GS Previous Verification Report by CTI, version 2.1, 05/09/2022
04	GS4GG Version 1.2
05	ACM0002 Version 20.0
06	Tool to calculate the emission factor of an electricity system, V7.
07	Initial GS Monitoring Report Version 1, 10/10/2023 Final GS Monitoring Report Version 1.6, 28/03/2024
08	Initial ER calculation Spreadsheet Version 1, 07/10/2023 Final ER calculation Spreadsheet Version 1, 07/10/2023
10	Sapphire Wind Farm Single Line Diagram, Rev 00
11	Energy Meter Reading (EMR) Sheet
12	Energy Invoices
13	Calibration certificates covering the monitoring period
14	NEPRA Grid Code 2005
15	Generation License No. WPGL/18/2012, valid till 30/12/2033
16	Modification of capacity expansion, 24/04/2015, valid till 29/11/2035
17	Decision on Initial Environmental Examination (IEE), 17/08/2014
18	Energy Purchase Agreement (EPA) signed between NTDC & Sapphire Wind Power Company, 17/02/2014.
19	Nameplate of WTG
20	Photographs of monitoring equipment
21	List of job created
22	Certificates of workers
23	Monitoring survey with workers
24	HSE Report
25	Contracts with workers
26	Pakistan Energy Yearbook 2020 & 2021
27	Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC
28	Deviation Request Form approved 15/11/2023.
29	Project Annual Report, 29/12/2022

5. FINAL VERIFICATION STATEMENT

Applus+ Certification has been engaged by SAPPHIRE WIND POWER CO. LTD. To perform the second periodical verification of the Sapphire 49.5 MW Wind Farm Project (GS Ref. No. 11307).

The management of SAPPHIRE WIND POWER CO. LTD is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the registered Key Project Information & Project Design Document (PDD) and the applied methodology ACM0002 version 20.0.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the Gold Standard. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project design document and passport approved by the EB and GS;
- the monitoring plan is as per the applied methodology;
- the monitoring in Monitoring Report is as per the PDD, Passport and Gold Standard for the Global Goals Transition Annex and the monitoring plan approved by the EB and GS;
- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for Sapphire 49.5 MW Wind Farm Project, for the monitoring period 01/01/2021 to 31/12/2022 as reported in Monitoring Report, prepared on the basis of the project's Monitoring Plan are fairly stated.



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Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/01/2021 to 31/12/2022

Verified emissions in the above reporting period:

Baseline emissions year 2021	60,128 tCO ₂ e
Emission reductions in 2022	51,327 tCO ₂ e
Leakage emissions	0 tCO ₂ e
Project emissions	0 tCO ₂ e
Total Emission reductions	111,455 tCO₂e

Date: 28/03/2024

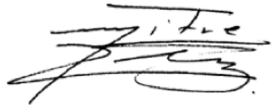
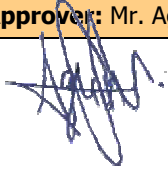
Lead Auditor: Raul Gonzalez Mitre

Tech. Expert: Raul Gonzalez Mitre

Tech. Reviewer: Premjit Singh

Approver (*Applus+ Certification VVB Technical Manager*)

Mr. Agustín Calle de Miguel

ASSESSMENT TEAM	
Lead Auditor: Raul Gonzalez Mitre	Technical Reviewer: Premjit Singh
Signature: 	Signature: 
Approver: Mr. Agustín Calle de Miguel	
Signature: 	

Appendix 1: Corrective Action Request/Clarification Request/Forward Action Request resolution table

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	01	Section no.	Date: DD/MM/YYYY
Description of FAR			
In-line with GS4GG Principles and Requirements, VVB and PP shall consider the rule below for future monitoring activities: 5.1.39: An annual update report shall be provided to GS -when design certification is achieved- for each monitoring year by the end of next calendar year for which verification is not completed.			
Project participant response			Date: 27/03/2024
The project was added to GSGG in 2022. A verification was conducted in 2022. An annual update report was also filed for 2022			
Documentation provided by project participant			
Project Annual Report dated 29/12/2022			
VVB assessment			Date: 28/03/2024
The Project Annual Report has been provided to the VVB. The report is dated on 29/12/2022 which also compiles year 2021 and 2022. No discrepancies were identified.			
FAR is closed.			

FAR ID	02	Section no.	Date: 16/03/2024
Description of FAR			
The CER issuance with serial number for Gold Standard labelling shall be submitted for the GS verification of the project.			
Project participant response			Date: 27/03/2024
The serial numbers of the CER issuance for Gold Standard labelling have previously been submitted to Gold Standard and are displayed on the registry at https://registry.goldstandard.org/projects/details/3328 .			
The serial numbers of the 2019 CER issuance are: PK-5-10435678-2-2-0-8163 - PK-5-10449070-2-2-0-8163			
The serial numbers of the 2020 CER issuance are: PK-5-10449071-2-2-0-8163 – PK-5-10488414-2-2-0-8163			
Documentation provided by project participant			
Nil			
VVB assessment			Date: 28/03/2024

The serial numbers have been provided in the MR. This is public available information. No further discrepancies were identified.

