



**Verified Carbon
Standard**

KUMKÖY HYDROELECTRIC POWER PLANT, SAMSUN



Document Prepared by RINA

Project Title	Kumköy Hydroelectric Power Plant, Samsun
Version	3.0Aa
Report ID	2021XTMD45

Report Title	Re-validation Report of Kumköy Hydroelectric Power Plant, Samsun
Client	Entek Elektrik Üretimi A.Ş.
Date of Issue	31/01/2023
Prepared By	RINA Services S.p.A.
Contact	Address : Via Corsica, 12 – 16128 Genoa, ITALY Telephone : +39 010 538 55 09

	email : ghg.services@rina.org web site : www.rina.org
Approved by	Laura Severino - Head of Sustainability Compliance & New Scheme Development Coordination Unit
Work carried out by	Tugce KIRATLI (Team Leader, VCS Validator and Local Expert)

Summary:

Brief description of the validation and the project: The project activity is developed in the Samsun province, TURKEY with the aim to generate electricity through renewable energy source as hydro energy power. The project has 17.5 MWe installed capacity as confirmed through generation license /20/.

The Project Activity utilizes the Yesilirmak river water in a run-of-river hydro power scheme to generate electricity with zero carbon emissions for the Turkish Power Grid. The project activity has 3 bulb-type turbines, with a total installed capacity of 17.5 MWe as confirmed through the Previous Verification Report /19/. The generated electricity is transmitted to the National Electricity System through 31.5 kV Carsamba TM.

Kumkoy HEPP is expected to generate 91,964 MWh. The estimated amount of emission reductions due to the realization of the proposed clean energy project is 52,475 tons CO₂ per annum as verified through calculation spreadsheet /3/.

Purpose and scope of Re-validation: The re-validation scope is defined as an independent and objective review by a DOE of the project activity to be registered. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria. The validation involves the assessment of project conformance to VCS rules; project conformance to the applied methodology, including the procedure for the demonstration of additionality specified in the methodology; the likelihood that methods and procedures set out in the project description will generated verifiable GHG data and information when implemented.

Method and criteria used for Re-validation: The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS Version 4.1 and GHG program applied, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements, GHG program requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects (or projects approved by another non-approved GHG Program) and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs). The project activity is found to be appropriately eligible under Project Scope 1 "Energy industries (renewable / non-renewable sources)" and project type "Renewable energy

projects". The validation criteria followed the guidance documents provided by VCS including the following: VCS Standard version 4.2 [/5/](#), VCS Program Guide version 4.1 [/4/](#) and CDM Methodology ACM0002: Grid-connected electricity generation from renewable sources — Version 20.0 [/11/](#).

Any uncertainties associated with the Re-validation: There are no restriction of uncertainty.

Number of findings raised during Re-validation: Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design. In the course of validation, no Corrective Action request (CAR) or Clarification Requests (CRs) were raised. All corrections are made during videoconferences.

Summary of the Re-validation conclusion. Entek Elektrik Üretimi A.Ş. has commissioned RINA to carry out the validation of the Kumköy Hydroelectric Power Plant, Samsun. This report summarizes the findings of the validation performed on the basis of VCS Version 4.1 criteria, GHG program applied as well as criteria given to provide for consistent project operations, monitoring and reporting. RINA confirms all validation activities including objectives, scope and criteria, level of assurance, monitoring and project documentation adhere to VCS version 4.1 and all associated updated as documented in this report, are complete. RINA concludes that the project description version 6 of 31/01/2023 meets the VCS requirements version 4.1 [/5/](#).

CONTENTS

1	INTRODUCTION	23
1.1	Objective	23
1.2	Scope and Criteria	23
1.3	Level of Assurance	23
1.4	Summary Description of the Project	24
2	VALIDATION PROCESS	24
2.1	Method and Criteria	24
2.2	Document Review	25
2.3	Interviews	27
2.4	Site Inspections	27
2.5	Resolution of Findings	29
3	VALIDATION FINDINGS	30
3.1	Project Details	30
3.2	Safeguards	32
3.3	Application of Methodology	28
3.4	Non-Permanence Risk Analysis	41
4	VALIDATION CONCLUSION	41
	APPENDIX 2: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS	43

1 INTRODUCTION

1.1 Objective

The objective of the Re-validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS Version 4.1 and GHG program applied, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements, GHG program requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs). The project still satisfies with the VCS criteria [/4/](#) [/5/](#).

