BIKES FOR THE PLANET - BRAZIL

Logo (optional)

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Summary:

RINA has performed a validation of the project activity "Bikes for the Planet – Brazil" in Brazil to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. The validation was performed on the basis of VCS requirements for VCS projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. In addition, RINA has performed the verification of the emission reductions reported for the "Bikes for the Planet – Brazil" for the period 30 January 2018 to 17 December 2018, to review and determine the monitored reductions in GHG emissions have occurred as a result of the project activity.

The validation and verification were conducted by means of document review, follow-up interviews and site inspection, and the resolution of outstanding issues. The review of the VCS joint project description & monitoring report and the subsequent follow-up interviews and site inspection have provided RINA with sufficient evidence to determine the fulfilment of stated criteria.

The project consists of the implementation of alternative mobility by constructing and/or expanding the existing bicycle lanes, parking areas and sharing programs. The project has applied the CDM methodology AMS-III.BM "Lightweight two and three wheeled personal transportation", version 01.0.

In summary, it is RINA's opinion that the project activity "Bikes for the Planet – Brazil" as described in the VCS PD&MR, dated 28 November 2019, meets all relevant VCS requirements for VCS projects and correctly applies the CDM methodology AMS-III.BM "Lightweight two and three wheeled personal transportation", version 01.0. In addition, the GHG emission reductions reported for the project in the VCS joint project description & monitoring report (version 3.6) of 26 December 2019 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the CDM methodology AMS-III.BM "Lightweight two and three wheeled personal transportation", version 01.0.

Hence, RINA recommends the registration of the project as a VCS project activity and is able to certify that the emission reductions from the "Bikes for the Planet – Brazil" during the period amount to 240 tonnes CO_2 equivalent.

RINA does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to RINA and the engagement conditions detailed in this report. RINA cannot be held liable by a party for decisions made or not made based on this report.

The following points were raised during the registration and issuance request on 10 December 2019. After that, on 19 December 2019, the VCS provided a response for each finding and a second round of responses are provided bellow. The VCS PD (version 3.5 of 20 December 2019) and related documents were updated accordingly.

Finding 1

Section 3.10.1 of the VCS Standard v4.0 requires that projects provide the project location, providing requirements for projects that contain multiple instances.

Section 1.2 of the project description only states that the project will occur within the geographical area of Brazil. Further the KML file provided only shows one location, which is not in Brazil.

Please request the project proponent update the project description to provide the location of at least one project instance and provide an updated KML file that includes each know project activity instance.

RINA Response (VCS PD version 3.4 dated 17 December 2019): The project proponents generated two new KML files, one with the approximate geographical area of Brazil (for the grouped project) and the other with

the approximate geographical area of the City of São Paulo (for the two project activity instances included in the group project).

Verra Response (2nd round on 19 December 2019): Two KML files have been provided, however, Section 1.2 of the joint project description and monitoring report still does not provide a location of any of the project instances. Please update Section 1.2 of the joint project description and monitoring report to include the location of the initial project instances.

RINA Response (2nd round on 20 December 2019): The project proponents revised section 1.12 of the joint project description and monitoring report (version 3.5 dated 20 December 2019) to include information about the first project activity instance implemented in the metropolitan region of the city of São Paulo.

Finding 2

Section 3.4.6 (page 30) of the validation and verification report states that the project will generate 1,670 tCO2 emission reductions over ten years but that the average over the ten-year period is 175 tCO2. Further in Section 5 of the validation and verification report it states that the "total emission reductions from the project are estimated to be on the average 1,670 tCO2e per year over the selected 10 years."

Please update the validation and verification report to clarify what the total and annual estimated emission reductions are.

RINA Response: The value for the average over the ten-year period was updated according to the ER spreadsheet provided by project proponent. The correct value is 167 tCO_2.

Finding 3

Section 3.17.1 of the VCS Standard v4.0 states that methodology deviations are only permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology.

Section 3.4.7 of the validation and verification report does not demonstrate how the second deviation represents a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology. Therefore, the deviation is not considered valid.

Please request the project proponent use a valid version of the additionality tool and update the project description and validation report accordingly.

RINA Response: The project proponents removed the second deviation and reformulated the additionality sections in the joint validation and verification document applying the newly revised CDM-TOOL21 (version 13).

Verra Response (2nd round on 19 December 2019): The second deviation has been removed from the joint project description and monitoring report.

However, given the removal of the deviation, it is unclear as to how the project is demonstrating additionality. Section 3.5 of the joint project description and monitoring report provides a list of the options available for projects to demonstrate additionality, but does not make it clear as to which options have been used or justify the use of any option. Please update Section 3.5 of the joint project description and monitoring report to provide a clear demonstration of additionality.

RINA Response (2nd round on 20 December 2019): The project proponents revised section 3.5 of the joint project description and monitoring report (version 3.5 dated 20 December 2019) to describe in detail the

methodology and tools application in the demonstration of the additionality to the forecasted project instances to be included in the grouped project.

Finding 4

Section 3.4.1 of the VCS Standard v4.0 requires that the, "project proponent shall use the VCS Project Description Template, an approved combined project description template available on the Verra website or an approved GHG program project description template where the project is registered under an approved GHG program, as appropriate. The project proponent shall adhere to all instructional text within the template."

Section 3.2 of the VCS Joint Project description and Monitoring Report Template requires that projects, "Demonstrate and justify how the project activity(s) meets each of the applicability conditions of the methodology(s), and tools (where applicable) applied by the project. Address each applicability condition separately"

Sections 3.2 of the project description and monitoring report list out the applicability requirements for applicability but don't make it clear as to how the project meets each requirement.

Please request the project proponent update section 3.2 of the project description and monitoring report to provide clarity as to how the project meets all the applicability conditions of the methodology.

RINA Response: Items 3.2 and 3.5 were revised by the project proponents (see revised joint validation and verification document) taking into account that, according to section 3.4.1 of the VCS Standard v4.0, "project proponent shall use the VCS Project Description Template, an approved combined project description template available on the Verra website or an approved GHG program project description template where the project is registered under an approved GHG program, as appropriate. The project proponent shall adhere to all instructional text within the template." Considering that the present joint validation and verification document is related to a grouped project, a fictitious project activity instance was described and it was demonstrated how this fictitious project meets all the applicability conditions of the methodology and how this project is additional.

Verra Response (2nd round on 19 December 2019): It is still unclear as to how the project meets the applicability conditions of the methodology and tools. Further, the eligibility criteria for the grouped project approach should not be included in the applicability conditions for the methodology and tools.

RINA Response (2nd round on 20 December 2019): The project proponents revised the joint project description and monitoring report (version 3.5 dated 20 December 2019) to describe in detail how the project meets the methodology and tools applicability conditions to the forecasted project instances to be included in the grouped project. Eligibility criteria for the grouped project approach is excluded from item 3.2.

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1 INTRODUCTION

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and compliance with the relevant VCS 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 necessary to provide assurance to stakeholders of the quality of the project and its intended generation of the Verified Carbon Units (VCUs).

Verification is the periodic independent review and ex-post determination by an accredited verification body of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined verification period.

A verification statement is the written assurance by a verification body that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and provide a verification statement of emission reductions reported for the "Bikes for the Planet - Brazil" for the period 30 January 2018 to 17 December 2018.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the VCS project document & monitoring report (VCS PD&MR).

The scope of verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement.
- To verify that reported GHG emissions data is sufficiently supported by evidence.

The VCS PD&MR is reviewed against the criteria stated in the VCS Version 4.0, and the relevant documents and policy announcements made by the VCSA, and the criteria stated in the CDM methodology AMS-III.BM "Lightweight two and three wheeled personal transportation", version 01.0.

The validation does not include project consulting. However, requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The verification shall ensure that reported emission reductions are complete and accurate in order to be verified.

1.3 Level of Assurance

RINA provides reasonable assurance that the "Bikes for the Planet - Brazil" meets VCS criteria. To ensure complete transparency, any clarification or corrective actions raised have been included in the Appendix A. The verification expresses a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.

In addition, RINA applies materiality threshold of 5 per cent with respect to omission or misstatement concerning reported quantities as per VCS Standard.

All the revisions of the validation and verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation and verification activities had been completed according to the pertinent RINA instructions, with reasonable level of assurance.

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.

The verification team and the technical reviewers consist of the following personnel.

Role	**Last Name**	**First Name**	**Country**
Lead Assessor	Leiroz	Andrea	External Auditor - Rina Brazil
Technical Expert – TA 7.1	Zhou	Jun	Rina China
Technical Reviewer	Principe Branco Saettoni	Geisa Maria	Rina Brazil
Technical Reviewer TA 7.1	Thenanchery Narayanan	Sajitha	Rina India

1.4 Summary Description of the Project

The "Bikes for the Planet – Brazil" located within the geographic are of Brazil, is Grouped Project, that promote alternative mobility by constructing and/or expanding the existing bicycle lanes, parking areas and sharing programs, thus resulting in emission reductions of greenhouse gases in the transportation sector.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The validation and verification consisted of the following three phases in accordance with the applied methodology, the VCS Standard version 4.0 and other relevant VCS requirements:

- A desk review of the project documents.
- Follow-up interviews with project stakeholders and site inspection.
- The resolution of outstanding issues and the issuance of the validation and verification report and opinion.

The following sections outline each step in more detail.

2.2 Document Review

The following tables list the documentation that was reviewed during the validation and verification.

Documents provided by the project participant.

/1/	EQAO: VCS Joint Project Description & Monitoring Report (VCS PD&MR) for project activity "Bikes for the Planet – Brazil", version 2 dated 22 October 2019, version 3.0 dated 11 November 2019, version 3.1 dated 15 November 2019, version 3.2 dated 28 November 2019, version 3.4 dated 17 December 2019, version 3.5 dated 20 December 2019 and version 3.6 dated 26 December 2019.
/2/	EQAO: Emission reductions calculation spreadsheet. Dated 22 October 2019, 11 November 2019, dated 15 November 2019 and 28 November 2019.
/3/	EQAO: Registers of operation for Tembici and Grow.
/4/	EQAO: Geographical coordinates of the project activity and each project activity instance. Brazil KML.kmz and Sao Paulo KML.kmz.

Standards, methodologies, and other guidance by the VCSA

/5/	Verified Carbon Standard: VCS Standard version 4.0 dated 19 September 2019.
/6/	Verified Carbon Standard: VCS Validation and Verification Manual, version 4.0 dated 19 September 2019.

/7/	Verified Carbon Standard: VCS Program Definitions version 4.0 dated 19 September 2019.
/8/	CDM Executive Board: Small-scale methodology AMS-III.BM – "Lightweight two and three wheeled personal transportation", version 01.0.
/9/	CDM Executive Board: TOOL05 - Methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation", version 03.0.
/10/	CDM Executive Board: TOOL11 "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.
/11/	CDM Executive Board: TOOL18 - Methodological tool "Baseline emissions for modal shift measures in urban passenger transport", version 01.0.
/12/	CDM Executive Board: TOOL19 - Methodological tool – Demonstration of additionality of microscale project activities, version 08.0.
/13/	CDM Executive Board: TOOL21 - Methodological tool "Demonstration of additionality of small-scale project activities", version 12.0.
/14/	CDM Executive Board: TOOL23 - Methodological tool "Additionality of first-of-its-kind project activities", version 03.0.
/15/	CDM Executive Board: TOOL32 - Methodological tool "Positive lists of technologies", version 02.0.

Documentation used by RINA to validate / cross-check the information provided by the project participant

/16/	*Origin Destination Survey 2017 - 50 years - The urban mobility in the metropolitan region of São Paulo in detail.* State of São Paulo Secretary of Metropolitan Transportation – São Paulo Metropolitan Company - Metrô (preliminary results published in December 2018; Summary report and published data in July 2019). Available at http://www.metro.sp.gov.br/pesquisa-od/ (access on October 20, 2019).
/17/	IPCC: 2006 Guidelines on National GHG Inventories.
/18/	Prior consideration: Available at: https://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html.
/19/	Law #13683 dated 19 June 2018.