FAR is closed.

FAR ID	03	Section no.		Date:	DD/MM/YYYY
Description of FAR					
The effectiveness of the grievance mechanism shall be checked by interviewing the local stakeholders during the GS verification of the project.					
Project participant response					Date: 27/03/2024
Local stakeholders were interviewed during the GS verification of the project.					
Documentation provided by project participant					
Nil					
VVB assessment					Date: 28/03/2024
A complete list of stakeholders has been included in this report. See section 2.3. Both employees and local stakeholders have been interviewed. It was also included already in this report the following: "During the onsite visit, the verification team confirmed that there is a grievance mechanism in place. There is a comment book which anybody can use. Furthermore, for any reason, anybody can talk directly to the line manager to express any concern. These mechanisms are accessible to any employee". "By checking grievance records at site & submitted by PP, it was able to confirm there are no comments received from any employee for the present monitoring period towards project activity". FAR is closed.					

Table 2. CL from this verification

CL ID	01	Section no.	3	Date:	11/10/2023
Description of CL					
Clarification is required regarding the fulfillment of the maximal site visit requirement of 3 years, according to the applicability of Minimum site visit requirements by VVB. Please include this information in the MR.					
Project participant response					Date: 17/10/2023
The interruptions of COVID had a subsequent impact to site visits. Project has sought a clarification from Gold Standard on this issue.					
Documentation provided by project participant					
Email for Gold Standard.					
VVB assessment					Date: 30/11/2023

The PP has requested a deviation with regard to on site visit requirements. The deviation request has been approved by the GS on 15/11/2023. Doing this, it can be confirmed by the VVB that no monitoring gaps exists within the monitoring period. Furthermore, it can also be confirmed by the VVB that all monitoring approaches are correct and conservative for the calculation of emission reductions. Moreover, the PP has correctly documented the deviation request in the last version of the MR. Hence, the VVB hereby confirms that all assumption stated in the deviation request has been met and the project complies with the conditions established in the deviation request from. No discrepancies were identified.

CL is closed.

Table 3. CAR from this verification

CAR ID	01	Section no.	3.5	Date: 11/10/2023
Description of CAR				
Section D.2 of MR: Sum of total net energy is incorrect in page 18: - Value observed 123,873.11 - Actual value: 223,873.11				
Project participant response				Date: 17/10/2023
The incorrect value has been corrected.				
Documentation provided by project participant				
Updated monitoring report.				
VVB assessment				Date: 18/10/2023
Sum of total net energy is now correct. No further discrepancies were identified. CAR is closed.				

CAR ID	02	Section no.	3.6	Date: 16/10/2023
Description of CAR				
Regarding the EF calculation: 1. Do not include calculation of OM for years 2020 & 2019. 2. For the calculation of OM 2021, please eliminate from tab name "(2019-20)" and for OM 2022, tab name "(2020-21)" as these make confusion. 3. Please clarify why in the OM calculations, the total fuel heat value for FO and NG of several plants included in rows 37-67 are subtracted from the total fuel consumption (in TJ). Furthermore, the title of such table is "Power Generation by Power Plants connected to the Karachi Grid in <u>Year 2019-20</u>". This is OM calculation of year 2021 and 2022. 4. For BM calculations, there is a power plant marked in yellow (B62)				
Project participant response				Date: 17/10/2023
All amendments have been made for clarity (removal of additional sheets, unnecessary year values and highlighting). The deduction of FO and NG relates to the necessary correction of the grid data. The Energy Yearbooks publish data related to the cumulative total of two grids: the WAPDA grid and the Karachi Grid. Rows 37-67 define those power plants that constitute the Karachi Grid. These power plants are only concerned with the Fuel Oil and Natural Gas technology types, the totals of which are then deducted from the total figures published in the Energy Yearbooks to result in the relevant figures for the WAPDA grid, of which Sapphire Wind Farm is connected to. This is consistent with the approach taken in prior years and by other projects in Pakistan.				
Documentation provided by project participant				

Updated ER calculations.

VVB assessment

Date: 18/10/2023

1. Information from other years which is not necessary for the current calculation has been eliminated.
2. Tab name "(2019-20)" and for OM 2022, tab name "(2020-21)" were correctly eliminated.
3. Furthermore, it has been clarified that WAPDA grid is separate from Karachi Grid and that is why the fuel consumption from Karachi Grid has been eliminated. This approach is found as correct.
4. Plants marked in yellow has been corrected.

CAR is closed.

Table 4. FAR from this verification

FAR ID	Section No.	Date: DD/MM/YYYY
Description of FAR		
<i>Nii</i>		
Project participant response		Date: DD/MM/YYYY
Documentation provided by project participant		
VVB assessment		Date: DD/MM/YYYY