1.2 Scope and Criteria

The validation scope is to review the VCS PD against the VCS criteria which refer to VCS Version 4.1 standard and all the GHG program requirements [/4/](#) [/5/](#). Re-validation is not meant to provide any consultancy towards the project participants.

The validation was based on the guidance given in the CDM validation and verification standard for project activities [/10/](#) and VCS guideline and standard version 4.1 [/5/](#). The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the VCS PD. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VERs. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design and monitoring report combined. The only purpose of the validation and verification is its usage during the registration issuance process as part of the VCS project cycle. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring of the project activity.

1.3 Level of Assurance

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent RINA instructions. The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for VCS and CDM validation and verification.

RINA confirms all validation activities, including objectives, scope and criteria, with reasonable level of assurance and PD adherence to the VCS Standard, as documented in this report are complete.

The validation team and the technical reviewers consist of the following personnel

Role/Qualification	Last Name	First Name	Country
VCS Team Leader, VCS Validator, Local Expert	KIRATLI	Tugce	Turkey
Technical Reviewer	RACHEV	Konstantin	Bulgaria

1.4 Summary Description of the Project

The Project Activity is a river type (run-of-river project without water conveyance system) hydropower project with a total installed capacity of 17.5 MW and a reservoir total surface area is 597,000 m². The estimated annual stream flow in the Project Activity is 5,269.3 million m³. The design discharge flow of the project is 210 m³/s. The net electricity is connected to the national grid at the 31.5 kV Carsamba TM.

The net electricity production (delivered to the grid after losses and consumption in the plant) from the plant is estimated to be 91,964 MWh per annum. The amount of electricity generated by the project is not influenced by factors outside the project boundary such as other power plants or demand for electricity.

The project location is in the Black Sea Region of Turkey, within the province of Samsun. The project is on the Yesilirmak River and located between 41°05'40"- 41°05'50" north and between 36°41'10"- 36°41'25" east.

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation was conducted using RINA procedures in line with the requirements specified in the VCS [/5/](#).

The scope is defined as an independent and objective review of the VCS PD [/1/](#) is reviewed against the criteria stated in the relevant decisions by the CDM Executive Board and VCS standard version 4.2 and guideline version 4.1 [/4/](#), including the approved baseline and monitoring methodology “ACM0002: Grid-connected electricity generation from renewable sources — Version 20.0 of 28/12/2019” [/11/](#). The re-validation was based on the requirements in the CDM validation and verification standard for project activities Version 03.0 [/10/](#) and VCS guideline version 4.1 and standard version 4.1 [/4/](#) [/5/](#).

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 document (PD).

Therefore, re-validation of the selected methodology ACM0002: Grid-connected electricity generation from renewable sources — Version 20.0 of 28/12/2019 [/11/](#) and reported project results were measured for compliance against the following criteria:

- VCS Standard [/5/](#)
- VCS Program Guide [/4/](#)
- CDM Methodological Tool “Tool for the demonstration and assessment of additionality”
[/15/](#)
- CDM Methodological Tool “Tool to calculate the emission factor for an electricity system”
[/12/](#)
- CDM Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” version 3.0.1 of 02/03/2012

The re-validation consists of the following three phases:

- Document review (Project Description Report and supporting documents)
- Remote assessment
- The resolution of outstanding issues and the issuance of the final Validation Report and opinion.

The following sections outline each step in more detail.

2.2 Document Review

A detailed review of all project documentation was conducted to ensure consistency with and identify any deviation from VCS requirements, the baseline methodology and the project description document. The VCS PD version 6 of 31/01/2023 and previous versions [/1/](#) in particular the applicability of the methodology, the validity of baseline determination, the validity of additionality of the project activity, the starting date of the project, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet [/3/](#), were assessed as part of the validation.