/20/	Federal law #13089 dated 12 January 2015. Establishes the City Statute for planning, management and execution of public functions of common interest in metropolitan regions and in urban agglomerations instituted by the State.
/21/	Federal law #12587 dated 03 January 2012. It establishes guidelines for the National Policy on Urban Mobility.
/22/	National Traffic Council (CONTRAN): Resolution #315. It regulates the necessary requirements from cycle-electric to mopeds vehicles for driving in public roads open to circulation.
/23/	National Traffic Council (CONTRAN): Resolution #160. It approves Annex II of the National Traffic Code, which includes signaling on bicycle lanes.
/24/	Federal decree #4711. It establishes the National Traffic System coordination.
/25/	Federal decree #9503. It establishes the National Traffic Code.
/26/	Municipal Assembly of São Paulo: law #16885 dated 16 April 2018. for the creation of the Sao Paulo Cycling System ("SICLO"). Available at: http://documentacao.camara.sp.gov.br/iah/fulltext/leis/L16885.pdf.
/27/	Environmental Company of São Paulo State (Cetesb). (2018). Vehicle emissions at São Paulo State 2017. Available at: https://cetesb.sp.gov.br/veicular/relatorios-e-publicacoes/.
/28/	Energy Research Office (EPE). Brazilian Energy Balance (BEN) *2018: Base Year 2017.* Available at: http://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-303/topico-419/BEN2018__Int.pdf.

2.3 Interviews

On 30 October 2019, Andrea Leiroz from RINA conducted the on-site visit to the "Bikes for the Planet – Brazil" and performed interviews with project stakeholders.

	Date	Name	Organization	Topic
/29/	30 October 2019	Ricardo Esparta	ZCO2	• Status of the project implementation; • Technical issues; • Methodology applicability;
/30/	30 October 2019	André Leal	ZCO2	

				• Project additionality; • GHG emission calculation; • Monitoring plan; • Environment Impact Assessment; • Consulting process on the stakeholder's comments.
/31/	30 October 2019	Mariana Cruz	Tembici	• Check monthly information about distance and passenger; • Verify the effectiveness of the data quality assurance control.
/32/	30 October 2019	Danilo Cain	Tembici	
/33/	30 October 2019	Camila Morais	Tembici	
/34/	30 October 2019	Vitor Bruzzi	Tembici	
/35/	30 October 2019	Rayane de A. Nunes	Tembici	
/36/	30 October 2019	Luiz M. T. Alves	Grow	
/37/	30 October 2019	Victor Sena	Grow	

2.4 Site Inspections

On 30 October 2019, RINA performed the on-site assessments. During the on-site assessment, RINA carried out:

Assessment of the implementation and operation of the VCS-PD&MR /1/;

A review of information flows for generating aggregating and reporting the monitoring parameters;

Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD&MR /1/;

A cross-check between information provided in the VCS PD&MR /1/ and log books, inventories purchase records or similar data sources;

A check of the monitoring equipment and observations of monitoring practices against the requirements of the VCS PD&MR /1/ and the selected methodology /8/;

A review of calculations and assumptions made in determining the GHG data and emission reductions /2/; and

An identification that 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 was to resolve any outstanding issues that needed be clarified prior to RINA's positive conclusion on the project design.

A corrective action request (CAR) is issued 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.
- The VCS requirements have not been met.
- There is a risk that emission reductions cannot be monitored or calculated.
- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions.

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

11 CARs and 7 CLs were raised and have been adequately addressed by the project participant (refer to Appendix 1).

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.

3 VALIDATION FINDINGS

3.1 Project Details

3.1.1 Project type, technologies and measures implemented, and eligibility of the project

Not applicable.

3.1.2 Project design, including eligibility criteria for grouped projects

The objective of "*Bikes for the Planet Brazil*" project is to promote alternative mobility constructing new and/or expanding existing bicycle lanes, bicycle sharing programs (through dockless bicycles or sharing stations), bicycle parking areas; introducing e-bikes or tricycles; and/or implementing new and/or expansion of existing passenger transportation services based on tricycles in different locations throughout Brazil.

The project emerges as a contribution for pursuing the goals proposed by the government. The program is developed as a grouped project within the Brazilian boundaries.

In the absence of the program, the baseline scenario is the continuation use of the existing transportation modes.

The program implementation results in avoided negative environmental impacts and may contribute to better mobility and, consequently, in better quality of life as it:

- Reduces demand on fossil fuel-based vehicles;
- Reduces traffic in rush hour and increases the offer on non-motorized options;
- Reduces GHG emissions (GHG emission free) and improves air quality.

An estimate of annual average and total GHG emission reductions and removals depends on the number of instances added to the grouped project. The initial new bicycle sharing program instance (type 3) in the city of São Paulo results in estimated annual 3,650,000 km ridden and emission reductions of 167 tCO_2e.

According to the VCS Standard version 04 /5/, grouped projects shall include one or more sets of eligibility criteria for the inclusion of new project activity instances. At least one set of eligibility criteria for the inclusion of new project activity instances shall be provided for each combination of project activity and geographic area specified in the project description.

The project is eligible under the following criteria:

1) Meet the applicability conditions set out in the methodology applied to the project.

   As per VCS PD&MR /1/, each project activity instance shall follow methodology /8/ and applicable tools /9/ - /14/ described under section 3.2.

As verified during the site visit, project activity instance 1 Tembici and project activity instance 2 Grow follow all requirements set out in the methodology AMS-III.BM /8/ since the type of projects is type 3 (implementation of new bicycle sharing program through dockless bicycles or sharing stations). Moreover, the project activity instances meet the applicability conditions of the applicable tools /11//12/.

2) Use the technologies or measures specified in the project description.

   As per VCS PD&MR /1/, each project activity instance shall apply one of the project types described under section 3.2.

   Both project activity instances are type 3 (implementation of new bicycle sharing program through dockless bicycles or sharing stations) as confirmed during the site visit /29/ - /37/.

3) Apply the technologies or measures in the same manner as specified in the project description.

   Each project activity instance shall apply technologies or measures in the same manner as specified in section 1.1 of the VCS PD&MR /1/.

   Projects activity instance 1 and 2 apply the technology specified under sections 1.1 and 1.11 of the VCS PD&MR /1/.

4) Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.

   Each project activity instance shall apply the baseline scenario described in section 3.4 and calculation of emission reductions defined in section 4 of the VCS PD&MR /1/.

   The baseline scenario for projects activity instance 1 and 2 is the continuation of the use of existing modes of transport as described under section 3.4 of the VCS PD&MR /1/.

5) Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area. For example, the new project activity instances have financial, technical and/or other parameters (such as the size/scale of the instances) consistent with the initial instances, or face the same investment, technological and/or other barriers as the initial instances.

   Each project activity instance shall assess additionality as described in section 3.5 of the VCS PD&MR /1/.

   The proposed projects activity instance complies with the criteria for demonstrating additionality for microscale projects as GHG emission reductions are lower than 600 tCO_2e/year. Furthermore, the end users of the measure are households and communities. Therefore, projects activity instance 1 and 2 are automatically additional as determined by AMS-III.BM /8/ and described in section 2.5 of the VCS PD&MR /1/.

The project activity meets the eligibility criteria of the VCS Standard /5/.

3.1.3 Project proponent and other entities involved in the project

The project proponent is ZSCORE S.A. of host Party Brazil. No other entity is involved in the project.

3.1.4 Ownership

ZSCORE S. A. owns the project “Bikes for the Planet – Brazil” as verified through the prior consideration of the project activity submitted by ZSCORE to the UNFCCC /18/.

3.1.5 Project start date

According to the VCS Program Definitions, version 4.0 /7/, the project start date is the “date on which the project began generating GHG emission reductions or removals”.

Therefore, the project starting date is 30 January 2018, when the first official bike sharing stations where made available to the public and started operation under the first project activity instance. This information was verified during the site visit by checking the registers of operation /3/.

3.1.6 Project crediting period

The crediting period starting date is 30 January 2018 and ends on 29 January 2028 (10 years fixed).

3.1.7 Project scale and estimated GHG emission reductions or removals

The “Bikes for the Planet – Brazil” is a project (less than or equal to 300,000 tonnes of CO_{2e} per year) and the average estimated GHG emission are 167 tCO_2 per year /2/.

3.1.8 Project location

Bikes for the Planet – Brazil Program is implemented within the geographical area of Brazil. All project activity instance will be implemented taking into consideration all applicable national and/or sectoral policies and regulations. The project activity instance 1 Tembici and project activity instance 2 Grow are located at the metropolitan rea of the city of São Paulo as verified during the site visit and KML file /4/.

The geographical coordinates of the proposed project activity, including positioning of each project activity instance, were validated by RINA and is presented in the documents Brazil KML and Sao Paulo KML /4/.

3.1.9 Conditions prior to project initiation

It was verified by RINA that the baseline scenario is assumed to be the continuation of the use of existing modes of transport in the absence of the project activity as described in the methodology AMS-III.BM /8/.

3.1.10 Project compliance with applicable laws, statutes and other regulatory frameworks

RINA confirmed that the proposed program complies with all laws and regulations /19/ - /25/, on the contrary, permissions and licenses would not be issued.

Each project activity instance shall follow all local/municipal regulations regarding bicycle lanes, parking areas and sharing programs.

3.1.11 Participation under other GHG programs:

On 18 July 2018, the project submitted a prior consideration /18/ of the Clean Development Mechanism (CDM), but by November 2019 has not been registered, or is seeking registration under the CDM or any GHG programs other than the VCS. Thus, the project activity is not registered or is seeking registration under any other GHG programs.

The project activity did nor does not participate in any other GHG program and, therefore, was not rejected by other GHG program.

3.1.12 Other forms of credit:

The project will be not used for compliance with an emissions trading program or to meet binding limits on GHG emissions.

The program does not receive another form of GHG-related environmental credit.

3.1.13 Additional information relevant to the project, including:

- Leakage management for AFOLU projects

  Not applicable.

- Commercially sensitive information

  Not applicable.

- Sustainable development contributions

  Not applicable.

3.2 Participation under Other GHG Programs

Not applicable.

3.3 Safeguards

3.3.1 No Net Harm

Not applicable. The project does not cause any potential negative environmental and socio-economic impacts.

3.3.2 Local Stakeholder Consultation

As explained in the VCS PD&MR /1/, there is no national requirement for local stakeholder consultation due to the implementation of measure types identified in section 2.2. However, any new activity or public infrastructure requires license and permits, including the construction or expansion of bicycle lanes and parking areas, which is under municipality management.

The global public comments carried out at the VCS pipeline projects database in April 2019 was considered as the local stakeholder consultation. This project was up for public comment from 12 April - 12 May 2019 and no comments were received.

3.3.3 Environmental Impact

There is no national requirement for the preparation of environmental impact assessment due to the implementation of measure types identified in section 2.2. However, any new activity or public infrastructure requires license and permits, including the construction or expansion of bicycle lanes and parking areas, which is under municipality management.

Compliance with the requirements established in licenses and environmental impact assessments, if required, shall be evaluated for each project activity instance based on local legislation.

The Municipal Assembly of São Paulo recently approved Law number 16,885 on 16-April-2018 /26/, for the creation of the São Paulo Cycling System ("SICLO") aiming the promotion of bicycle use. It also established the necessity of public hearings and technical and environmental studies for new bicycle lanes implementation.

In spite of this new regulation, there is no municipal requirement for measure type 3.

3.3.4 Public Comments

The project submitted documents for public comments at the VCS pipeline projects database in April 2019. This project was up for public comment from 12 April - 12 May 2019 and no comments were received.

3.3.5 AFOLU-Specific Safeguards

Not applicable.

3.4 Application of Methodology

3.4.1 Title and Reference

The project applies the CDM methodology AMS-III.BM – "Lightweight two and three-wheeled personal transportation", version 01.0 /8/. The methodology also refers to the latest version of the following methodological tools and standards:

(a) TOOL05 - Methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation", version 03.0 /9/;

(b) TOOL11 "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 /10/;

(c) TOOL18 - Methodological tool "Baseline emissions for modal shift measures in urban passenger transport", version 01.0 /11/;

(d) TOOL21 - Methodological tool “Demonstration of additionality of small-scale project activities”, version 12.0 /13/;

(e) TOOL23 - Methodological tool “Additionality of first-of-its-kind project activities”, version 03.0 /14/;

(f) The standard “Sampling and surveys for CDM project activities and programme of activities” (version 7.0) may also be used when applying option 1 of AMS-III.BM;

(g) TOOL19 - Methodological tool – Demonstration of additionality of microscale project activities, version 08.0 /12/.

3.4.2 Applicability

The project applies the CDM methodology AMS-III.BM – “Lightweight two and three-wheeled personal transportation”, version 01.0 /8/. As described in the VCS PD&MR /1/ each project activity instance included in the grouped project will have to follow the applicability conditions under the methodology and applied tools.

The table below shows the types of projects eligible under AMS-III.BM /8/.

Type of project	Description
Type 1	Construction of new bicycle lanes
Type 2	Extension of the existing bicycle lanes
Type 3	Implementation of new bicycle sharing program (through dockless bicycles or sharing stations)
Type 4	Expansion of an existing bicycle sharing program (through increasing the number of dockless bicycles and/or through increasing the size or number of bicycle sharing stations)
Type 5	Construction of new bicycle parking areas. These parking areas may be connected to public transport (subway stations, bus stops, light-rail train stations, etc.) or activity hubs (office towers, shopping centers, markets, venues, etc.)
Type 6	Expansion of the existing bicycle parking areas
Type 7	Introduction of e-bikes
Type 8	Implementation of a new transportation service or expansion of an existing one based on tricycles

Since the project "*Bikes for the Planet Brazil*" is a grouped project, i.e., various different project activity instances may be included. The initial activity instance is a new bicycle sharing program in the city of São Paulo.

The initial new project activity instance is eligible since it is type 3 - Implementation of new bicycle sharing program (through dockless bicycles or sharing stations).

If one or more measures described in the table above have already been implemented within the project boundary (e.g. within the same city as the proposed project activity), it shall be ensured that these measures are identified and taken into account when determining the baseline.

The type of project will be defined at project activity instance level and the measures identified will be taken into account for the determination of the baseline.

The initial new project activity instance is eligible since it is type 3 - Implementation of new bicycle sharing program (through dockless bicycles or sharing stations). The measures identified will be taken into account for the determination of the baseline applying Option 1.

Combination of measures described in the table above are also eligible. If multiple measures are implemented as part of the project activity, it shall be ensured that any interactive effects between the measures are identified and taken into account to avoid double-counting. The project proponent should make an analysis of the interactive effects and account for them following the provisions from the applicable version of the "Guidelines for the consideration of interactive effects for the application of multiple CDM methodologies for a programme of activities", considering that interactive effects could occur, for example, in the following situations:

(a) When there is an overlap in users between different measures of the project; or

(b) When several measures rely on the same information when estimating emission reductions; or

(c) When relying on default factors for setting the baseline.

Will be defined at project activity instance level. In case of a combination of different types of project, PP will identify the interactive effects and will take into account to avoid double-counting.

The initial new project activity instance (type 3) is not a combination of measures described in the table above.

If the project activity involves the construction of on-road bicycle lanes, the width of any existing dedicated bus lane shall not be reduced in such a way that the traffic would be altered.

The existing dedicated bus lane will not be reduced in case of projects Type 1 or Type 2. The type of project will be defined at project activity instance level.

Since the initial new project activity instance is type 3, no construction of on-road bicycles lanes is involved. The planned project instances to be included in the grouped project are all type 3.

Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.

The project activity instance included in the grouped project will not result in emission reductions over 60 kt CO_{2e} per year.

The initial new project activity instance results in emission reductions of 167 tCO_{2e} and thus, less than 60 kt CO_2 equivalent annually.

The applicability conditions included in the following tools should also be applied to each project activity instance.

The methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" version 3.0 /9/ is applicable:

1. If emissions are calculated for electricity consumption. The tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption:

   (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer;

   (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid; or

   (c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer can be provided with electricity from the captive power plant(s) and the grid.

2. This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated:

   (a) Scenario I: Electricity is supplied to the grid;

   (b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or

   (c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.

3. This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO_2 emissions.

Since the initial new project activity instance is type 3, no electricity consumption is involved. Thus, this tool will not be used.

The methodological tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” (version 0.3.0.1) /10/ will not be used to identify the baseline scenario since this project is not renewing the crediting period.

Since the initial new project activity instance (type 3) is not renewing the crediting period, thus, this tool will not be used.

The methodological tool “Baseline emissions for modal shift measures in urban passenger transport” (version 01.0) /11/ is applicable to project activities in urban passenger transport that implement a measure or a group of measures aimed at a modal shift to urban public transit such as metro, bus rapid transit (BRT), light rail and trams. In addition, this tool can be used by designated national authorities (DNAs) for establishing standardized baselines. The tool is also applicable for estimating baseline emissions for individual CDM project activities. This tool will be applied for the initial new project activity instance included in the grouped project.

The methodological tool “Demonstration of additionality of microscale projects activities” (version 09.0) /12/ will not be used in order to demonstrate additionality for activities that do not satisfy the conditions under paragraph 18 of AMS-III.BM /8/ since the initial new project activity instance does not meet the conditions in paragraphs 11-13 of the tool irrespective of the scale of the approved CDM methodology applied to the project activity.

Just like TOOL 19 /12/, the methodological tool “Additionality of first-of-its-kind project activities” (version 03.0) /14/ will not be used since the initial new project activity instance is not a "first-of-its kind" project.

The methodological tool “Demonstration of additionality of small-scale project activities” (version 12.0) /13/ will be used in order to demonstrate additionality for activities that do not satisfy the conditions under paragraph 18 of AMS-III.BM /8/. The use of this tool is not mandatory for project participants when proposing new methodologies. Project participants and coordinating/managing entities may propose alternative methods to demonstrate additionality for consideration by the Executive Board. Project participants and coordinating/managing entities may also apply “Tool for Demonstration of additionality of microscale project” as applicable /12/.

The standard “Sampling and surveys for CDM project activities and programmes of activities” (version 08.0) is applicable whenever a sampling is necessary in the development of a project activity instance. However, as the Metro’s survey is used this standard will not be applied.

The compliance of those applicability conditions should be confirmed for each project activity instance.

As verified during the site visit, project activity instance 1 Tembici and project activity instance 2 Grow follow all requirements set out in the methodology AMS-III.BM /8/ since the type of projects is type 3 (implementation of new bicycle sharing program through dockless bicycles or sharing stations). Both project activity instances result in emission reductions of less than 60 kt CO_2 equivalent annually (Project activity instance 1 Tembici – 169 tCO_{2e} and Project activity instance 2 Grow– 270 tCO_{2e}).

Moreover, the project activity instances meet the applicability conditions of the applicable tools.

The methodological tool “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” version 3.0 /9/ is not used since no electricity is consumed in both

project activity instances. RINA verified during the site visit that no e-bicycles were included in both project activity instances.

For both project activity instances, the methodological tool “Baseline emissions for modal shift measures in urban passenger transport” (version 01.0) /11/ is used in order to calculate the baseline emissions resulting from transportation of passengers in the absence of the project activity.

The methodological tools “Demonstration of additionality of microscale projects activities” (version 09.0) /12/ and “Additionality of first-of-its-kind project activities” (version 03.0) /14/ were not used to demonstrating additionality since the project activity instances comply with criteria for tool “Demonstration of additionality of small-scale project activities” (version 12.0) /13/ . For more details refers to Section 3.4.5.

3.4.3 Project Boundary

The project boundary is correctly defined as the area in which the users of the infrastructure and/or the promoted bicycles, tricycles, e-bikes or e-tricycles travel between origins and destinations. In addition, if the project involves the use of e-bikes or e-tricycles, the project boundary also includes the electric grid and all physically connected power plants that supply electricity to the grid used to recharge the battery from e-bikes or e-tricycles.

	GHG involved	Description
Baseline emissions	CO_2	Different modes of transport that users of bicycles, e-bikes, tricycles and e-tricycles would have taken in the absence of the project.
Project emissions	CO_2	Electricity consumption. For example, due to recharge the batteries.
Leakage	N/A	Leakage does not have to be taken into account.

The identified boundary and selected sources and gases are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, which are not addressed by AMS-III.BM /8/.

3.4.4 Baseline Scenario

As per AMS-III.BM /8/, in the absence of the proposed project activity, the baseline scenario is assumed to be the continuation of the use of existing modes of transport.

3.4.5 Additionality

Since the project "*Bikes for the Planet Brazil*" is a grouped project, i.e., various different project activity instances may be included, clarity as to how the project demonstrate additionality is given in the individual project activity instances descriptions. Nevertheless, demonstration of additionality is based upon the initial project activity instances. For that reason, the initial new bicycle sharing program in the city of São Paulo is used to demonstrate additionality.

According to the methodology AMS-III.BM /8/, the following measures, alone or in combination, are automatically additional:

(a) Type 1 and Type 2 (*i.e.* construction of new bicycle lanes and extension of the existing bicycle lanes);

(b) Type 3 and Type 4 (*i.e.* implementation of new or expansion of existing bicycle sharing programs), if the value paid when renting the bicycle is fully refundable upon return to the sharing station;

(c) Type 5 and Type 6 (*i.e.* construction of new or expansion of existing bicycle parking areas), if no charges are applied to park the bicycles.

The initial project activity instance (type 3) does not satisfy the conditions described above. Thus, the project activity instance is not automatically additional.

Other activities that do not satisfy the conditions described above are additional if:

(a) The project activity complies with the criteria for demonstrating additionality of microscale project activities /12/.

(b) The first-of-its-kind barrier is demonstrated as per the methodological tool "Additionality of first-of-its-kind project activities" (TOOL23) /14/.

According to TOOL23, a proposed project activity is the first of its kind in the applicable geographical area if:

- The project is the first in the applicable geographical area that applies a technology that is different from technologies that are implemented by any other project, which are able to deliver the same output and have started commercial operation in the applicable geographical area before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of the proposed project activity, whichever is earlier;
- The project implements one or more of the measures;
- The project participants selected a crediting period for the project activity that is "a maximum of 10 years with no option of renewal".

Definitions of TOOL23 shall be considered when applying this option.

(c) Activities that are type 7 (i.e. introduction of e-bikes) and the share (penetration) of e-bikes in bicycle in use in the city is below or equal to 5% based on number annual bicycle trips undertaken in the city or based on market share.

National and regional statistics, published reports and surveys may be used to determine trips or market share.

(d) It is demonstrated, through the application of the methodological tool "Demonstration of additionality of small-scale project activities" (TOOL21) /13/, that at least one barrier would prevent the implementation of the project activity.

(a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;

(b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;

(c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

(d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

Documentation of barriers, as item d above, is not required for the positive list of technologies and project activity types that are defined as automatically additional[1] for project sizes up to and including the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). For the positive list of technologies, the project proponent shall refer to methodological tool "TOOL32: Positive lists of technologies" /15/.

Considering the proposed initial project activity instance: new bicycle sharing program (type 3) in the city of São Paulo. This initial project activity instance complies with the criteria for demonstrating additionality for small scale projects following the provisions of small-scale and microscale tools for automatic additionality (Appendix of TOOL21) /13/ as:

- The initial project activity instance aggregate size is <= 60 ktCO2e/y;
- The initial project activity instance does not comprise of one or more technologies from the positive list under TOOL32;

[1] The appendix of TOOL21 (see "**Error! Reference source not found.**") provides a flow chart to guide the users to help navigate provisions for automatic additionality across "Tool for Demonstration of additionality of small-scale project activities" and "Tool for Demonstration of additionality of microscale project".

- The initial project activity instance aggregate size is <= 20 ktCO2e/y under TOOL19 /12/;
- The initial project activity instance meets one of the conditions under TOOL19 /12/. For the initial project activity instance, the emission reduction is lower than 60 $ktCO_{2e}$/y and the end users of the subsystems are the independent individuals riding the bikes, which can be reasonably considered equivalent/similar to households/communities.