/1/	Seem Turkey: VCS PD for Kumköy Hydroelectric Power Plant, Samsun, version 6 of 31/01/2023 Seem Turkey: VCS PD for Kumköy Hydroelectric Power Plant, Samsun, version 5 of 13/10/2022 Seem Turkey: VCS PD for Kumköy Hydroelectric Power Plant, Samsun, version 4 of 13/01/2022 Seem Turkey: VCS PD for Kumköy Hydroelectric Power Plant, Samsun, version 3 of 22/11/2021
/2/	VCS PD for 1st crediting period of Kumköy Hydroelectric Power Plant, Samsun, version 2.1 of 28/02/2013
/3/	Seem Turkey: Grid ERs Calculation Spreadsheet “CM_Kumkoy_13.01.2022.xlsx” version 02 of 13/01/2022 Seem Turkey: Grid ERs Calculation Spreadsheet “CM_Kumkoy_22 11 2021.xlsx” version 01 of 22/11/2021
/4/	VCS Verified Carbon Standard: VCS Program Guide, VCS Version 4.1 of 20/01/2022
/5/	VCS Verified Carbon Standard: VCS Standard, VCS Version 4.2 of 20/01/2022
/6/	VCS Verified Carbon Standard: VCS Validation report template, 4.1 of 20/01/2022
/7/	VCS Verified Carbon Standard: VCS project description report template version 4.1 of 20/01/2022
/8/	Ministry of Energy and Natural Resources: Turkish National Electricity Grid Emission Factor, Document no. ETKB-EVÇED-FRM-039 Rev.00 of 06/10/2021
/9/	CDM Executive Board: Clean Development Mechanism Project Standard for project activities, version 03.0 of 09/09/2021
/10/	CDM Executive Board: Clean Development Mechanism Validation and Verification Standard for project activities, version 03.0 of 09/09/2021
/11/	CDM Executive Board: Baseline and Monitoring Methodology “ACM0002: Grid-connected electricity generation from renewable sources — Version 20.0 of 28/11/2019
/12/	CDM Executive Board: Methodological Tool “Tool to calculate the emission factor for an electricity system”, version 07.0 of 31/08/2018
/13/	TUV Rheinland: Validation Report of 1st crediting period N° 21221548, version 1.0 date of 01/03/2013
/14/	CDM Executive Board: Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” version 3.0.1 of 02/03/2012
/15/	CDM Executive Board: Methodological Tool “demonstration and assessment of additionality”, version 07.0 of 22/09/2017
/16/	Energy Market Regulatory Authority: Communiqué for Measurement Devices used in the Electricity Market, date of 22/03/2003
/17/	Energy Market Regulatory Authority Regulation of Metering and Testing of Metering Systems date of 24/07/1994
/18/	Turkish Electricity Transmission Company (TEIAS): Meter Change Protocol of 20/10/2019 for electricity meters

/19/	Re-Carbon: Previous Verification Report, report ID: 538 version 03 of 10/12/2019
/20/	Energy Market Regulatory Board: Generation License numbered EU/3519-1/2152 date of 01/12/2011
/21/	Website of GS: https://registry.goldstandard.org/projects?q=kumkoy&page=1 , retrieved on 31/01/2023
/22/	Website of GCC: https://projects.globalcarboncouncil.com/pages/approved_projects , retrieved on 31/01/2023

2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	BORAN	Burcu	Seem Turkey Danışmanlık <i>Carbon Consultant</i>	19/01/2022	Description of the project activity, Emission reductions calculations, Monitoring plan and monitoring arrangements, Environmental and social impacts Monitoring Equipment	Tugce KIRATLI
2.	DUNDAR	Serkan	Kumkoy HEPP <i>Project Responsible</i>	19/01/2022		
3.	SONKAYA	Tuncay	Kumkoy Village <i>Mukhtar</i>	19/01/2022	Benefit of the project activity	
4.	OZBEK	Ekrem	Kumkoy Village <i>Stakeholder</i>	19/01/2022	Complaints about project Contact details of the project proponents	
5.	OZTURK	Suleyman	Kumkoy Village <i>Stakeholder</i>	19/01/2022	Tail Water Local Employment	

During on remote audit, the project proponent and the carbon consultant were interviewed about description of the project activity, emission reductions calculations, monitoring plan and monitoring arrangements, monitoring equipment and environmental and social impacts of the project activity. In addition, 3 stakeholders were interviewed about the benefits or complaints about the project. They all defined that they have no complaints about the project activity.