In addition, by applying the barrier due to prevailing practice, it was demonstrated that the use of bicycles in the city of São Paulo is less than 1% of the total trips /16/.

Therefore, the initial project activity instance is additional as determined by AMS-III.BM /8/.

RINA was able to confirm that the proposed project activity instance 1 and project activity instance 2 complies with the criteria for demonstrating additionality for small scale projects following the provisions of small-scale and microscale tools for automatic additionality (Appendix of TOOL21) /13/ as:

- The project activity instance aggregate size is <= 60 ktCO2e/y. For both project activity instances is 120 tCO_{2e}/y;
- The project activity instance does not comprise of one or more technologies from the positive list under TOOL32;
- The project activity instance aggregate size is <= 20 ktCO2e/y under TOOL19 /12/. For both project activity instances is 120 tCO_{2e}/y;
- The project activity instance meets one of the conditions under TOOL19 /12/. For both project activity instances, the emission reductions are 120 tCO_{2e}/y and the end users of the subsystems are the independent individuals riding the bikes, which can be reasonably considered equivalent/similar to households/communities.

In addition, by applying the barrier due to prevailing practice, it was demonstrated that the use of bicycles in the city of São Paulo is less than 1% of the total trips /16/.

Therefore, both project activity instance is automatically additional as determined by AMS-III.BM /8/.

3.4.6 Quantification of GHG Emission Reductions and Removals

In accordance with the simplified baseline methodology AMS-III.BM, version 01.0 /8/, no leakage effects have been considered.

Baseline emissions are calculated as the emissions resulting from transportation of passengers in the absence of the project activity. The baseline emissions calculations depend on the modes of transport that the project activity users would have used in the absence of the project activity.

Option 1: Ex-post survey of baseline travel modes – This option is suitable for all types of project eligible under the methodology AMS-III.BM /8/.

Under this option, baseline emissions cover the emissions which would have been caused by the user of the infrastructure and/or of the bicycle-sharing program in absence of the project from origin (O) to

destination (D), where the O and D points of the trip are assumed to be equal for both the baseline and the project scenarios.

Baseline emissions are determined by applying Steps 1 to 4 from the latest approved version of the methodological tool "Baseline emissions for modal shift measures in urban passenger transport" /11/, using parameters estimated based on data collected during the survey in the year 1 and optionally in the year 4 of the crediting period. The survey shall be conducted with the users of the infrastructure, bicycle sharing program or new tricycles, e-bikes or e-tricycles.

The vehicle categories index *i* indicated in Step 1 of the methodological tool "Baseline emissions for modal shift measures in urban passenger transport" /11/ shall be included, and "cycling" and "walking" should be considered as potential baseline "vehicle categories" with an emission factor of zero. If some vehicle categories are not explicitly identified or do not fit into the categories from the tool, they should be included in the survey as "others" and baseline emissions of this category are counted as zero. The survey shall be undertaken at locations of the project infrastructure and origin/destination of the cycling trip shall be substituted for "entry/exit station" in the methodological tool "Baseline emissions for modal shift measures in urban passenger transport" /11/. The survey may be conducted with a sample of users in the case of the bicycle sharing program or new tricycles, e-bikes or e-tricycles.

Option 2: Baseline emissions based on public transportation (excluding cars, taxis and motorcycles) as benchmark - This option is suitable for Type 1 and Type 2 (i.e. construction of new or extension of existing bicycle lanes) and Type 5 and Type 6 (i.e. construction of new or expansion of existing bicycle parking areas).

Under this option, the modal shares of the public transportation in the city (excluding travels using passenger cars, motorcycles and taxis) and the corresponding CO_2 emissions are determined before the implementation of the project, using statistics from the transport authority or other credible studies. Steps 1 to 3 of the methodological tool "Baseline emissions for modal shift measures in urban passenger transport" /11/ may be applied to complement existing data, if necessary. Also, the number of cycling trips prior to installation of the new infrastructure ($N_{bicycles,BL}$) shall be determined ex ante.

The baseline emissions are calculated considering the number of cycling trips after installation of the new infrastructure and the distance travelled by the users of the infrastructure.

$$BE_y = 0.9 \times \left(N_{bicycles,y} - N_{bicycles,BL}\right) \times ADT_{u,y} \times EF_{BL,benchmark}$$

Where:

BE_y = Baseline emissions in year *y* (tCO_2).

0.9 = Net-to-gross adjustment factor to account for 'walking' in the baseline.

$N_{bycicles,y}$ = Number of bicycles trips travelling through the bicycle infrastructure in year y.

$N_{bycicles,BL}$ = Number of bicycle trips travelling through the location of the new bicycle infrastructure prior to implementation of the project activity.

$ADT_{u,y}$ = Average distance travelled per trip by the user u of the infrastructure in year y (km).

$EF_{BL,benhcmark}$ = Weighted average CO_2 emission factor per passenger-kilometre corresponding to public transportation-mix in the city (excluding travels by using passenger cars, motorcycles and taxis) (tCO_2/pkm), before the implementation of the project, using statistics from the transport authority or credible studies.

Option 3: Based on a survey of users of e-bikes and users of bicycle sharing programs – this option is applicable to Type 3, Type 4 and Type 7 (i.e. introduction of e-bikes).

Under this option, the baseline emission factor is determined through a survey of users of e-bike promotion programs or bicycle sharing programs ($EF_{BL,CO2,survey}$) and the distance travelled will be monitored for each user of the programs ($DT_{u,y}$).

Baseline emissions are determined through the equation below:

$$BE_y = EF_{BL,CO2,survey} \times \sum_n DT_{u,y}$$

Where:

BE_y = Baseline emissions in year *y* (tCO_2).

$DT_{u,y}$ = Total distance travelled by the individual user *u* of the bicycle sharing program and/or of the promoted e-bikes in year y (km).

$EF_{BL,CO2,survey}$ = Average CO_2 emission factor per passenger-kilometre based on survey conducted with users of e-bike promotion programs or bicycle sharing programs (tCO_2/pkm).

Based on assumption considered for the Bikes for the Planet Program, the following steps from the methodological tool “Baseline emissions for modal shift measures in urban passenger transport” version 01.0 /11/ were applied for the calculation of estimated net baseline emissions:

Option 1 was selected to determine the baseline emissions.

Step 1: Determine relevant vehicle categories

The following vehicle categories are considered relevant for urban transport:

(a) Bus (large);

(b) Minibus (scholar and small buses);

(c) Car (private and taxis);

(d) Motorcycle;

(e) Subway (rail-based urban mass transit, mainly subway/underground railway, operated by "Metrô - Companhia do Metropolitano de São Paulo");

(f) Railway (rail-based urban mass transit, mainly surface railway, operated by "CPTM - Companhia Paulista de Trens Metropolitanos");

(g) Bicycle;

(h) Walking.

RINA was able to confirm the information provided in the VCS PD&MR /1/ regarding the transportation share use for the vehicle categories included in the project /16/.

Vehicle categories	Transportation share use (%)
Bus	20.4
Minibus	5.0
Subway	8.1
Railway	3.0
Car	28.1
Motorcycle	2.5
Bicycle	0.9
Walking	32.0

Step 2: Determine the emission factor per kilometre for each relevant road-based vehicle category

Differentiate relevant fuel types for each of the relevant road-based vehicle categories identified in Step 1. Vehicles in a vehicle category using diesel, gasoline, biofuel, biofuel blend, electricity or gas (compressed natural gas (CNG) or liquefied petroleum gas (LPG) should be listed separately.

RINA verified the relevant fuel types for each relevant vehicle category included in the project /27/.

Vehicle categories	Fuel type
Bus	Diesel oil
Minibus	Diesel oil
Car	Gasoline
	Ethanol
Motorcycle	Gasoline

	Ethanol
Subway	Electricity
Railway	Electricity
Bicycle	Not applicable
Walking	Not applicable

The emission factor per kilometre is estimated based on the fraction of vehicles using a specific fuel type, the consumption of each fuel type and CO_{2eq} emissions per unit of fuel consumed.

$$EF_{KM,i,x} = \left[\sum_{n}\left[SFC_{i,n,x} \times NCV_{i,n} \times EF_{CO2,n} + SEC_{i,x} \times EF_{CO2,x}\right] \times \frac{N_{i,n,x}}{N_{i,x}}\right]$$

Where:

$EF_{KM,i,x}$ = Emission factor per kilometre of vehicle category *i* in year *x* (g CO_2/km).

$SFC_{i,n,x}$ = Specific fuel consumption of vehicle category *i* using fuel type *n* in year *x* (mass or volume units of fuel/km).

$NCV_{i,n}$ = Net calorific value of fuel *n* used in vehicle category *i* (MJ/mass or volume units of fuel).

$EF_{CO2,n}$ = Emission factor for fuel type n (g CO_2/MJ).

$SEC_{i,x}$ = Specific electricity consumption of vehicle category *i* using electricity in year *x* (kWh/km).

$EF_{CO2,x}$ = Emission factor for electricity in year *x* (g CO_2/kWh).

$N_{i,x}$ = Number of vehicle-kilometres of category *i* driven in year *x* (VKM) or number of vehicles of category *i* in year *x* (units).

$N_{i,n,x}$ = Number of vehicle-kilometres vehicle category *i* using fuel type n^2 driven in year *x* (VKM) or number of vehicles in vehicle category *i* using fuel type n^3 in year *x* (units).

n = Fuel types used by vehicle category *i* in year *x*.

i = Road-based vehicle categories (passenger car (C), bus (B), motorcycle (M), etc.

x = Most recent calendar year for which data is available. Data not older than three years.

Vehicle Categories	Fuel Type	$EF_{KM,i,x}$ ($kgCO_2$/km)
Bus	Diesel oil	1.21
Minibus	Diesel oil	0.78
Subway	Electricity	*
Railway	Electricity	*

Car	Gasoline	0.15
	Ethanol	0.00
Motorcycle	Gasoline	0.04
	Ethanol	0.00
Bicycle	N/A	0.00

* For the categories, subway and railway, the emission factor per kilometer of vehicle category is not calculated. The public state transport companies (Metrô and CPTM) provide the value for the emission factor per passenger-kilometre for electricity-based vehicle category. As verified by RINA, this value is 6.0 gCO_2/PKM for both categories for the year 2018 /16/.

Step 3: Determine the emission factor per passenger-kilometre

The emission factor per PKM for electricity-based transport systems is determined using the following equation:

$$EF_{PKM,i,x} = \frac{TE_{EL,i,x}}{P_{EL,i,x} \times D_{EL,i,x}} \times 10^6$$

Where:

$EF_{PKM,i,x}$ = Emission factor per passenger-kilometer for electricity-based vehicle category *i* in year *x* (g CO_2/PKM).

$TE_{EL,i,x}$ = Total emissions from electricity-based vehicle category *i* in year *x* (t CO_2).

$P_{EL,i,x}$ = Total number of passengers transported per annum by electricity-based vehicle category *i* in year *x* (passengers).

$D_{EL,i,x}$ = Average trip distance travelled by passengers using electricity-based vehicle category *i* in year *x* (km).

x = Most recent calendar year for which data is available. Data not older than three years.

For this project the emission factor passenger-kilometre for electricity-based transport system is calculated by the public state transport companies (METRÔ and CPTM) and is 6.00 g CO_2/PKM for both means of transport (subway and railway) /16/.

The emission factor per PKM for fuel-based transport systems is determined using the following equation:

$$EF_{PKM,i,x} = \frac{EF_{KM,i,x}}{OC_{i,x}}$$

Where:

$EF_{PKM,i,x}$ = Emission factor per passenger-kilometre of vehicle category *i* in year *x* (g CO_2/PKM).

$EF_{KM,i,x}$ = Emission factor per kilometre of vehicle category *i* in year *x* (g CO_2/kM).

$OC_{i,x}$ = Average occupancy rate of vehicle category *i* in year *x* (passengers).

i = Road-based vehicle categories (such as passenger car (C), bus (B), motorcycle (M)).

x = Most recent calendar year for which data is available. Data not older than three years.

The results are as follows:

Vehicle	$OC_{i,x}$	$EF_{PKM,i,x}$ (gCO_2/PKM)
Bus	40% x 40 seats = 16	75.89
Minibus	40% x 10 seats = 4	195.36
Subway	200	6*
Railway	200	6*
Car	2	76.79
Motorcycle	1.5	24.85

* Values provided by the public state transport companies /16/.

RINA verified the emission factor per passenger-kilometre (PKM) for each vehicle category.

Step 4: Determine baseline emissions

For the determination of *ex-ante* baseline emissions, Option 1 is considered based on the share of passengers shifted from baseline vehicle categories *i* to the project urban public system (s) and an average trip distance on each relevant vehicle category.

$$BE_y = \left(\sum_i (IR_i)^{t+y-1} \times EF_{PKM,i,x} \times D_i \times S_i\right) \times P_y \times 10^{-6}$$

Where:

BE_y = Baseline emissions in year *y* (t CO_{2eq}).

IR_i = Technology improvement factor for vehicle category *i* per year (ratio).

T = Time difference (in years) between the year for which data is available for vehicle category *i* and the year of establishing standardized baseline or start date of CDM project in case the tool is used to determine baseline emissions of CDM project.

$EF_{PKM,i,x}$ = Emission factor per passenger-kilometre for electricity-based or road-based vehicle category *i* in year *x* (g CO_2/PKM).

D_i = Average trip distance travelled by passengers who shifted from electricity-based or road-based vehicle category *i* (km).

P_y = Number of passengers travelled by the project system in year *y*.

S_i = Share of passengers who shifted from electricity-based or road-based vehicle category *i* (%).

i = Vehicle categories (such as passenger car (C), bus (B), motorcycle (M) or rail based urban transit (R)).

y = Crediting year when emissions reductions are estimated.

As per methodological tool /11/ the share of passengers S_i (%) out of total number of passengers using the project system who have shifted from electricity-based or road-based vehicle categories *i* to the urban public system(s) established as CDM project activities as well as an average trip distance on each relevant vehicle category $D_{i,y}$ are determined from a survey of the project system by the project developers.

Surveys conducted in year 1 and year 4 of the first crediting period shall be used to determine: (i) the entry and exit stations for each surveyed passenger to determine the average trip distance on each relevant vehicle category $D_{i,y}$ (ii) the vehicle category from which each surveyed passenger had shifted to determine the share of passengers Si (%) out of total number of passengers using the project system who have shifted from each relevant vehicle category. The data from the survey in year 1 shall be used for the first three years of the first crediting period while the data from the survey in year 4 shall be used until the end of the crediting periods of the project activity.

Estimated net GHG emissions were based on the following assumptions to Bikes for the Planet Program:

Parameter	Data
Quantity of stations	250
Quantity of bikes/station	10
Quantity of trips/bike/day	2
Days in year	365
Average trip distance (km)	2

For the technology improvement factor, default value of 0.99 is considered for all vehicles as required by the methodology tool “Baseline emissions for modal shift measures in urban passenger transport” /11/ in order to estimate baseline emissions for individual CDM project activities or Programmes of Activities.

Considering the assumptions above, the baseline emissions are estimated as:

Year	Baseline emissions (tCO_2/year)

year 1	175
year 2	173
year 3	171
year 4	169
year 5	168
year 6	166
year 7	164
year 8	163
year 9	161
year 10	160
Total	1,670

Project emissions are determined based on the amount of electricity consumed to recharge the batteries of e-bikes or e-tricycles ($EC_{PJ,y}$) using the following equation from the methodological tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" /9/.

The electricity consumed to recharge the batteries ($EC_{PJ,y}$) may be determined:

(a) By directly measuring the electricity consumed by all e-bikes or e-tricycles included in the project; or

(b) Alternatively, assuming a default consumption of 0.015 kWh/km[4] travelled.

$$EC_{PJ,y} = 0.015 \times \sum_{u} DT_{u,y}$$

Where:

$EC_{PJ,y}$ = Quantity of electricity consumed to recharge the batteries of e-bikes or e-tricycles in year y (kWh)

$DT_{u,y}$ = Total distance travelled by the individual user u of the bicycle sharing program and/or of the promoted e-bikes in year y (km).

No project emissions were considered for the determination of emission reductions and, therefore, they are zero.

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO_2)

BE_y = Baseline emissions in year y (tCO_2)

PE_y = Project emissions in year y (tCO_2)

Year	Baseline emissions (tCO_2/year)	Project emissions (tCO_2/year)	Emission reductions (tCO_2/year)
year 1	175	-	175
year 2	173	-	173
year 3	171	-	171
year 4	169	-	169
year 5	168	-	168
year 6	166	-	166
year 7	164	-	164
year 8	163	-	163
year 9	161	-	161
year 10	160	-	160
Average		-	167
Total	1,670	-	1,670

3.4.7 Methodology Deviations

According to the VCS Standard version 04 /5/, projects may deviate from the procedures set out in methodologies in certain cases, where alternative methods may be more efficient for project-specific circumstances, and where the deviation will achieve the same level of accuracy or is more conservative than what is set out in the methodology.

Requirements

3.17.1 - Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan).

3.17.2 - Methodology deviations shall not negatively impact the conservativeness of the quantification of GHG emission reductions or removals, except where they result in increased accuracy of such quantification. Deviations relating to any other part of the methodology shall not be permitted.

3.17.3 - Methodology deviations shall be permitted at validation or verification and their consequences shall be reported in the validation or verification report, as applicable, and all subsequent verification reports. Methodology deviations are not considered to be precedent setting.

Deviation 1 - Option 1: Ex-post survey of baseline travel modes.

As per AMS-III.BM, baseline emissions should be determined using parameters estimated based on data collected during the survey conducted with users of the infrastructure, bicycles sharing program or new tricycles, e-bikes or e-tricycles in the year 1 of the crediting period.

The use of the survey carried out by Metrô is a deviation of the methodology because of three reasons:

1. it is not an ex-post survey (it was carried from 2017 to 2018),
2. It was not conducted with the users of the infrastructure (it was conducted with all inhabitants of the Sao Paulo metropolitan area), and
3. It does not follow exactly the standard “Sampling and surveys for CDM project activities and programme of activities”.

As demonstrated in the VCS PD&MR, the proposed deviation is more efficient for the project-specific circumstances and will not only achieve at least the same level of accuracy set out in the methodology, but will be likely more conservative because of the following reasons:

1. Metrô carried out the survey (from July 2017 to October 2018, published preliminary results in December 2018 and detailed analysis and data in July 2019. Therefore, considering the project activity instances start date in January (Tembici) and August (Grow) 2018, the project proponents consider the vintage reasonably applicable, because it does not negatively affect the conservativeness of the quantification of GHG emission reductions.
2. The survey was conducted with all inhabitants of the metropolitan region of São Paulo, but the project activity instances concentrate their operation in the city of São Paulo (Center Region of the Metropolitan Area in the survey), in areas with better transportation infrastructure. The results of the survey show that the users of the bicycle-sharing infrastructure - located in the city of São Paulo, will use less zero-emission modes. For that reason, using the population of the metropolitan region of São Paulo is clearly more conservative than using only the users of the bicycle-share infrastructure and, therefore, the deviation does not negatively affect the conservativeness of the quantification of GHG emission reductions.
3. The sampling did not follow exactly the prescription of the standard “Sampling and surveys for CDM project activities and programme of activities”. But there is no doubt about the seriousness, quality and accuracy of the surveys regularly carried out by Metrô since 1967 and used the governments of the City and State of São Paulo to plan and develop transport sector policies in the metropolitan region of São Paulo. The most recent edition of the survey, financed by the World Bank, compiled over 150,000 samples and is the most complete diagnosis of transport modes use in a metropolitan area in Brazil. For that reason, the project proponents are confident to state that the deviation does not negatively affect the conservativeness of the quantification of GHG emission reductions.

After checking the survey carried out by Metrô, it is RINA’s opinion that the proposed deviation is more efficient for the project-specific circumstances and will be likely more conservative than what is set out in the methodology. Thus, RINA agree with the use of the survey to determine baseline emissions.

3.4.8 Monitoring Plan

The project applies the approved small-scale methodology AMS-III.BM "Lightweight two and three wheeled personal transportation", version 01.0 /8/ in combination with the methodological tool "Baseline emissions for modal shift measures in urban passenger transport" /11/.

The project monitoring plan is in compliance with the monitoring methodology AMS-III.BM (version 01.0) /8/. The monitoring plan will give opportunity for real measurements of achieved emission reductions.

It is RINA's opinion, that the project participant is able to implement the monitoring plan.

Parameters determined ex-ante:

AMS-III.BM:

- Average CO_2 emission factor per passenger-kilometre corresponding to public transportation-mix in the city (excluding travels using passenger cars, motorcycles and taxis) – official statistics from the transport authority or published studies conducted by a third party should be used to determine this parameter when applying option 2 of the methodology for the determination of the baseline emissions.
- Number of bicycles trips travelling through the location of the new bicycle infrastructure (Type 1 or Type 2) or parked in the area of influence e.g. surroundings of new bicycle parking area the (Type 5 or Type 6) prior to implementation of the project activity in a year – this parameter should be measured directly (determined through sensors installed in the location that counts the number of bicycles riding in the lane or the number of bicycles parked in the parking area) and/or based on a sample basis when applying option 2 of the methodology for the determination of the baseline emissions.
- Average CO_2 emission factor per passenger-kilometre in the baseline – survey with users of e-bike promotion programs and bicycle sharing programs should be used to determine this parameter when applying option 3 of the methodology for the determination of the baseline emissions.

Methodology tool "Baseline emissions for modal shift measures in urban passenger transport":

- Specific fuel consumption of vehicle category *i* using fuel type n in year *x* – this parameter should be determined following the decreasing order of preference: (1) Local measured data (studies, e.g. performed by universities, other institutions or ordered by project proponent); (2) National or international data from studies; (3) IPCC default values for the respective vehicle categories (latest IPCC report /17/); (4) Design data for relevant vehicle categories and (5) Globally applicable default values.
- Specific electricity consumption of vehicles category *i* using electricity in year *x* - this parameter should be determined following the decreasing order of preference: (1) Local measured data (studies, e.g. performed by universities, other institutions or ordered by project proponent); (2) National or international data from studies; (3) IPCC default values for the respective vehicle categories (latest IPCC report /17/); (4) Design data for relevant vehicle categories and (5) Globally applicable default values.

- Number of vehicle-kilometres vehicle category *i* using fuel type *n* driven in year *x* or number of vehicles in vehicle category *i* using fuel type *n* in year *x* – Municipal transit authorities based on vehicle registration statistics from the respective city or data from vehicle control stations (technical and emission control stations) should be used to determine this parameter. If no city/municipal data is available, regional data (canton, state) or, as a last option, national data can be used.
- Percentage or share of vehicle-kilometres or vehicles in vehicle category i using fuel type n in year x – national transport statistics based on vehicle registration statistics, company data (for buses) or surveys should be used to determine this parameter.
- Net calorific value of fuel *n* used in vehicle category *i* – the following data sources may be used to determine this parameter if the relevant conditions apply: (i) National default values – this source can only used for liquid fuels and should be based on well documented reliable sources (such as national energy balances) or (ii) IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in table 1.2 of chapter 1 of volume 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories /17/.
- Technology improvement factor for vehicle category *i* per year – when the tool is used for estimating baseline emissions for individual CDM project activities or Programmes of Activities, the default technology improvement factor is 0.99 for all vehicle categories.
- Average occupancy rate of vehicle category i in year x (e.g. buses (B), taxis (T), passenger cars (C), motorized rickshaws (MR) – this parameter should be determined following one of the options: Option 1. Municipal transit authorities or specific studies. Vintage maximum three years, Option 2. The default values presented under Table 4 of the tool can be applied or Option 3. Survey of occupancy of individual motorized transport (motorcycles, personal cars, taxis) in the urban area for which the baseline is established.
- Emission factor for fuel type n – the following data sources may be used to determine this parameter if the relevant conditions apply: (i) National default values – this source can only used for liquid fuels and should be based on well documented reliable sources (such as national energy balances) or (ii) IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in table 1.4 of chapter 1 of volume 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories /17/.
- Emission factor for electricity in year x – official data source should be applied following the latest approved version of the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” /9/.
- Emission factor per kilometre of vehicle category i in year x – emission factor for new vehicles should be used to determine this parameter.
- Average trip distance travelled by passengers using electricity-based vehicle category i in year x – official statistics data obtained from the system operator should be used in order to determine this parameter. Data should be maximum three years old.