2.4 Site Inspections

On 19/01/2022, RINA team performed remote audit via video conference for Kumköy Hydroelectric Power Plant, Samsun due to covid-19 pandemic. Project location is confirmed via google earth and monitoring equipment are verified through video conference and also PDD /2/. During the remote assessment of the project, there were no hindrance and all the equipment's and the systems were accessible. RINA assessed the implementation and operation of the proposed project activity, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data plant, checked the monitoring equipment, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the project description. To guarantee transparency a validation protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of validation and the results from validating the identified criteria. The validation protocol consists of three tables; the different columns in these tables are described below.

A corrective action request (CAR) is raised if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions. Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- The VCS requirements have not been met. There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CR) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

Validation Protocol, Appendix 2 - Resolution of Corrective Action Requests and Clarification		
Corrective action requests and/or clarification requests	Response by project participants	Validation Conclusion
The CAR and/or CRs raised in table 1 are repeated here.	The responses given by the project participants to address the CARs and/or CRs.	The validation team's assessment and final conclusion of the CARs and/or CRs.
Validation Protocol, Appendix 2 - Forward Action Requests (if no FAR the table 3 is deleted)		
Forward action request	Response by project participants Verification Conclusion	
The FAR raised in table 1 is repeated here.	Response by the project participants on how forward action request will be addressed prior to first verification.	

In summary, no CRs / CARs were raised during the re-validation. All corrections were made during videoconference.

2.5.1 Forward Action Requests

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity.

A forward action request (FAR) should be issued, where:

1. the actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or
2. an adjustment of the MP is recommended.

No forward action requests (FAR) were identified during the re-validation process.

3 VALIDATION FINDINGS

3.1 Project Details

The Kumköy Hydroelectric Power Plant, Samsun (hereafter referred to as the “Project” or “Kumkoy HEPP”), Turkey, which is developed by Entek Elektrik Üretimi A.Ş. (hereafter referred to as the “project owner”) is a hydroelectric power plant in Samsun province, Turkey.

The Project has been implemented and operated by Entek Elektrik Üretimi A.Ş. The project aims to generate electricity from hydro energy and feed it to the national electricity grid. The project was not rejected by another GHG program before. The project activity is not participated under other GHG Programs as confirmed through the websites of the other standards [/21/](#) [/22/](#). In addition, the project highly supports the sustainable economic development in the region.

The Kumköy Hydroelectric Power Plant, Samsun utilizes the Yesilirmak river water in a run-of-river hydro power scheme to generate electricity with zero carbon emissions for the Turkish Power Grid. The project qualifies as a large-scale VCS project activity. The project activity has 3 bulb-type turbines, with a total installed capacity of 17.5 MWe as confirmed through the Previous Verification Report [/19/](#). The generated electricity is transmitted to the National Electricity System through 31.5 kV Carsamba TM.

The project producing positive environmental and economic benefits through the following aspects:

- Displacing the electricity generated by fossil fuel fired power plants by utilising the renewable resources to avoid environmental pollution and GHG emissions,
- Contributing the economic development of the region by providing sustainable energy resources,
- Increasing the income and local standard of living by providing job opportunities for the local people,

- Reducing the blackout because of low voltage by lowering required capacity of the transformer.

The expected annual electricity output and the estimated emission reduction along the first ten year of crediting is given below. Kumkoy HEPP are expected to generate 91,964 MWh as verified through previous PDD /2/. The project started operation on 03/03/2011 as confirmed through the registered PDD /2/. There is no update or any change to the project design after the registration of the project.