- Total number of passengers transported per annum by electricity-based vehicle category i in year x – official statistics data obtained from the system operator should be used in order to determine this parameter. Data not older than three years.

Parameters monitored ex-post:

The monitoring plan allows for collection and archiving of the following key parameters related to the determination of emission reductions resulting from the project activity:

AMS-III.BM:

- Average distance travelled per trip by the user *u* of the infrastructure that would not have used the bicycle in the absence of the project in year *y* – this parameter should be monitored applying one of the following options: (i) estimated via survey of the users of the infrastructure; (ii) directly measured via GPS; or (iii) as a conservative approach, the average distance travelled can be assumed as 2.5 km for bicycles and 5 km for e-bikes. The survey should be conducted in the year 1 and optionally in the year 4 of the crediting period;
- Number of bicycles trips travelling through the bicycle infrastructure in year y or parked in the bicycle parking area – this parameter should be measured continuously and consolidated daily if direct measurement methods are used and/or based on a sample basis. This parameter is used when applying option 2 of the methodology;
- Total distance travelled by the individual user u of the e-bike promotion program or bicycle sharing program in year y – this parameter should be measured while travelling and the values should be aggregated monthly for each individual user *u*. One of the following options should be applied to determine this parameter: (i) data should be sourced from mobile apps that record the distance travelled based on GPS for programs that promoted e-bikes; (ii) data should be sourced from mobile apps that record the distance travelled based on GPS or from sensors installed in bicycles for bicycle sharing programs and (iii) if data for (ii) are not available, then trip distance may be conservatively assumed as the straight distance between the check-out and check-in docking spaces of the trip for bicycle sharing programs using docking spaces. This parameter is used when applying option 3 of the methodology;
- Quantity of electricity consumed to recharge the batteries of e-bikes or e-tricycles in year y – this parameter should be monitored as per the methodological tool “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” /9/.

Methodology tool “Baseline emissions for modal shift measures in urban passenger transport”:

- Average trip distance travelled by passengers who shifted from electricity-based or road-based vehicle category *i* – this parameter will be monitored based on a survey of the project passengers in year 1 and optionally in year 4 of the first crediting period asking about the entry and exit stations

in the project system and noting electricity-based or road-based vehicle category *i* each surveyed passenger used prior to shifting to the project system (S_i);

- Share of passengers who shifted from electricity-based or road-based vehicle category i – this parameter will be monitored based on a survey of the project passengers in year 1 and optionally in year 4 of the first crediting period asking about electricity-based or road-based vehicle category i each surveyed passenger used prior to shifting to the project system and noting the entry and exit stations in the project system ($D_{i,y}$);
- Share of passenger-kilometres who shifted from electricity-based or road-based vehicle category i (%) – this parameter will be monitored based on a survey of the project passengers in year 1 and optionally in year 4 of the first crediting period asking about electricity-based or road-based vehicle category i each surveyed passenger used prior to shifting to the project system and noting the entry and exit stations in the project system to determine the share of passenger-kilometres SDi (%) out of total number of passengers using the project system who have shifted from each relevant vehicle category;
- Number of passengers travelled by the project system in year *y* – this parameter will be monitored annually using project system operator, electronic ticketing system or any other official records;
- Number of passenger-kilometres travelled by the project system in year *y* – this parameter will be estimated annually by transport operators based on surveys, occupancy rates at different points in the network.

Management system and quality assurance:

Detailed procedures have been elaborated in section 4.3 of the VCS PD&MR /1/. The responsibility of monitoring parameters is clearly described, as well as frequency of reporting and data control. These will be maintained and implemented to enable subsequent verification of emission reductions.

In conclusion, the application of the monitoring methodology is transparent and RINA considers that the project participant is able to implement the monitoring plan.

3.5 Non-Permanence Risk Analysis

Where relevant, describe the steps taken to assess the non-permanence risk rating determined by the project proponent. For each risk factor, provide the following:

- An assessment of all rationale, assumptions and justifications used to support the risk score.
- An assessment of any documentation and data provided to support the risk score.
- A conclusion regarding the appropriateness of the risk score.

Provide a concluding statement regarding the determined value of the overall risk rating.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

The GHG emissions reductions for project activity instance 1 and project activity instance 2 under the group project were calculated correctly on the basis of the approved baseline and monitoring methodology AMS-III.BM (version 01.0) /8/, the methodology tool "Baseline emissions for modal shift measures in urban passenger transport" (version 01.0) /11/ and the formulae given in the VCS PD&MR /1/.

Both project activity instances are located in the city of São Paulo, state of São Paulo, Brazil and apply type 3 of AMS-III.BM. Consequently **Option 1** (Ex-post survey of baseline travel modes) was selected for the determination of the baseline emissions. Steps 1, 2 and 3 of the methodological tool /11/ were calculated as presented in section 3.4.6 of this report. Only step 4 was determined for each project activity instance.

For the monitoring period 30 January 2018 to 17 December 2018, the emission reduction calculations are based on the following parameters:

- $SFC_{i,n,x}$ (l/km) – according to the tool /11/, local measured data from 2018 Vehicle Emissions Inventory issued by CETESB were applied /27/;
- $NCV_{i,n}$ (kcal/kg) – according to the tool /11/, national default values from the 2018 Brazilian Energy Balance were applied /28/;
- Density (kg/l) – according to the tool /11/, national default values from the 2018 Brazilian Energy Balance were applied /28/;
- $EF_{CO2,n}$ – according to the tool /11/, IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval should be applied /17/;
- Information about $SEC_{i,x}$ and $EF_{CO2,x}$ is not provided in the VCS PD&MR or spreadsheet since the $EF_{PKM,i,x}$ for electricity based transport system is provided by the public state transport companies (Metrô and CPTM) /16/;
- $N_{i,n,x}/N_{i,x}$ – The values applied are based on the Metrô's survey /16/;
- $OC_{i,x}$ – as per methodological tool /11/, world default values were applied.
- $EF_{PKM,i,x}$ – the value applied of 6.00 g CO_2/PKM for subway and railway was provided by the public state transport companies (Metrô and CPTM) /16/.
- IR_i – the default value of 0.99 was applied according to the tool /11/;
- D_i – as per tool, data from the project system operator was applied for both project activity instances /2//3/:
    - 1. Tembici: (i) 2018 – *Commercially Sensitive Information*

- 2. Grow: (i) 2018 – Commercially Sensitive information

- S_i – as per tool, this parameter should be monitored trough a survey. For year 1, values of official source were applied /16/;
- P_y – as per tool, this parameter should be monitored annually using project system operator: electronic ticketing or any other official records /2//3/:
  - 1. Tembici: (i) 2018 - Commercially Sensitive information
  - 2. Grow: (i) 2018 – Commercially Sensitive information

Since both project activity instances do not include e-bikes or e-tricycles, the project emissions are zero.

Emission reductions are calculated as follows:

Project activity instance 1 Tembici:

Year	Baseline emissions (tCO_2)	Project emissions (tCO_2)	Emission reductions (tCO_2)
30 January 2018 to 17 December 2018	120	-	120
Total	120	-	120

Project activity instance 2 Grow:

Year	Baseline emissions (tCO_2)	Project emissions (tCO_2)	Emission reductions (tCO_2)
02 August 2018 to 17 December 2018	120	-	120
Total	120	-	120

Data source and the emission reductions calculations were verified and are considered accurate. Detailed information regarding the resulted emission reductions is available in the VERs calculation spreadsheet /2/.

The formulas and calculations used for the VERs determination are correctly applied and the resulted emissions calculation is reliable.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

RINA was able to confirm that the calculations are based on authentic data from the Tembici and Grow historical records /3/. The spreadsheet used to calculate the yearly certified emission reduction calculations and all figures were tracked, check by sampling and found to be consistent.

5 VALIDATION AND VERIFICATION CONCLUSION

RINA has performed a validation of the project activity “Bikes for the Planet - Brazil” in Brazil. The validation was performed on the basis of VCS criteria for VCS projects as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The project correctly applies the methodology “Lightweight two and three wheeled personal transportation”, version 01.0.

The project activity consists of the implementation of alternative mobility by constructing and/or expanding the existing bicycles lane, parking areas and sharing programs. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 1,670 tCO_{2e} per year over the selected 10 years fixed crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

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

In summary, it is RINA’s opinion that the project activity “Bikes for the Planet - Brazil” in Brazil, as described in the VCS PD&MR, version 3.6 dated 26 December 2019, meets all relevant VCS requirements for VCS projects and correctly applies the VCS/CDM methodology “Lightweight two and three wheeled personal transportation”, version 01.0. Hence, RINA recommends the registration of the project as a VCS project activity.

In addition, RINA has performed the verification of the emission reductions that have been reported for the “Bikes for the Planet – Brazil” for the period 30 January 2018 to 17 December 2018.

The project participant is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emission reductions from the project.

It is RINA’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project.

RINA conducted the verification on the basis of the small-scale methodology AMS-III.BM (version 01.0), the monitoring plan contained in the VCS joint project description & monitoring report dated 26 December 2019. The verification included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

RINA's verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. RINA planned and performed the verification by obtaining evidence and other information and explanations that RINA considers necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions of the "Bikes for the Planet - Brazil" for the period 30 January 2018 to 17 December 2018 are fairly stated in the VCS joint project description & monitoring report dated 28 November 2019.

The GHG emission reductions were calculated correctly on the basis of the small-scale methodology AMS-III.BM (version 01.0) and the monitoring plan contained in the VCS joint project description & monitoring report dated 26 December 2019.

RINA is able to certify that the emission reductions from the "Bikes for the Planet - Brazil" during the period 30 January 2018 to 17 December 2018 amount to 240 tonnes of CO_2 equivalent, detailed as below.

For project activity instance 1 - Tembici:

Verification period: From 30 January 2018 to 17 December 2018

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_{2e})	Project emissions or removals (tCO_{2e})	Leakage emissions (tCO_{2e})	Net GHG emission reductions or removals (tCO_{2e})
2018	120	-	-	120
Total	120	-	-	120

For project activity instance -2 Grow:

Verification period: From 02 August 2018 to 17 December 2018

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_{2e})	Project emissions or removals (tCO_{2e})	Leakage emissions (tCO_{2e})	Net GHG emission reductions or removals (tCO_{2e})
2018	120	-	-	120
Total	120	-	-	120

Verification period: From 30 January 2018 to 17 December 2018

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_{2e})	Project emissions or removals (tCO_{2e})	Leakage emissions (tCO_{2e})	Net GHG emission reductions or removals (tCO_{2e})
2018	240	-	-	240
Total	240	-	-	240

RINA does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approver VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to RINA and the engagement conditions detailed in this report. RINA cannot be held liable by any party for decisions made or not made based on this report.

APPENDIX 1: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Table 1. CLs from this validation

CL ID	01	**Section no.**	3.1.6	**Date:** 31/10/2019
Description of CL				
Project participant is requested to clarify the project crediting period length. As per VCS Standard the project crediting shall be either seven years, twice renewable for a total of 21 years, or ten years fixed and not as described in the VCS PD&MR.				
Project participant response				**Date:** 07/11/2019
The Project will have a fixed crediting period of ten years. *→ The project proponent revised the PD document to avoid the misunderstanding.*				
Documentation provided by project participant				
Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019
RINA verified that section 1.9 of the VCS PD&MR was correctly updated as per VCS Standard. Thus, this CL is closed.				

CL ID	02	**Section no.**	3.4.5	**Date:** 31/10/2019
Description of CL				
It is stated in the VCS PD&MR that the project activity complies with criteria for demonstrating additionality of microscale project activities following the conditions stated in paragraph 10. However, information provided is not according this paragraph and should be clarified.				
Project participant response				**Date:** 07/11/2019
To the best of the project proponent understanding, the included project activity instances comply with the conditions stated in paragraph 10 of the methodological tool "demonstration of additionality of microscale activities". The full text of the tool is the following: *10. Other project activities… that aim to achieve emission reductions at a scale of no more than 20 ktCO2e per year, are additional if any one of the following conditions is satisfied:* *(a) The geographic location of the project activity is an LDC/SIDS or SUZ of the host country as identified by the government…;* *(b) The project activity is an emission reduction activity with both conditions (i) and (ii) below satisfied:* *(i) Each of the independent subsystems/measures in the project activity achieves an estimated annual emission reduction equal to or less than 600 tCO2e per year; and* *(ii) End users of the subsystems or measures are households / communities / medium-size enterprises (SMEs).* *Both project activity instances comply with paragraph 10 (b) of the tool because (i) the estimated annual emission reduction are equal or less than 600 tCO2e per year and (ii) end users of the subsystems are the independent individuals riding the bikes, which can be reasonably considered equivalent/similar to households/communities.* *→ The project proponent revised the PD document to include the above clarification.*				
Documentation provided by project participant				
Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019

RINA was not able to verify the information provided above under paragraph 10 of the tool.	
Project participant response	**Date:** 15/11/2019
As indicated in section 1.7 of the joint PD&VR document, the project started considering the submission to registration in July 2018, when version 8 of the methodological tool for the "Demonstration of additionality of microscale project activities" (tool 19) was applicable. *In December 2018 the newer version 9 of the tool was approved. Considering the eight months grace period, version 8 was applied when the project submitted documents for public comments at the VCS pipeline projects database in April 2019 (see section 2.4 of the the joint PD&VR docume).* *Because the exact paragraph used of the demonstration of additionality in the example project was removed in the new version 9, the project proponents propose the (deviation-) use of paragraph 10 from the previous version 8 of the tool.* *→ The project proponent revised the PD&VR document to include the above clarification (see section 3.6).*	
Documentation provided by project participant	
VCS Joint PD&VR document is revised to include the information related to the deviation request in accordance with the CL request above (see section 3.6).	
DOE assessment	**Date:** 18/11/2019
It is RINA's opinion that the proposed deviation is more efficient for the project-specific circumstances since microscale mobility is clearly a microscale project activity and will very unlikely achieve more than 600 tCO_2e per year, likely significantly less, but was unfortunately not included in paragraph 13 of the new version of the tool. Thus, this CL is closed.	

CL ID	03	**Section no.**	3.4.6	**Date:** 31/10/2019
Description of CL				
It is not clearly described under section "Estimated Net GHG Emission Reductions and Removals" of the VCS PD&MR which option was selected to determine the baseline emissions.				
Project participant response				**Date:** 08/11/2019

Both proposed activity instances apply option 1 (ex-post survey of baseline travel modes) of AMS-III.BM for the determination baseline emission calculation using data from the origin-destination survey carried out by Metrô on transport modes used in the Metropolitan Region of Sao Paulo (RMSP from the Portuguese "Região Metropolitana de São Paulo").

Project Proponents are aware that the use of the survey carried out by Metrô is a deviation of the methodology because of three reasons:

4. *it is not an ex-post survey (it was carried from 2017 to 2018),*
5. *It was not conducted with the users of the infrastructure (it was conducted with all inhabitants of the Sao Paulo metropolitan area), and*
6. *It does not follow exactly the standard "Sampling and surveys for CDM project activities and programme of activities".*

With respect to methodology deviations, according the VCS Standard, version 4.0, item 3.17:

> *Projects may deviate from the procedures set out in methodologies in certain cases, where alternative methods may be more efficient for project-specific circumstances, and where the deviation will achieve the same level of accuracy or is more conservative than what is set out in the methodology.*
>
> *Requirements*
>
> *3.17.1 - Deviations from the applied methodology are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement set out in the methodology (i.e., deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan).*
>
> *3.17.2 - Methodology deviations shall not negatively impact the conservativeness of the quantification of GHG emission reductions or removals, except where they result in increased accuracy of such quantification. Deviations relating to any other part of the methodology shall not be permitted.*
>
> *3.17.3 - Methodology deviations shall be permitted at validation or verification and their consequences shall be reported in the validation or verification report, as applicable, and all subsequent verification reports. Methodology deviations are not considered to be precedent setting.*

In the project proponents opinion the proposed deviation is more efficient for the project-specific circumstances and will not only achieve at least the same level of accuracy set out in the methodology, but will be likely more conservative because of the following reasons:

4. *Metrô carried out the survey (nicknamed OD2017, from the Portuguese "Origem-Destino 2017") from July 2017 to October 2018, published preliminary results in December 2018 and detailed analysis and data in July 2019. Therefore, considering the project activity instances start date in January (Tembici) and August (Grow) 2018, the project proponents consider the vintage reasonably applicable, because it does not negatively affect the conservativeness of the quantification of GHG emission reductions.*
5. *The survey OD2017 was conducted with all inhabitants of the RMSP, but the project activity instances concentrate their operation in the city of São Paulo (Center Region of the Metropolitan Area in the survey), in areas with better transportation infrastructure. The results of the survey show that the users of the bicycle-sharing infrastructure - located in the city of São Paulo, will use less zero-emission modes (see Table 1, with the share of trips by mode "walking", "bicycles" and "others" are all below the RMSP average). For that reason, using the population of the RMSP is clearly more conservative than using only the users of the bicycle-share infrastructure and, therefore, the deviation does not negatively affect the conservativeness of the quantification of GHG emission reductions.*

Table 1 – Daily trips by mode (source: Metrô, 2019)

Region of origin	subway	railway	bus 1	bus 2	minibus	car	taxi	motorcycle	bicycle	walk	other	TOTAL	(%) of the total
Southwest	65	4	246	9	102	356	3	79	15	510	4	1,393	3.3%
	4.67%	0.29%	17.66%	0.65%	7.32%	25.56%	0.22%	5.67%	1.08%	36.61%	0.29%	100.0%	
West	91	178	645	37	227	1,164	22	153	15	1,196	10	3,738	8.9%
	2.43%	4.76%	17.26%	0.99%	6.07%	31.14%	0.59%	4.09%	0.40%	32.00%	0.27%	100.0%	
North	27	51	111	4	82	185	2	15	9	329	2	817	1.9%
	3.30%	6.24%	13.59%	0.49%	10.04%	22.64%	0.24%	1.84%	1.10%	40.27%	0.24%	100.0%	
Northeast	61	21	579	23	170	786	28	62	34	979	14	2,757	6.6%
	2.21%	0.76%	21.00%	0.83%	6.17%	28.51%	1.02%	2.25%	1.23%	35.51%	0.51%	100.0%	
East	74	121	346	32	118	645	19	52	55	996	6	2,464	5.9%
	3.00%	4.91%	14.04%	1.30%	4.79%	26.18%	0.77%	2.11%	2.23%	40.42%	0.24%	100.0%	
Southeast	127	148	875	81	257	1,652	48	156	37	1,606	10	4,997	11.9%
	2.54%	2.96%	17.51%	1.62%	5.14%	33.06%	0.96%	3.12%	0.74%	32.14%	0.20%	100.0%	
Center	2,955	722	5,502	66	1,138	6,553	346	547	212	7,734	66	25,841	61.5%
(City of São Paulo)	11.44%	2.79%	21.29%	0.26%	4.40%	25.36%	1.34%	2.12%	0.82%	29.93%	0.26%	100.0%	
TOTAL	3,400	1,245	8,304	252	2,094	11,341	468	1,064	377	13,350	112	42,007	100.0%
TOTAL (%)	8.09%	2.96%	19.77%	0.60%	4.98%	27.00%	1.11%	2.53%	0.90%	31.78%	0.27%	100.0%	

6. *The sampling did not follow exactly the prescription of the standard "Sampling and surveys for CDM project activities and programme of activities". But there is no doubt about the seriousness, quality and accuracy of the surveys regularly carried out by Metrô since 1967 and used the governments of the City and State of Sao Paulo to plan and develop transport sector policies in the RMSP. The most recent edition of the survey, financed by the World Bank, compiled over 150,000 samples and is the most complete diagnosis of transport modes use in a metropolitan area in Brazil. For that reason the project proponents are confident to state that the deviation does not negatively affect the conservativeness of the quantification of GHG emission reductions.*

→ *The project proponent revised the PD&VR document to include the above clarification.*

Documentation provided by project participant

1. Revised PD&VR document.
2. Metrô (2018). Balanço da realização e os primeiros resultados da Pesquisa Origem e Destino 2017. Companhia do Metropolitano de São Paulo.
3. Metrô (2019). A Mobilidade Urbana da Região Metropolitana de São Paulo em Detalhes. Companhia do Metropolitano de São Paulo.

DOE assessment	**DOE assessment**
RINA agrees with project proponent's opinion that the proposed deviation is more efficient for the project-specific circumstances and will be likely more conservative than what is set out in the methodology. However, RINA request PP to revise section 3.6 of the VCS PD&MR to include the deviation described above.	
Project participant response	**Date:** 14/11/2019
VCS Joint PD&VR document is revised to rearrange the information related to the deviation in accordance with the CL request above (see sections 3.6 and 6.2).	
Documentation provided by project participant	
1. Revised VCS Joint PD&VR document	
DOE assessment	**Date:** 18/11/2019
RINA verified that PP revised section 3.6 of the VCS PD&MR to include the deviation described above. Thus, this CL is closed.	

CL ID	04	**Section no.**	3.4.6	**Date:** 31/10/2019
Description of CL				
As verified during the site visit, option 1 (ex-post survey of baseline travel modes) was selected to determine the baseline emissions. Project participant is requested to explain why an ex-post survey was not applied.				
Project participant response				**Date:** 08/11/2019
The clarification request is responded in the context of the response to CL ID 03 (please see above).				
Documentation provided by project participant				
DOE assessment				**Date:** 13/11/2019
RINA agrees with the explanation provided by PP under CL 03. Thus, this CL is closed.				

CL ID	05	**Section no.**	4.1	**Date:** 31/10/2019
Description of CL				

$N_{i,n,x}/N_{i,x}$ – It is not clearly described which approach was applied in the calculation.	
Project participant response	**Date:** 08/11/2019
As prescribed in TOOL18. instead of the two parameters $N_{i,n,x}$ and $N_{i,x}$, it is possible to use one parameter $N_{i,n,x}/N_{i,x}$ which can be defined using the following options, which are described in the order of preference (see "Data and parameters" section for further guidance on data requirements): *(a) Approach 1. The share of vehicle-kilometres within vehicle category i that are driven by vehicles using fuel type n, if a reliable data source for this parameter exists (see TOOL18, "Data and parameters" section for further guidance on data requirements). This is the preferred option;* *(b) Approach 2. In case data on vehicle-kilometres required in approach 1 is not available the share of vehicles within vehicle category i that use fuel type n should be used, if a reliable data source for this parameter exists.* *As data on vehicle kilometres required in approach 1 is not available, "approach 2 (share of vehicles within category i that used fuel type n) is used for the determination of $N_{i,n,x}/N_{i,x}$. The data was derived from the OD2017 survey and is presented in table 4.* *→ The project proponent revised the PD&VR document to include the above clarification.*	
Documentation provided by project participant	
1. Revised PD&VR document.	
DOE assessment	**Date:** 13/11/2019
RINA verified the revised VCS PD&MR and confirmed that information regarding the choice of approach applied to determine the share of vehicles within vehicle category i that use fuel type n was included. Thus, this CL is closed.	