Start date of the first crediting period: 03/03/2011 - End date of the first crediting period: 02/03/2021 as verified through latest verification report /19/

Start date of the second crediting period: 03/03/2021

End date of the second crediting period: 02/03/2031

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
03/03/2021-31.12.2022	43,705	0	0	43,705
Year 2022	52,475	0	0	52,475
Year 2023	52,475	0	0	52,475
Year 2024	52,475	0	0	52,475
Year 2025	52,475	0	0	52,475
Year 2026	52,475	0	0	52,475
Year 2027	52,475	0	0	52,475
Year 2028	52,475	0	0	52,475
Year 2029	52,475	0	0	52,475
Year 2030	52,475	0	0	52,475
01.01.2031-02/03/2031	8,770	0	0	8,770
Total	524,750	0	0	524,750

Average annual ERs 52,475 tCO₂

Laws related to the project are (1) Electricity Market Law and (2) Law on Use of Renewable Energy Resources for Electricity Generation.

Environment is protected by various Laws and Regulations in Turkey. The purpose of the Environmental Protection Law is to protect the environment with sustainable development and environmental principles. These regulations, which the project must comply with, are evaluated within the scope of the Environmental Impact Assessment Report.

In addition, it must comply with the "Occupational Health and Safety Regulation". In this context, all employees should receive OHS training and have the necessary equipment. Social security of all employees will be provided in accordance with the Law.

The GHG benefit of the project activity was only accounted under VCS. There are not any other RECs were being issued for the project activity. Furthermore, as a host country in Turkey such any programme like a government-regulated system or programme for the constraint and monetisation of GHG emissions (such as emissions trading scheme, cap and trade or carbon tax mechanisms) has not been implemented.

In conclusion it is RINA's opinion that the project activity meets all the relevant VCS requirements /5/ for the renewal of the 2nd crediting period.

3.2 Safeguards

3.2.1 No Net Harm

There aren't any potential negative environmental and socio-economic impacts identified by the project proponent as confirmed through the registered PD /2/.

3.2.2 Local Stakeholder Consultation

The local stakeholder consultation was conducted in Kumkoy Village on 03/10/2007. The remote audit was conducted on 19/01/2022 for re-validation. Based on the interviews, there are no complaints from the local community regarding the project implementation. In addition, there was no change in the project design/implementation in the first crediting period and re-validation processes were carried out accordingly. For this reason, no new LSC has been carried out regarding the current status of the project.

3.2.3 Environmental Impact

The specific benefits of the project are:

- reduce greenhouse gas emissions in Turkey compared to the business-as-usual scenario,
- help to stimulate private sector participation in hydro power industry in Turkey,
- create employment during the construction and the operation phase of the plant,

- relatively reduce some other pollutants from power generation industry in Turkey, compared to a business-as-usual scenario,
- help to diminish Turkey's increasing energy deficit,
- diversify the electricity generation portfolio and reduce dependency on import of other energy sources.

3.2.4 Public Comments

For this re-validation period, stakeholders were interviewed by phone. It was learned that in general, the main form of communication between the local people and the project owner is face-to-face or by phone. They stated that in case of any problem, they can easily reach the responsible persons and convey their complaints. There are no complaints/compliance related to the project implementation during this monitoring period. This issue is confirmed with the petitions provided from Mukhtar. The contact details of the project responsible is provided and shared with all stakeholders.

3.2.5 AFOLU-Specific Safeguards

NA

3.3 Application of Methodology

3.3.1 Title and Reference

Methodology: ACM0002: Grid-connected electricity generation from renewable sources, refers to [/11/](#) correctly applied for the project activity. The application of the methodology is subject to the following methodological tools:

- Tool to calculate the emission factor for an electricity system, Version 07.0 [/12/](#)
- Tool for the demonstration and assessment of additionality, Version 07.0.0 [/15/](#)
- Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”, Version 03.0.1 [/14/](#)

3.3.2 Applicability

The methodology ACM0002: Grid-connected electricity generation from renewable sources is applicable to grid-connected renewable power generation project activities that 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).