CL ID	06	**Section no.**	4.1	**Date:** 31/10/2019
Description of CL				
Di – as per tool, data from the project system operator was applied for both project activity instances. It is not clearly stated in the VCS PD&MR how this parameter is determined for each project activity instance. As verified during the site visit, this parameter is not directly measured.				
Project participant response				**Date:** 08/11/2019
Parameter "D_i" (average trip distance travelled by passengers) is individually and directly measured for each project instance (see data monitored tables with the applied figures in section 6.2) as follows: • *For project activity instance 1 (Tembici), measurement is made using the shortest road path between the station where the bicycle is taken and the station where it is returned. For conservative reasons, if the stations where the bicycle is take and returned are the same, a zero km distance trip is assumed. Yearly chronological averages (for 2018 and for 2019) are used in the determination of D_i.* • *For project activity instance 2 (Grow), all trips are directly measured and the average trip distance for the country is used.* *→ The project proponent revised the PD&VR document to include the above clarification (see section 6.2).*				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019
RINA verified the revised VCS PD&MR and confirmed that information regarding on how the parameter Di is determined was included under section 6.2. Thus, this CL is closed.				

CL ID	07	**Section no.**	4.1	**Date:** 31/10/2019
Description of CL				
Py – as per tool, this parameter should be monitored annually using project system operator: electronic ticketing or any other official records. Project participant is requested to clarify the use of Metrô's survey to determine this parameter for both project activity instances.				
Project participant response				**Date:** 08/11/2019
Parameter P_y (number of passengers travelled by the project system in year y) is directly determined by each project instance for each chronological year (see individual and yearly figures in the tables with monitored data in section 6.2). Metrô's survey is not used to determine P_y. *→ The project proponent revised the PD&VR document to include the above clarification (see section 6.2).*				

Documentation provided by project participant	
1. Revised PD&VR document.	
DOE assessment	**Date:** 13/11/2019
As observed in the spreadsheet, this parameter is determined multiplying the total number of trips (measured directly for each project activity instance) by the share of vehicles within vehicle category i that use fuel type n determined applying the Metro's survey. RINA cross-checked the values against evidences and confirmed that the values applied are correct. Thus, this CAR is closed.	

Table 2. CARs from this validation

CAR ID	01	**Section no.**		**Date:** 31/10/2019
Description of CAR				
The template version applied for the VCS PD&MR is no more valid. Project participant is requested to apply the latest template version of the VCS PD&MR.				
Project participant response				**Date:** 08/11/2019
Revised version of the PD&MR document applies the latest template version (4.0)				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019
RINA verified that the latest template version of the VCS PD&MR was applied. Thus, this CAR is closed.				

CAR ID	02	**Section no.**	3.1.2	**Date:** 31/10/2019
Description of CAR				
Regarding the eligibility criteria of the VCS Standard the following issues were identified: • No information regarding applicability conditions is detailed under section 2.1 of the VCS PD&MR; • No information regarding technologies or measures specified in the project description is detailed under section 2.2 of the VCS PD&MR; and • In the VCS Standard there is no criteria 6 and 7 included in the VCS PD&MR.				
Project participant response				**Date:** 11/11/2019
Sections change due to the application of the new PD&VR document template. Previous sections 2.1 and 2.2 are now sections 3.1.and 3.2, respectively. Responding the items above: • *The instructions in the "VCS Joint PD & VR template version 4.0" for section 3.1 (previous 2.1), "title and reference of methodology", are the following, "provide the title, reference and version number of the methodology or methodologies applied to the project. Include also the title and version number of any tools applied by the project." Therefore, no applicability condition is detailed in section 3.1 (applicability conditions are described and detailed in section 3.2 (previous 2.2), "applicability of the methodology").* • *The instructions in the "VCS Joint PD & VR template version 4.0" for section 3.2 (previous 2.2), "applicability of the methodology", are the following, "demonstrate and justify how the project activity(s) meets each of the applicability conditions of the methodology(s), and tools (where applicable) applied by the project. Address each applicability condition separately". Therefore, no technologies and measures are detailed in section 3.2 (technologies and measures are described and detailed in sections 1.1 and 1.11).* • *Criteria 6 and 7 removed from the PD&VR document.* → *The project proponent revised the PD&VR in accordance with the above clarification (see section 3.1, 3.2 and 1.1/1.11).*				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**DOE assessment**

PP is requested to clarify the modification done under criterion 3. The section mentioned under this criterion does not refer to the project description.
Project participant response **Date:** 14/11/2019
Project eligibility criteria 3 is revised, as follows: "Technologies or measures (as described in item 1.1) are related to the construction of new and/or expansion of existing bicycle lanes, bicycle sharing programs (through dockless bicycles or sharing stations), bicycle parking areas; introduction of e-bikes or tricycles; and/or implementation of new and/or expansion of existing passenger transportation services based on tricycles in different locations throughout Brazil."
Documentation provided by project participant
1. Revised VCS Joint PD&VR document
DOE assessment **Date:** 18/11/2019
The revised VCS PD&MR describe and justify how the project is eligible under the scope of the VCS Program correctly. Thus, this CAR is closed.

CAR ID	03	**Section no.**	3.1.5	**Date:** 31/10/2019
Description of CAR				
Project participant is requested to update the version of the VCS Program Definitions mention under "Project start date". The version applied is no more valid.				
Project participant response				**Date:** 09/11/2019
→ The project proponent revised the PD&VR document to respond to the CAR (see section 1.8 in the revised document).				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019
RINA verified that the version of the VCS Program Definitions was correctly updated under section 1.8 of the VCS PD&MR. Thus, this CAR is closed.				

CAR ID	04	**Section no.**	3.4.2	**Date:** 31/10/2019
Description of CAR				
PP is requested to demonstrate and justify how the project activity meets each of the applicability conditions of the methodology, and tools (where applicable) applied by the project. Each applicability condition should be addressed separately.				
Project participant response				**Date:** 11/11/2019
The project proponents revised the joint PD & VR document to indicate all applicable conditions to be observed (section 3) and to demonstrate and justify how each added project activity instance met relevant applicability conditions. *→ The project proponent revised the PD&VR document to respond to the CAR.*				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019
RINA verified that section 3.2 of the VCS PD&MR was correctly updated according to AMS-III.BM and all applicability criteria established in the applied methodology and tools were justified. Thus, this CAR is closed.				

CAR ID	05	**Section no.**	3.4.6	**Date:** 31/10/2019
Description of CAR				
No information in Portuguese should be included in the VCS PD&MR and ER spreadsheet.				
Project participant response				**Date:** 09/11/2019
Project proponents revised PD&MR document and ER spreadsheet to remove information in Portuguese. Nevertheless, information related to sources/literature/references/documents original names remain in Portuguese as well as references to the text in the documents (for example, see "tabela XX" in page YY) to facilitate searching data and information used.				
Documentation provided by project participant				
1. Revised PD&VR document and ER spreadsheet				

DOE assessment	**Date:** 13/11/2019
RINA verified the revised VCS PD&MR and ER spreadsheet and confirmed that information in Portuguese was removed. Thus, this CAR is closed.	

CAR ID	06	**Section no.**	3.4.8	**Date:** 31/10/2019
Description of CAR				
The table template included under this section of the VCS PD&MR is not correct. In addition, the information provided is only copy of the methodology and tool. No information regarding the sources that will be applied is specified.				
Project participant response				**Date:** 09/11/2019
As far as the project proponents can see, there is no section 3.4.8 in the PD&MR and, therefore, it is not clear to the project proponent which table template is incorrect. Nevertheless, as the whole PD&MD document was revised to correspond to the new VCS template (version 4), all the tables were revised. Please check the revised document and, if the mentioned table is still not correct, indicated it again more precisely.				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**Date:** 13/11/2019
The table template included for some parameters under section 5.1 of the VCS PD&MR is not correct.				
Project participant response				**Date:** 14/11/2019
Tables in section 5.1 revised to comply with the template.				
Documentation provided by project participant				
1. Revised PD&VR document.				
DOE assessment				**Date:** 18/11/2019
RINA verified that the table template under section 5.1 of the VCS PD&MR is now according to the VCS-Joint-Project-Description-Monitoring-Report-Template-v4.0. Thus, this Car s closed.				

CAR ID	07	**Section no.**	4.1	**Date:** 31/10/2019
Description of CAR				
$EF_{CO2,n}$ – according to the tool, IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval should be applied. However, the project applied the default value.				
Project participant response				**Date:** 09/11/2019
PD&MR document and ER spreadsheet was revised applying IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.				
Documentation provided by project participant				
1. Revised PD&VR document and ER spreadsheet				
DOE assessment				**Date:** 13/11/2019
RINA verified that the value applied for the $EF_{CO2,n}$ is now correct. Thus, this CAR is closed.				

CAR ID	08	**Section no.**	4.1	**Date:** 31/10/2019
Description of CAR				
$OC_{i,x}$ – as per methodological tool, world default values were applied. The value applied for taxi is not according to the tool.				
Project participant response				**Date:** 10/11/2019
As explained above, taxis and private cars are grouped in the category "cars". Tool18 recommended occupancy rate for taxis is "1.1", but for simplicity and conservative reasons (the higher the occupancy rate, the smaller is the emission factor per passenger-kilometer) the same figure applied for cars ("2") is used. *→ The PD&VR document was revised to respond to the CAR (see footnote in section 4.4 in the revised document).*				
Documentation provided by project participant				
1. Revised PD&VR document				
DOE assessment				**Date:** 13/11/2019

RINA confirmed that an explanation for the value applied for taxi was included under section 4.4 of the revised VCS PD&MR. The approach was considered conservative and adequate. Thus, this CAR is closed.

CAR ID	09	**Section no.**	4.1	**Date:** 31/10/2019
Description of CAR				
The value included for emission reductions on table 19 and table 20 of the VCS PD&MR is not correct. In addition, project participant is requested to clarify the monitoring period for each project activity instance. The period included under tables 19 and 20 of the VCS PD&MR is different from the period included for each project activity instance in the spreadsheet.				
Project participant response				**Date:** 10/11/2019
→ The project proponent revised the PD&VR document and ER calculation spreadsheet to respond to the CAR (see sections 1.10 and 6.5 in the revised PD&VR document as well as the corresponding sheets in the ER calculation spreadsheet).				
Documentation provided by project participant				
1. Revised PD&VR document and ER spreadsheet				
DOE assessment				**Date:** 13/11/2019
RINA verified that the information under tables 20 and 21 were correctly revised. Thus, this CAR is closed.				

CAR ID	10	**Section no.**	4.1	**Date:** 31/10/2019
Description of CAR				
As verified during the site visit, the values applied for the average trip distance travelled by passengers who shifted from electricity-based or road-based vehicle category *i* are not according to the evidences provided by Tembici.				
Project participant response				**Date:** 10/11/2019
The project proponent revised the PD&VR document and ER calculation spreadsheet to respond to the CAR (see sections 1.10 and 6.5 in the revised PD&VR document as well as the corresponding sheets in the ER calculation spreadsheet). *All (confidential) data used for the calculation of each project activity instance as well as evidences collected directly from the databases as verified during site visits is supplied.*				
Documentation provided by project participant				
1. Revised PD&VR document and ER spreadsheet *2.Raw data and evidences from project activity instance 1 (Tembici)* *2.Raw data and evidences from project activity instance 2 (Grow)*				
DOE assessment				**Date:** 13/11/2019
The values applied for the average trip distance travelled by passengers who shifted from electricity-based or road-based vehicle category *i* were correctly revised according to the evidences provided by Tembici during the site visit. Thus, this CAR is closed.				

CAR ID	11	**Section no.**	5	**Date:** 31/10/2019
Description of CAR				
The total emission reductions value presented in the spreadsheet is not correct. Values should not include decimals in the VCS PD&MR.				
Project participant response				**Date:** 10/11/2019
→ The project proponent revised the PD&VR document and ER calculation spreadsheet to respond to the CAR (see sections 1.10 and 6.5 in the revised PD&VR document as well as the corresponding sheets in the ER calculation spreadsheet).				
Documentation provided by project participant				
1. Revised PD&VR document and ER spreadsheet				
DOE assessment				**Date:** 13/11/2019
RINA verified that the documents were correctly revised. Thus, this CAR is closed.				

Table 3. FARs from this validation

FAR ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of FAR				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

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