The project activity installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield), ACM0002: Grid-connected electricity generation from renewable sources is applicable. The applicability criteria are listed and justified below:

For each of the applied methodology's applicability conditions are described the steps taken to assess compliance of the project with the applicability condition;

The choice of methodology ACM0002 Version 20.0 is justified as the proposed project activity meets relevant applicability criteria:

Applicability Criteria	Justification
This methodology is applicable to grid-connected renewable energy power generation project activities that: (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)	The project is installation of a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity /2/.
The methodology is applicable under the following conditions: (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; (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	The project is a hydro power plant.

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	
In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (3), is greater than 4 W/m²; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m². (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: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m² ; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density	The project is not a hydro power plant that results in a new reservoir or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m² /2/.

lower than or equal to 4 W/m² shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
The methodology is not applicable to: (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.	The project does not involve switching from fossil fuels to renewable energy sources and is not a biomass fired power plant /2/.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.	The project does not involve retrofits, rehabilitations, replacements, and it's not a capacity addition /2/.

RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM EB, and is applicable to the project, which complies with all the applicability conditions therein and the selected version is valid at the time of the validation commencement. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the methodology.

3.3.3 Project Boundary

The project boundary clearly defined in accordance with the applied methodology. According to the approved baseline and monitoring methodology “ACM0002 [/11/](#)”, the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project is connected to since there is no dispatch grid system in Turkey, project boundary is considered as the National Electricity Grid of Turkey according to applied tool.

By checking the information during the remote audit, RINA can confirm that all the emission sources, gases have been included in the project boundary, and the description in the latest version

of VCS PD version 4 /1/ is accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

3.3.4 Baseline Scenario

According to the approved baseline methodology ACM0002 /11/, the baseline scenario is “Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”. Since the baseline is defined by the approved methodology, no further analysis is required as per the paragraph 75 of the VVS /10/.

RINA verified that the baseline was updated assessed according to the tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” /14/. The conclusion is that the baseline of the type I component of the project activity complies and will continue to comply with the laws and regulations in the sector for the next crediting period. It can be concluded that the conditions used to determine the baseline emissions in the previous crediting period are still valid.

The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. Hence 1st step is approved for this project activity.

The validity of the current baseline is assessed using the following Sub-steps:

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

The approved baseline methodology “Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid” has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed VCS project activity. The current baseline has been updated with the latest data and projections available by the official bodies /8/. It’s clear that the baseline scenario is still valid for the second crediting period in accordance with the tool /14/.

Step 1.2: Assess the impact of circumstances.

The present circumstances do not influence the calculation of the current baseline emissions. A new grid emission factor of the Turkey grid is chosen /8/ and defined for the new crediting period.

As demonstrated in the assessment above the baseline of the grid and it does not need to be updated.

3.3.5 Additionality

A full reassessment of additionality is not required when renewing the project crediting period in line with the VCS rules /5/.

Additionally, ongoing financial need has been demonstrated by explanation related to VERs revenues under section B.5.2 of the PDD /1/ has been validated.

Regulatory Surplus: Turkey has a special circumstance, where it is listed as Annex I country of the UNFCCC and not listed as Annex B country of the KP. Thus, Turkey cannot benefit from the CDM. This project is not mandated by any law, statute or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework. In Turkey, there is feed-in-tariff mechanism to support the renewable energy, which gave certain economical advantage to the investors. This is taken into account while developing the investment analysis.

3.3.6 Quantification of GHG Emission Reductions and Removals

According to the applied methodology /11/ baseline emissions are calculated with the formulae below:

$$BE_y = EGPJ,y \times EF_{grid,CM,y}$$

where:

BE_y = Baseline Emissions in year y (tCO₂e)

$EGPJ,y$ = 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)

$EF_{grid,CM,y}$ = Combined margin CO₂ 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”(t CO₂/MWh)

$EGPJ,y = EG_{facility}$ for greenfield power plants

In accordance with ACM0002, the baseline emissions are calculated as the net electricity generated by the project activity, multiplied with the baseline emission factor of the project grid.

Baseline Emissions

The calculation of baseline emission reductions is carried out in a conservative manner providing documentation and references to data sources. An approved CDM methodology, ACM0002 /11/ and methodological tool “Tool to calculate the emission factor for an electricity system /12/” is applied. The directly official published data /8/ by Turkish Ministry of Energy and Natural Resources is used for this monitoring period.

Calculating of the Combined Margin Emission Factor

It's been published as 0,5706 tCO₂/MWh by the Ministry of Energy.

According to the methodology the baseline emissions may consist of:

$$BE_y = 91,964 \times 0.5706 = 52,475 \text{ tCO}_2$$

Project Emissions

Since the project activity is a hydropower project, $PE_y = 0$. Additionally, the project consists in hydropower plants with no reservoir area and the power density is calculated as 29.31 W/m².

Leakage

In accordance with the ACM0002 (version 20), leakage is taken as zero since the project is a new power plant is taken as zero, LEy= 0

Emission Reductions

$$ER_y = BE_y - PE_y - LE_y$$

$$ER_y = 52,475 \text{ tCO}_2$$

It is confirmed that all the documentation used by the project participants as the basis for assumptions and source of data are quoted and interpreted in the PDD [/1/](#) and the Emission Reduction Calculation Spread Sheet [/3/](#) are correctly applied in line with the methodology [/11/](#).

3.3.7 Methodology Deviations

No methodology deviations applied to the project.

3.3.8 Monitoring Plan

The monitoring plan (data and parameters fixed ex ante) includes all data and parameters fixed ex ante required by the applied methodology [/6/](#) [/7/](#) [/8/](#) and baseline tool [/9/](#).

Parameters ex-ante:

Data/ parameter	Unit	Value applied	Assessment
Combined Margin of Turkey National Grid (CM)	tCO ₂ / MWh	0.5706	Emission factor of the Turkish grid determined ex-ante. It's been published by the Ministry of Energy for 2019 on 06/10/2021 /8/ . It is confirmed that public official data vintage is in line with the tool /12/ for the 2 nd crediting period.

The validation team considers that the description of the monitoring plan contains all necessary parameters, that they are described and that the means of monitoring described in the plan complies with the requirements of the methodology including applicable tool(s).

Parameters ex-post:

Data/ parameter	Unit	Assessment
--------------------	------	------------

EG _{PJ,y}	MWh/yr	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. Two meters are measuring continuously then calculate the net electricity generation supplied by the project to grid. The annual electricity fed to the grid is estimated as 91,964 MWh as verified through PD of previous crediting period /2/. The electricity generation of the plant will be calculated based on TEIAS records and crosschecked with EPIAS records that are the basis of sold electricity. The net electricity is measured continuously and recorded at least monthly. Net electricity generation will be measured by two meters are sealed by TEIAS. Meters information: <table border="1"> <thead> <tr> <th>Specifications</th><th>Main meter</th><th>Spare Meter</th></tr> </thead> <tbody> <tr> <td>Manufacturer:</td><td>ITRON</td><td>ITRON</td></tr> <tr> <td>Serial No:</td><td>84260361</td><td>84260362</td></tr> <tr> <td>Accuracy Class:</td><td>0.5S</td><td>0.5S</td></tr> </tbody> </table> As verified during remote audit conf call and TEIAS document /18/. Calculations are as follows: $EG_{Facility,y} = EG_{Export,y} - EG_{Import,y}$ The technical specifications of the power meters should be in line with Measure and Metering Devices Regulation by Ministry of Industry and Trade. In addition, the metering devices are in line with the technical requirements which are set out by the Communiqué for Metering Devices to be used in the Electricity Market /16/. Also, according to Article 11 of this Communiqué, meters shall be in class of 0.5s, which means error interval for measuring is in +-0.5% range which is well acceptable according to rules. TEIAS performs a regular maintenance on a regular basis. TEIAS is the main responsible for calibration and maintenance of the devices. TEIAS performs the necessary maintenance and	Specifications	Main meter	Spare Meter	Manufacturer:	ITRON	ITRON	Serial No:	84260361	84260362	Accuracy Class:	0.5S	0.5S
Specifications	Main meter	Spare Meter												
Manufacturer:	ITRON	ITRON												
Serial No:	84260361	84260362												
Accuracy Class:	0.5S	0.5S												

		calibration. Since the electricity generation data is used for the billing and accounting between TEİAŞ and Project Participant the data is of high quality. The calibration will be implemented in accordance with the related standard procedures. The periodical maintenance is under the responsibility of TEİAŞ and has been fixed as once 10 years /17/. The necessary regulations regarding to electricity generation and metering are checked by the validation team. The monitoring plan of the $EG_{PJ,y}$ parameter is line with the necessary regulations. The validation team considers that the description of the monitoring plan contains all necessary parameters, that they are described and that the means of monitoring described in the plan complies with the requirements of the methodology including applicable tool(s).
Cap_{PJ}	W	Installed capacity of the hydropower plant after the implementation of the Project Activity will be monitored once for each monitoring period by SCADA system and the turbine name plates. The value is defined as 17,500,000 W for this crediting period.
A_{PJ}	m^2	Area of the reservoir measured in the surface of the water, after the implementation of the Project Activity, when the reservoir is full will be monitored once during each monitoring period by Scada System of the project. The value is defined as 597,000 m^2 for this crediting period.

3.4 Non-Permanence Risk Analysis

There is not any risk for the project activity.

4 VALIDATION CONCLUSION

RINA has performed the validation of the updated PDD version 6 of 31/01/2023 for the project activity “Kumköy Hydroelectric Power Plant, Samsun”. The validation is performed for the 2nd renewal crediting (from 03/03/2021 to 02/03/2031) /19/ and is based on the information available to us.

The review of the PDD version 4 [/1/](#) and the subsequent follow-up interview have provided RINA with sufficient evidence to determine the validity of the original baseline and the sustainable indicators; the project correctly applied the baseline and monitoring methodology ACM0002. Version 20.0 of 28/11/2019 [/11/](#).

In conclusion it is RINA's opinion that the project activity meets all the relevant VCS requirements [/5/](#) for the renewal of the 2nd crediting period.

APPENDIX 2: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Corrective action and/ or clarification requests	Response by project participants	Verification conclusion



CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Vinay SINGH

è qualificato come¹:
is qualified as:

TEC – VAL – VER – TL – ITRP – REG-EXP⁵

nello schema²:
for the scheme:

CDM – VCS – SCS – JI – ISO14064-2

per le seguenti aree tecniche:
for the following technical areas:

1.2 – 14.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
14.1	Forestry	14

in accordo alle istruzioni dell'Unità responsabile (OU) per sostenibilità & cambiamenti climatici.
in accordance with the instructions of the responsible unit (OU) for the sustainability & climate change.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	04/05/2020	First Issue
2	11/03/2022	Updated form

Il Resp. OU
Head of OU



¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
REG-EXP: Regional Expert
ITR: Independent Reviewer
DET: Determiner

² Legend:

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS4GG: Gold Standard for Global Goals
SCS: SocialCarbon Standard
JI: Joint Implementation
ISO14064-2: International standard 14064 part 2

³India, Kenya, Uganda, Sri Lanka, Thailand, Mauritius.

RINA Services S.p.A. è accreditata da UNIFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecotegica Institute per condurre la Validazione e la Verifica di progetti SCS.
RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS4GG Projects and by the Ecotegica Institute, to carry out Validation and Verification of SCS Projects.

GHG_QUAL_CERT_EN(08-2021)

Page 1 of 1



CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
 We declare that Mr/Mrs/Ms:

Tugce Kiratli

è qualificato come:
 is qualified as:

**TEC, VAL, VER, TL, ITRP
 LOCAL EXPERT**

per le seguenti aree tecniche:
 for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
13.1	Solid waste and wastewater	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template
1	09/06/2017	Added qualification as ITRP and Local Expert

Responsabile di schema
 Scheme Leader
 Laura Severino



*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/recognised da
 RINA Services S.p.A. is accredited /recognized by

UNFCCC	quali Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects
VCSA	per condurre la Validazione e la Verifica di Progetti VCS to carry out Validation and Verification of VCS Projects
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS to carry out Validation and Verification of GS Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS to carry out Validation and Verification of SCS Reports
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR to carry out Validation and Verification of ACR projects
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects