



**Verified Carbon  
Standard**


# VALIDATION REPORT OF XINGNING TOKZIN PET RECYCLING PROJECT



Document Prepared by CTI Certification Co., Ltd

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## Summary

### Description of the project

The project activity is a PET flakes producing project located at Dongguan Shijie (Xingning) Industrial Transfer Area, Xingning City, Meizhou City, Guangdong Province, P.R.C with geographic coordinates of 115° 40' 42" E and 24° 11' 11" N, implemented by Xingning Tokzin Yinghui Resources Co., Ltd. The main purpose is to produce PET flakes by recycling and processing post-consumer PET bottles, which replaces the same PET product produced from the raw materials. The total production capacity is about 55,000 tons of recycled polyester (PET) flakes per year. GHG emission reductions will be generated through the implementation of the project activity by avoiding the consumption of the raw materials and reducing related energy consumption. It's estimated that the project activity could achieve average annual GHG emission reductions of 35,890 tCO<sub>2e</sub> during the first crediting period.

### Description of the validation

CTI Certification Co., Ltd. (hereafter referred to as "CTI") has been commissioned by Baineng New Energy (Shenzhen) Co., Ltd. to perform the validation of project activity "Xingning Tokzin PET Recycling Project" with Project ID. 4703 (hereafter referred to as the "project activity" or the "project") and reported in the Validation Report.

### The purpose and scope of validation

The validation objective is an independent assessment by a Third Party of a proposed project activity against all defined criteria set for the registration under the VCS. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria, the validation involves the assessment of: project conformance to VCS rules, project conformance to the applied methodology and tools, including the procedure for the demonstration of additionality specified in the methodology; and likelihood that methods a procedure set out in the project description will generate verifiable GHG data and information when implemented. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended generation of VCUs. Validation is part of the VCS project cycle and will finally result in a conclusion by the executing VVB whether a project activity is valid to be submitted for registration to Verra registry.

### The method and criteria used for validation

Validation is conducted using CTI standard auditing techniques in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques including but not limited to: document review, follow-up interviews and site visits, and the resolution of outstanding issues.

The validation criteria followed the guidance documents provided by VCS and the selected CDM methodology and tool includes:

- VCS Standards Version 4.5;
- VCS Program Guide, version 4.4;
- Program Definitions, version 4.4;
- VCS Validation Verification Manual, version 3.2;
- VMR0007 Revision to AMS-III.AJ.: Recovery and Recycling of Materials from Solid Wastes, v1.0
- Applied Methodology: AMS-III.AJ.: Recovery and recycling of materials from solid wastes, version 09.0;
- Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion, version 3;
- Tool to calculate the emission factor for an electricity system, version 07.0;
- Tool for Demonstration of additionality of small-scale project activities, Version 13.1.

The number of findings raised during validation

In the course of the validation, 3 Clarification Requests (CLs) and 6 Corrective Action Requests (CARs) were raised and successfully closed. No Forwarded Action Requests (FARs) was raised. The assessment is included in Appendix 4 of this report.

Any uncertainties associated with the validation

There are no restrictions of uncertainty.

Summary of the validation conclusions

Baineng New Energy (Shenzhen) Co., Ltd. has commissioned CTI to carry out the validation of the project activity: Xingning Tokzin PET Recycling Project (ID.4703) with regard to the relevant requirements of VCS Standard Version 4.5.

CTI confirms all validation activities including objectives, scope and criteria, level of assurance, monitoring and project documentation adhere to VCS Standard Version 4.5 and all associated updated as documented in this report, are complete. CTI concludes that the “Xingning Tokzin PET Recycling Project” final Project Description (version 04 dated 18/07/2024) meets the requirements of VCS and all associated updated. The GHG assertion provided by PP and validated by CTI will result in the expected GHG emission reductions or removal of 251,230 tCO<sub>2</sub>e over the 7 years crediting period.

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# 1 INTRODUCTION

## 1.1 Objective

Baineng New Energy (Shenzhen) Co., Ltd. has commissioned the CTI to carry out the Verified Carbon Standard (VCS) validation of the project "Xingning Tokzin PET Recycling Project" (Project ID. 4703).

The objective of validation is an independent assessment by a Third Party of a proposed project activity against all defined criteria set for the registration under the VCS. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria, the validation involves the assessment of: project conformance to VCS standards/programs, project conformance to the applied methodology, including the procedure for the demonstration of additionality specified in the methodology; and likelihood that methods and procedures set out in the project description will generate verifiable GHG data and information when implemented. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended generation of VCU. Validation is part of the VCS project cycle and will finally result in a conclusion by the executing VVB whether a project activity is valid to be submitted for registration to Verra registry.

## 1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the Project Description to validate that (a) the project design is actual, (b) the baseline scenario is correctly defined as per the applied methodology and relate tools, (c) the project is additional, (d) the monitoring plan can be implemented and is transparent and adequate and (e) all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature. The PD is reviewed against the criteria stated in VCS Standards Version 4.5 /89/, the approved baseline and monitoring methodology AMS-III.AJ., Version 09.0 and VMR0007 Revision to AMS-III.AJ., v1.0. The validation was based on VCS Standards Version 4.5 applying auditing techniques. The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

## 1.3 Reasonableness of Assumptions

CTI has assessed the claims and assumptions made in the PD, i.e., assumptions regarding the determination of baseline scenario, the investment analysis and additionality assessment, as well as validated the assumptions, limitations, and methods used for determining parameters and calculation of baseline emission, project emission and leakage against the VCS Standard

Version 4.5 /89/, applied methodology AMS-III.AJ., version 09.0 /58/, VMR0007 Revision to AMS-III.AJ., v1.0/94/ and tools /95/-/97/ and other VCS rules /90/-/92/. It is confirmed that the assumptions made in the PD are reasonable which are in line with the applied methodology and tools as well as the requirement of VCS. The project is expected to generate average GHG emission removal of 35,890 tCO<sub>2e</sub> per year, and it is confirmed that outcome of future activities will be achieved as the assumptions and limitations are reasonable.

The Validation Report expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement. CTI applied a materiality threshold of 5% (for projects with ER less than or equal to 300,000 tCO<sub>2e</sub> per year) with respect to emission or misstatements concerning reported quantities as per para 3.10.1 and 4.1.10 (4) of VCS Standard Version 4.5.

## 1.4 Summary Description of the Project

The project activity is a PET flakes producing project located at Dongguan Shijie (Xingning) Industrial Transfer Area, Xingning City, Meizhou City, Guangdong Province, P.R.C with geographic coordinates of 115°40'42" E and 24°11'11"N, implemented by Xingning Tokzin Yinghui Resources Co., Ltd. The main purpose is to produce PET flakes by recycling and processing post-consumer PET bottles, which replaces the same PET product produced from the raw materials. The total production capacity is about 55,000 tons of recycled polyester (PET) flakes per year. GHG emission reductions will be generated through the implementation of the project activity by avoiding the consumption of the equivalent raw materials and reducing related energy consumption. It's estimated that the project activity could achieve average annual GHG emission reductions of 35,890 tCO<sub>2e</sub> and total ERs of 251,230 tCO<sub>2e</sub> over this crediting period 06/04/2022-05/04/2029.

## 2 VALIDATION PROCESS

### 2.1 Method and Criteria

A project specific validation plan was developed to guide the validation auditing process to ensure efficiency and effectiveness.

The purpose of the validation is to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error is reduced to a reasonable level. According to the ISO14064-3, the criteria are the policy, procedure or requirement used as reference against which evidence is compared. The validation was performed through means of the following three phases in accordance with the requirement of the applied methodology, and VCS Standard (version 4.5) and other relevant VCS requirements.

- A desk review of the PD and all support documents;
- Follow-up interviews with project stakeholders and site inspection;
- The resolution of outstanding issues and the issuance of the Validation Report and statement.

CTI completed a strategic review and risk assessment of the project's activities and processes in order to gain a full understanding of (if applicable):

- Project Details;
- Application of Methodology;
- Estimated GHG Emission Reduction and Removals;
- Monitoring;
- Safeguards etc.

CTI also verified the emission reductions through assessing all factors and issues that constitute the basis for emission reductions from the project, including:

- The emission reduction calculations and the relevant data records;
- The calibration and maintenance records for the monitoring instruments;
- The management systems to support the project operation and monitoring.

CTI assessed that the reported information in the PD is complete and accurate in question. This Validation Report describes the findings of this assessment. The information of the assessment team has been included in below of this report.

## 2.2 Document Review

The PD /1/ and supporting background documents related to the project implementation were reviewed. Documents review was conducted to ensure consistency with and identify any deviation from VCS program requirements. Desk review included an examination of the project design details, baseline scenario, additionality, ex ante and monitoring data and parameters, and ex ante quantification of GHG emission reductions. The assessment team also used additional documentation by third parties like host party legislation, technical reports referring to the project design details, baseline scenario, additionality, monitoring or to the basic conditions and technical data.

Furthermore, the PD /1/ and emission reduction calculation spreadsheet/2/, relevant decisions, clarifications and guidance from the Verra, other information and references relevant to the project activity have also been assessed. During the desk review, CTI has applied standard auditing techniques to assess the quality of information provided, including a review of the data and information presented to verify their completeness; a review of the monitoring plan and monitoring methodology and the quality assurance and quality control procedures as well as an evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

The validation was performed basing on the documents check and site visit, refer to the section 3 of this report for the validation process details and Appendix 3 for corresponding documents review.

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, CTI has composed a project assessment team in accordance with the appointment rules in CTI. The composition of CTI assessment team has to be approved by the CTI ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

Function	Name	Technical competence	Task Performance*
Team Leader	Feng Tian	1.2, 8.1, 13.1, 13.2	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RP <input type="checkbox"/> TR
Technical Reviewer	Lin Shunrong	1.2, 3.1, 13.1, 13.2, 14.1, 15.1	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RP <input checked="" type="checkbox"/> TR

\*DR=Document review; SV=Site visit; RP=Reporting; TR=Technical review

## 2.3 Interviews

The objective of the interview process was to solicit important information from personnel related to project and relevant to the validation process. Onsite interviews and information discussions were conducted with project proponent and workers of Xingning Tokzin Yinghui Resources Co.,

Ltd., local officer from government, local residents and Project VCS development consultant. The interviews were performed by the assessment team on-site within the project area in Dongguan Shijie (Xingning) Industrial Transfer Area, Xingning City, Meizhou City, Guangdong Province, P.R.C and the following is a list of the main interviewees and subject.

Interviewed personnel	Role	Organization	Date	Subject	Team Member
Mr. Liu Yupeng	Plant Manager	Xingning Tokzin Yinghui Resources Co., Ltd.	19/02/2024	Chronological description of the project activity with documents of key steps of the implementation; Financial aspects; Technical details of the project realization, project feasibility, designing, operational life time; Baseline and Additionality; Project Boundary; Eligibility criteria; Monitoring plan and arrangements; Crediting period; Project activity starting date; Ownership; Local stakeholder consultation; Project implementation status; Data collection and data achievement; Calibration of meters and equipment maintenance; Data collection and ER calculation.	Feng Tian
Ms. Lai Gaoyun	O&M Staff				
Ms. Luo Yinfang	O&M Staff				
Ms. Liu Yan	Financial Staff				
Mr. Zeng Song	Manager	Waste PET supplier			
Mr. Ma Zhiyuan	Officer	Management Committee of Dongguan Shijie (Xingning) Industrial Transfer Area	19/02/2024	Local stakeholder consultation; Impact to local residents; Impact to local environment; Impact to social-economic; Risks to stakeholders and environment.	Feng Tian
Mr. Liao Kefeng	Officer				

Mr. Zhong Sibin		Local Ecology and Environment Bureau			
Ms. Qiu Xiaochan	Local Resident	Local village			
Mr. Zhong Ronghui					
Mr. Liu Wenfeng					
Mr. Liu Weiming					
Ms. Lai Yawen	Project Manager	Baineng New Energy (Shenzhen) Co., Ltd.	19/02/2024	Baseline and Additionality Editorial issues of the PD Data collection and ER calculation.	Feng Tian

## 2.4 Site Visits

On 19/02/2024, CTI Validation Team visited Xingning Tokzin Yinghui Resources Co., Ltd. and performed the on-site validation at the project location. The interviewed personnel and objective are listed in above table. During the site inspection, the project was inspected and documents evidence were checked, details as following table,

Duration of on-site inspection: 19/02/2024				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting; Interview with PP Representative, local officers, local residents, O&M staff and financial staff	Project proponent's office in Xingning Tokzin Yinghui Resources Co., Ltd.	19/02/2024	Feng Tian
2.	On-site ground inspection of the Project site, PET recycling facilities, monitoring equipment, operation of the recycling facilities, interview with O&M staff.	Project production line, monitoring points in Xingning Tokzin Yinghui Resources Co., Ltd.	19/02/2024	Feng Tian
3.	Documents check	Project proponent's office in Xingning Tokzin Yinghui Resources Co., Ltd.	19/02/2024	Feng Tian
4.	Finding Summary	Project proponent's office in Xingning Tokzin Yinghui Resources Co., Ltd.	19/02/2024	Feng Tian

5.	Close Meeting	Project proponent's office in Xingning Tokzin Yinghui Resources Co., Ltd.	19/02/2024	Feng Tian
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Opening meeting of the validation process started on 19/02/2024 at the project proponent's office in Xingning Tokzin Yinghui Resources Co., Ltd., as confirmed by the assessment team the project is listed on the project pipeline with a status of under validation before the opening meeting representing the beginning of the validation process.

Furthermore, the validation took place after the 30-day public comment period during 30/10/2023-29/11/2023 and CTI completed the validation until after the 30-day public comment period has ended.

During the on-site validation, CTI has applied standard auditing techniques to assess the quality of information provided, the implementation and current situation of the project activity, evaluate data management, QA/QC system, project technology and equipment, training provided, and monitoring etc.

## 2.5 Resolution of Findings

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the first verification.

In the course of the validation, 3 Corrective Action Requests (CARs) and 6 Clarification Requests (CLs) were raised and are successfully closed. The detailed assessment is included in Appendix 4 of this report.

### 2.5.1 Forward Action Requests

None FAR was raised during the validation process.

## 3 VALIDATION FINDINGS

### 3.1 Project Details

The following description of the project as per PD was verified during the on-site visit and documents review:

#### **Project type, technologies and measures implemented, and eligibility of the project**

##### *Type*

Through the onsite visit, interviewing the project proponent and checking the FSR /6/, Project approval /7/ and EIA approval/9/ , it is verified by CTI the project activity is a PET flakes producing project located at Dongguan Shijie (Xingning) Industrial Transfer Area, Xingning City, Meizhou City, Guangdong Province, P.R.C, of which the main purpose is to produce PET flakes by recycling and processing post-consumer PET bottles, which replaces the same PET product produced from the raw materials. Therefore, it is confirmed that the sectoral scope of the project activity is sectoral scope 13: Waste Handling and Disposal as per the UNFCCC Standard “Applicability of sectoral scopes version 01.0”/99/.

The validation team also confirms that the project is not a grouped project as it is conducted in one single location and involves only one single installation.

##### *Technologies and measures implemented*

The information and descriptions reported in section 1.11 of the PD have been checked against the FSR/6/ as well as site visit.

Through ground inspection of the plant against the Layout of the project site /23/ and checking the FSR /6/, Project approval /7/, the Equipment purchase agreements /17/, waste PET bottle supply contract /35/ and PET products sales records/29/, it is confirmed that the project activity is a PET flakes producing project to produce PET flakes by recycling and processing post-consumer PET bottles. The main technical processes include unpacking, optical sorting, manual sorting, first break, float-sink separation, dewatering, one-stage washing, two-stage washing, dewatering, three-stage washing, dewatering, cyclone separation, screening, optical sorting and packaging. The production process does not involve any chemical reaction. GHG emission reductions will be generated through the implementation of the project activity by avoiding the consumption of the equivalent raw materials and reducing related energy consumption. 65,000 tons of post-consumer PET bottles per year will be recycled into 55,000 tons of PET flakes at maximum production capacity.

The Project installs series of product equipment and system, the project activity aims to recycle the waste plastic PET. Through site visit and checking nameplate of the equipment /36/, the Equipment purchase agreements/17/, the electricity invoices/32/ and interview with O&M staff, it is confirmed that the types of energy involved in the recycling facility are grid electricity which

is used for most of the recycling equipment, natural gas which is used for the washing and drying unit and diesel which is used for forklifts. The technical specifications of the main equipment are also confirmed by the assessment team, which are listed as follows:

Machine name	Type	Quantity	Lifetime
Automatic sorting machine	AUTOSORT2800	3	20 years
Wind sorting machine	FX1200AS-00	2	20 years
Crushing machine	JS1500	2	20 years
Friction cleaning machine	MCJ1000A-00	1	20 years
Hot wash machine	RX2100C-S-00	3	20 years
Dehydrator	TS800H-S-00	3	20 years

#### *Eligibility of the project*

Through checking the Project approval /7/ and Environmental Impact Assessment (EIA) approval /9/, the assessment team confirmed that the project activity has been approved by the Xingning Development and Reform Bureau on 18/12/2019 and by Xingning City Environmental Protection Bureau on 07/08/2020. The project has got the construction permit /11/ from Xingning Municipal Housing and Urban-Rural Development Bureau on 21-September-2020. Through checking the construction contract /17/, it is verified that the project started construction on 10/10/2020. By checking the Statement/25/ issued by PP: Xingning Tokzin Yinghui Resources Co., Ltd., the Operation logs /26/ and through interview with O&M staff during site visit, it is confirmed that the project started operation on 06/04/2022.

By checking the ER calculation sheet/2/, it is confirmed that the project activity could achieve average annual GHG emission reductions of 35,890tCO<sub>2e</sub> and total emission reductions of 251,230 tCO<sub>2e</sub> during the first 7-year crediting period.

In conclusion, it is verified that the summary description of the project is in line with the PD template requirements and all the information has been provided and verified as correct.

#### **Project design, including eligibility criteria for grouped projects**

The project has not been designed to include a single installation of an activity, multiple project activity instances, or as a grouped project.

#### **Project proponent and other entities involved in the project**

Through document review by checking the Business License /4/, Project approval /7/, EIA approval /9/ and via site visit, the assessment team confirmed the project is owned and operated by Xingning Tokzin Yinghui Resources Co., Ltd. Therefore, Xingning Tokzin Yinghui Resources Co., Ltd. is confirmed to be the project proponent of the project.

The other entities involved in the project is Baineng New Energy (Shenzhen) Co., Ltd. which is appointed as the consultant for VCS development as verified by interviewing with the representatives from project proponent and Baineng New Energy (Shenzhen) Co., Ltd. The contact information reported in section 1.5 and 1.6 of PD has been confirmed to be correct through interviewing the representatives of the companies.

### **Project ownership**

By checking the Business License /3/, Project approval /7/, EIA approval /9/ and the Equipment purchase agreements /17/, the assessment team confirmed that the project proponent Xingning Tokzin Yinghui Resources Co., Ltd. has the legal right to control and operate the project activity and has full legal and beneficial title to all of the GHG reductions generated by the Project.

### **Project start date**

The project start date is 06/04/2022 on which the project started operation and began to generate GHG emission reductions. By checking Statement/25/ issued by PP, the Operation logs /26/ and through interview with PP during site visit, it is verified the start date is correct and in line with the VCS Standard Version 4.5.

### **Project crediting period**

The project activity adopts renewable crediting period of which the first crediting period is 7 years from 06-April-2022 to 05-April-2029 and could be renewed twice. Since the expected project lifetime is 20 years as confirmed by checking the FSR/6/, the total crediting period will not exceed 05-April-2042, the assessment team confirms that demonstration of crediting period is in line with the requirement in the VCS Standard Version 4.5.

### **Project scale and estimated GHG emission reductions or removals**

As the annually estimated emission reductions are 35,890tCO<sub>2e</sub> which is lower than 300,000tCO<sub>2e</sub>, the project falls under “Project” as per section 3.10.1 of VCS Standard Version 4.5.

Through checking emission reductions calculation spreadsheets /2/, it is verified that the total estimated GHG emission reductions during the first 7-year crediting period (06/04/2022-05/04/2029) are 251,230 tCO<sub>2e</sub>. The assessment team was able to confirm that the estimated GHG emission reductions of the project activity are calculated correctly and conservatively, which are shown as follows:

Year	Estimated GHG emission reductions or removals (tCO <sub>2</sub> e)
Year 2022 (06/04/2022 – 31/12/2022)	26,549*
Year 2023	35,890
Year 2024	35,890
Year 2025	35,890
Year 2026	35,890
Year 2027	35,890
Year 2028	35,890
Year 2029 (01/01/2029 – 05/04/2029)	9,341**
<b>Total estimated ERs</b>	<b>251,230</b>
<b>Total number of crediting years</b>	<b>7</b>
<b>Average annual ERs</b>	<b>35,890</b>

Note:

\*The estimated annual ERs are 35,890 tCO<sub>2</sub>e, the period 06/04/2022 – 31/12/2022 accounts for 270 days, thus the estimated ERs during 06/04/2022 – 31/12/2022 are calculated as  $35,890/365 \times 270 = 26,549 \text{ tCO}_2\text{e}$ ;

\*\*The estimated annual ERs are 35,890 tCO<sub>2</sub>e, the period 01/01/2029 – 05/04/2029 accounting for 95 days, thus the estimated ERs during 01/01/2029 – 05/04/2029 are calculated as  $35,890/365 \times 95 = 9,341 \text{ tCO}_2\text{e}$ .

### Project location

The project activity is located at Dongguan Shijie (Xingning) Industrial Transfer Area, Xingning City, Meizhou City, Guangdong Province, P.R.C with geographic coordinates of 115° 40' 42" E and 24° 11' 11" N which are confirmed through investigation with the GPS device and ground inspection during site visit.

### Conditions prior to project initiation

Before the implementation of the project activity, the same amount of PET flakes would be produced from raw materials (crude oil and natural gas) which is also the baseline scenario of the project. GHG emission reductions will be generated through the implementation of the project activity by avoiding the consumption of the equivalent raw materials and reducing related energy consumption.

### **Project compliance with applicable laws, statutes and other regulatory frameworks**

The assessment team confirms that the Project has been approved by Chinese government by checking the Project approval /7/ and EIA approval /9/.

By checking all the relevant local, regional and national laws, statutes and regulatory frameworks/51/, including:

- Environmental Protection Law of the People's Republic of China,
- Environmental Impact Assessment Law of the People's Republic of China,
- Law of the People's Republic of China on the Prevention and Control of Water Pollution,
- Air Pollution Prevention and Control Law of the People's Republic of China,
- Law of the People's Republic of China on prevention and Control of Noise Pollution,
- Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste,
- Law of the People's Republic of China on the Prevention and Control of Soil Pollution, Regulations on safety Administration of Hazardous Chemicals,
- Regulations on the Administration of Environmental Protection of Construction Projects,
- VOCs pollution prevention and control technology policy,
- Technical specification for recycling of waste plastics, Identification standards for solid wastes General rules,
- Classified Management Catalogue of Environmental Impact Assessment of Construction Projects, Recycled polyethylene terephthalate (PET) flakes.

it is confirmed that the project activity is in complicate with all laws and regulations in China.

### **Participation under other GHG programs**

#### *Projects registered (or seeking registration) under other GHG program(s)*

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC, GS, VCS, China Certified Emission Reduction (CCER) and other GHG schemes' website /100/ and checking the Declaration of non-participation any other schemes /14/. It is verified that the project is seeking registration only in VCS program.

#### *Rejection by other GHG programs*

It is also confirmed that the project is not rejected by any other GHG programs via checking the UNFCCC, GS, VCS, China Certified Emission Reduction (CCER) and other GHG schemes' website /100/ and checking the Declaration of non-participation any other schemes /14/.

### **Other forms of credit and supply chain (Scope 3) emissions**

#### *Emissions trading programs and other binding limits*

Although China's national emission trading scheme (ETS) has been launched since 16/07/2021, it only covers the high-emission and energy intensive industries which are categorized as "key emission enterprises" by the provincial government as per the Interim Regulations on the Management of Carbon Emission Trading /66/. Through checking the List of key emission enterprises in the national carbon emissions transaction quota management in 2022 in Guangdong Province issued by Department of Ecology and Environment of Guangdong Province/67/, it is confirmed that as this is waste recycle project, it is not included the mandatory emission control scheme. Moreover, it is verified by the validation team the project activity has not been registered as CCER project, the emission reductions generated by the project activity are not eligible to be used for compliance with emission trading programs or to meet binding limits on GHG emissions as stipulated in the regulation.

To be concluded, the project activity is not involved on other emissions trading programs and other binding limits and its GHG emission reductions will not be enforced to exchange for the compliance in the China's national ETS.

Furthermore, the validation team confirms by checking the Declaration of non-participation any other schemes/14/ submitted by the project proponents that the net GHG emission reductions generated by the project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions. Thus, it is concluded that the project activity is not involved on other emissions trading programs and other binding limits.

#### *Other forms of environmental credit sought or received and eligible to be sought or received*

Via interview with the project proponent and based on above assessment, it is confirmed that the project has not created any other form of environmental credit.

#### *Issuance of public statement(s) to help prevent Scope 3 emissions double claiming*

Through checking the public statement made by PP on the public website/16/, it is confirmed that the statement made by PP is in line with the requirement of section 3.24.7 of VCS Standard v4.5.

### **Sustainable development contributions**

Via the site visit and by independent assessment through checking the evidence and public information, CTI verified that the project contributes the sustainable development through the following aspects:

- **SDG 8 "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all"**: the project activity will increase employment opportunities for the management, operation and maintenance of the power plant. This contributes to one of the China's actions for promoting sustainable developing, "Increase labor force participation rate through implementation of the classification policy. Vigorously enforce the Law on Promotion of Employment"/51/ Through checking the Labor contracts/42/, Staff roster, the payroll and social welfare slips of employees/41/ and onsite interview with staff, it is confirmed that the project has provided 140 job opportunities for the local community with equal pay of equal work which contributes to SDG8. Through checking the project monitoring manual /27/ and PD, it is confirmed that the monitoring provision of SDG8 has been included that the number, age, gender, salary rate of all employees will be recorded by the HR department and summarized annually in the HR records. All data and records will be archived at least 2 years after the end of the final crediting period or 2 years after the final issuance of VCUs whichever occurs later.

- **SDG12 "Ensure sustainable consumption and production patterns"**: the project activity produces PET flakes by utilizing waste PET bottles which prevents them from being disposed of in a landfill site. This contributes to one of China's actions for promoting sustainable developing: "achieve carbon peaks in 2030, and achieve carbon neutralization before 2060, accelerating the establishment and improvement of green low-carbon circulation economic systems, and promoting the comprehensive green transformation of economic and social development."/51/ Through checking the FSR/6/, Project approval /7/, waste PET bottle supply contract /35/ as well as interview with PP during site visit, it is verified that the project is expected to recycle 65,000t of waste PET and prevents them from being disposed of in a landfill site which contribute to SDG12. Through checking the project monitoring manual /27/ and PD, it is confirmed that the monitoring provision of SDG12 has been included that the quantity of PET waste collected will be recorded at the time of sending each consignment from recycling facility to processing / manufacturing facility through the truck scale. All data and records will be archived at least 2 years after the end of the final crediting period or 2 years after the final issuance of VCUs whichever occurs later.

- **SDG13 "Take urgent action to combat climate change and its impacts"**: GHG emission reductions will be generated through the implementation of the project activity by avoiding the consumption of the equivalent raw materials and reducing related energy consumption. This contributes to achieve one of China's stated sustainable development priorities "Actively adapt to climate change and strengthen resistance capacity to climate risks in agriculture, forestry, water resources and other key fields, as well as cities, coastal regions and ecologically vulnerable areas"./51/ As verified the project activity and ER calculation/2/, the project is expected to achieve 35,890 tCO<sub>2</sub>e annual emission reductions during the first 7-year crediting period: 06/04/2022-05/04/2029. The actual emission reductions will be calculated following the methodology AMS-III.AJ., v09.0 and VMR0007, v1.0. All data and records will be archived at least 2 years after the end of the final crediting period or 2 years after the final issuance of VCUs whichever occurs later.

### **Additional information relevant to the project**

#### *Leakage management for AFOLU projects*

The project activity is not a AFOLU project, therefore, this section is not applicable.

#### *Commercially sensitive information*

No commercially sensitive information has been excluded from the public version of the project description. The details are presented transparently to the assessment team for analysis which lead to positive conclusion for this validation.

In conclusion, it is confirmed that:

- Project Description is accurate, complete and provides an understanding of the nature of the project;
- Project has been implemented as described in the Project Description;
- Project is likely to achieve estimated GHG emission reduction or removals, explaining that actual results may vary since the estimates are based on assumptions that are subject to change.

CL01, CL02 and CAR01 were raised here and have been successfully closed, details please refer to Appendix 4.

## **3.2 Safeguards**

### **3.2.1 No Net Harm**

The Environmental Impact Assessment (EIA) Report of the project activity was compiled by Guangdong Senhai Environmental Protection Equipment Engineering Co., Ltd./8/ and approved by the Xingning City Environmental Protection Bureau on 22/05/2020/9/. The assessment team confirm all environmental impacts has been analyzed and significant environmental impacts during construction and operation was detected. By checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection and interview with officers from the Local Ecology and Environment Bureau, it is confirmed that the project has passed the EIA acceptance check, necessary mitigation measures have been applied according to the EIA and EIA approval and all environmental impact assessment indicators have met requirement of relevant national laws, regulations or standards. Refer to section 3.3.3 of this report for detailed environmental impacts arising from the Project construction and operation.

Furthermore, PD has analyzed the risks to stakeholders and the environment following the section 3.19.4-3.19.10 of VCS Standard, version 4.5 and CTI assessment team has assessed the same as follows:

(1) Likely natural and human-induced risks to stakeholders' well-being expected during the project lifetime as a result of project activities

Through checking the FSR /6/, Project approval /7/, EIA approval /9/ and vis onsite inspection, it is confirmed that the project is a waste plastic recycling project which does not involve any occurrence of natural risks. Through onsite inspection and checking the Business license /4/of the project proponent, it is verified that the project is located in the Dongguan Shijie (Xingning) Industrial Transfer Area and the Industrial Transfer Area is particularly for industrial use which can be confirmed through the introduction of the area on public website/87/. By checking the EIA /8/ and its approval /9/, the Statement/12/ from the Management Committee of Dongguan Shijie (Xingning) Industrial Transfer Area as well as interview officers from local government and the representatives from the local community, it is confirmed that the project does not cause any demolition or land acquisition, which does not involve any human-induced risks to stakeholders' well-being. Furthermore, by checking the Staff roster and the payroll of employees/41/ and through interview with staff, it is verified that the project provides job opportunities for the local people which has positive impact on the stakeholders' well-being.

(2) Risks for stakeholders to participate in the project, including project design and consultation. Risks may include trade-offs with food security, land loss, loss of yields, negative impacts on livelihoods, and climate change adaptation.

By checking the stakeholder meeting notice and meeting records /24/ and interview with PP, it is confirmed that the local stakeholder consultation has been conducted before the construction of the project and the results show that the local stakeholders are supportive for the project. In addition, the PD also describes the on-going communication mechanism with local stakeholders. The detailed assessment of local stakeholder consultation is in section 3.2.2 below. By checking the EIA /8/ and its approval /9/, the Statement/12/ from the Management Committee of Dongguan Shijie (Xingning) Industrial Transfer Area as well as interview officers from local government and the representatives from the local community, it is validated that the project does not involve any demolition or land acquisition. Therefore, it is confirmed that the project is not likely to cause any risks include trade-off like food security, land loss, loss of yields. Furthermore, by checking the Staff roster and the payroll of employees/41/ and through interview with staff, it is confirmed that the project provides job opportunities to local people which benefits the livelihoods of the local residents. In addition, as the project is a GHG emission reduction project, the successful development of this project can provide valuable experience to other individuals or organizations regarding future climate change adaptation.

(3) The management teams involved in the project shall have expertise in and prior experience implementing similar carbon or land management projects, and community engagement at the project scale and in the local context.

Through checking the consultancy: Baineng New Energy (Shenzhen) Co., Ltd.'s website/101/, the public information from Baidu Encyclopaedia /102/ as well as interview with representatives from the consultancy, it is conformed that the consultancy: Baineng New Energy (Shenzhen) Co.,

Ltd. is in rich experience of developing carbon and community engagement and through checking the business license /5/ of the consultancy and interview with representatives from consultancy, it is confirmed that the consultancy: Baineng New Energy (Shenzhen) Co., Ltd. is a locally based (in Shenzhen) company in Guangdong Province which is familiar with the local socio-economic environment. As per the records on Verra registry/100/, it is confirmed that they have successfully developed the similar plastic recycling projects (VCS3393 and VCS3603) at the same project scale of this project. Thus, it is confirmed that it is not likely to cause any risks to stakeholders due to the lack of management team's expertise and experience.

(4) Risks related to working conditions as a result of project activities and shall design and implement mitigation measures to provide safe and healthy working conditions for employees.

Through checking the Construction acceptance report/19/, Safety production regulations /21/ established by PP as well as onsite inspection, it is confirmed that the construction, operation and the internal Regulations on safety production of the Project are in accordance with the relevant national standards or codes including: <GB 50681-2011 Code for design of machinery building architecture>/62/, <GBZ1-2002 Hygienic standards for the design of industrial enterprises>/63/, <GB5083-1999 General Principles for Safety and Health Design of Production Equipment>/64/, <GB50016-2014 Code for fire prevention design of buildings>/65/. Through checking the training records /28/ and interview with staff, it is confirmed that the project proponent provides regularly training on safety production to all employees. Furthermore, by checking the payroll and social welfare slips /41/ of the employees, it is verified that the project proponent has purchased the work injury insurance and medical insurance for all employees which is in compliance with the Labor Law of the People's Republic of China/51/. Thus, it is confirmed that the project is not likely to cause any risks regarding working conditions.

(5) Risks related to the safety of women and girls in the local community due to project activities.

As per the Constitution of the People's Republic of China and Law on the Protection of the Rights and Interests of Women and Children/51/, women and girls enjoy the equal rights with men. All individuals or organizations within China must obey the laws. Through checking the labor contracts /42/ and payroll and social welfare slips of the employees /41/ as well as interview with female staff from local community during site visit, it is confirmed that the female staff of the project enjoy equal rights with men, they receives equal pay for equal work as well as the equal social welfare. Female staff also receives all training same as the male staff as confirmed by checking the training records /28/ and interview with staff. Thus, it is confirmed that the project protects women's rights and interests as well as women's safety and health during labor and work according to laws and regulations. Furthermore, through checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection and interview with officers from the Local Ecology and Environment Bureau, it is confirmed that that the project has passed the EIA acceptance check, necessary mitigation measures have been applied and all environmental impact assessment indicators have met requirement of relevant national laws, regulations or standards. Thus, it is confirmed that there is no negative impact on local communities.

(6) Risks as a result of project activities to children, and minority and marginalized groups in the local community

As per the Law of the People's Republic of China on the Protection of Minors, the Provisions on the Prohibition of Child Labor and Labor Law of the People's Republic of China/51/, it is confirmed that the children and minority and marginalized groups rights must be protected and child labor is strictly prohibited in China. Through onsite visit and checking the labor contracts/42/, no child labor was detected in the project. Besides, by checking the Employee handbook/22/, interview with PP and staff, it is confirmed that the project proponent pays attention to equality, unity and mutual assistance among all groups and the relevant equal protection clause has been included in the Employee handbook/22/. Thus, it is confirmed that the construction and implementation of the project is not likely to affect the life of children, minority and marginalized groups in the local community.

(7) Impacts caused by pollutant emissions to air, discharges to water, noise and vibration, the generation of waste, or the release of hazardous materials as a result of project activities.

The Environmental Impact Assessment (EIA) Report of the project activity was compiled by Guangdong Senhai Environmental Protection Equipment Engineering Co., Ltd./8/ and approved by the Xingning City Environmental Protection Bureau on 22/05/2020/9/. The assessment team confirm all environmental impacts has been analyzed and significant environmental impacts during construction and operation was detected. By checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection and interview with officers from the Local Ecology and Environment Bureau, it is confirmed that the project has passed the EIA acceptance check, necessary mitigation measures have been applied and all environmental impact assessment indicators have met requirement of relevant national laws, regulations or standards.

In conclusion, it is confirmed by the assessment team the project has no negative impacts on local environment and socio-economy. And no net harm on local environment and social community has been detected for the project.

CAR02 was raised here and has been successfully closed, details please refer to Appendix 4.

### 3.2.2 Local Stakeholder Consultation

#### **LSC prior to the start of the project activity**

Local stakeholder consultation was carried out by the project proponents consisting of stakeholder consultation meeting and questionnaire surveys.

Local stakeholder consultation was conducted on 18/02/2020, aiming at collecting comments from local stakeholders. Invitation notice was put on the bulletin of local villages nearby the project site before the stakeholder meeting. By checking the stakeholder meeting notice and meeting records /24/ and interview with PP, local residents and officer from Ecology and

Environment Bureau, it is confirmed that the background of the project implementation and its impact to environment was introduced during the stakeholder consultation.

Questionnaires /24/ were distributed to the stakeholder representatives at the conference room of PP on 18/02/2020. The questionnaire was reasonably designed to assess the project impacts on the local environment and social economic development. In total 100 out of 100 questionnaires were returned with a 100% response rate.

By checking the stakeholder meeting records and filled questionnaires/24/, the assessment team confirmed that the local stakeholders have no negative comments for the development of the project activity.

### **Ongoing communication with local stakeholders**

Furthermore, through site interview and interview with PP, the assessment team confirmed that ongoing communications with stakeholders will be conducted at periodic intervals i.e., once every two years during project implementation period. Via interview with PP and officer from local government, it is confirmed that key implementation schedules or changes of the project has been and will be communicated to the local stakeholders. Local government agencies and authorities will conduct spot checks on the implementation of the project, and give suggestions to the project proponent on the involved rectification problems.

As confirmed with PP and staff from local Ecology and Environment Bureau, it is confirmed that the PP would maintain the communication with the stakeholders through the regular stakeholder meeting, and they can also leave comments in the grievance book located in the project site. Any recommendations or suggestions received will be taken into account by PP.

Furthermore, via interviewing with staff from local Ecology and Environment Bureau during the site visit, it is confirmed that during the implementation stage, local authority has conducted spot checks and the project passed all the periodic spot checks by local government.

Therefore, the assessment team was able to confirm that the stakeholder meeting was adequate and appropriate.

### **Grievance and redress procedure**

Moreover, by checking the PD and the ongoing stakeholder consultation mechanism including the Grievance and redress procedure/24/, it is confirmed that PP promised that grievances will be addressed in a reasonable amount of time in the three stages:

Firstly, for ordinary conflicts and grievances, the project manager from the project management office would try to resolve them with the stakeholders within 7 days, if the conflicts or grievances could not be resolved by the project management office, PP would communicate with the stakeholders together with the representatives of the Management Committee of Dongguan Shijie (Xingning) Industrial Transfer Area to resolve the issues through amicable negotiations and provide a written response within 30 days and publish the results on the notice boards in the

Industrial Transfer Area and local community which have been confirmed by checking the Grievance and redress procedure/24/ and through on-site interview with the project proponent and representatives from the Management Committee of the Industrial Transfer Area and representatives from local stakeholders.

Secondly, for any grievances that are not resolved by amicable negotiations, they will be referred to the local ecology and environment bureau which is the neutral third party for mediation and provide a written response within 30 days and publish the results on the notice boards in the Industrial Transfer Area and local community which have been confirmed by checking the Grievance and redress procedure/24/ and on-site interview with the project proponent, officers from local ecology and environment bureau and representatives from local stakeholders.

Thirdly, the local stakeholders can appeal to arbitration department or people's court to get the judgment or the arbitration in case the disputes can't be solved by above two steps so that the judgment or the arbitration result can be the final solution and publish the results on the notice boards in the Industrial Transfer Area and local community, which has been confirmed by checking the Grievance and redress procedure/24/ and on-site interview with the project proponent, officers from local ecology and environment bureau and representatives from local stakeholders.

### 3.2.3 Environmental Impact

The Environmental Impact Assessment (EIA) Report of the project activity was compiled by Guangdong Senhai Environmental Protection Equipment Engineering Co., Ltd./8/ and approved by the Xingning City Environmental Protection Bureau on 22/05/2020/9/. The assessment team confirm all environmental impacts has been analyzed and significant environmental impacts during construction and operation was detected. By checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection and interview with officers from the Local Ecology and Environment Bureau, it is confirmed that the project has passed the EIA acceptance check, necessary mitigation measures have been applied and all environmental impact assessment indicators have met requirement of relevant national laws, regulations or standards. The detailed assessment is as follows:

#### **Air pollution**

By checking EIA Report /8/, EIA Approval /9/ and site interview with PP, officers from local Ecology and Environment Bureau and the local residents, the assessment team confirmed during the construction period, machinery and transportation dust, exhaust gas from vehicles and machineries as well as VOCs released from interior decoration have a certain effect to the surrounding areas of construction site. Effective measures such as vacuum sintering furnace was used and the management is strengthened to limited the impacts only to the surrounding area of the construction site and all types of waste gases are treated to meet the second stage, level two standards of "Emission Limits of Atmospheric Pollutants in Guangdong Province" (DB44/27-2001)/52/. Through checking the Environmental Impact Assessment Acceptance Report/10/

and through onsite inspection and interview with officers from the Local Ecology and Environment Bureau, it is confirmed that the vacuum sintering furnace was used and the air pollutant emission has met the second stage, level two standards of DB44/27-2001/52/.

During the operation period, air pollution may be caused by combustion of natural gas, VOCs and the cooking of the staff canteen. The concentrations of SO<sub>2</sub>, NO<sub>x</sub> and particulate matter in the flue gas of this project must meet the requirements set out in Emission Standard of Air Pollutants for Boiler (GB13271-2014)/53/. The VOCs are treated by using the combination of negative pressure collecting, UV photolysis and activated carbon adsorption. The staff canteen the project site follows the requirements in Emission Standard of Cooking Fume (GB 18483-2001)/54/. Through checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection of staff canteen and recycling facilities and interview with staff and officers from the Local Ecology and Environment Bureau, it is validated that the combination of negative pressure collecting, UV photolysis and activated carbon adsorption has been adopted to treat the VOCs and the emission of the waste gas is in line with the national standards GB13271-2014/53/and GB 18483-2001/54/.

Therefore, air pollution generated from the project would not cause significant impacts on the surrounding environment.

#### **Water pollution**

By checking EIA Report /8/, EIA Approval /9/ and site interview with PP, officers from local Ecology and Environment Bureau and the local residents as well as ground inspection during site visit, the assessment team confirmed that:

During the construction period, wastewater mainly includes construction wastewater and domestic sewage. The domestic sewage is discharged to the nearby treatment facility. Construction wastewater would be reused for watering and spraying after treatment. Through checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that the waste water during construction period has been properly handled.

During the operation period, the wastewater of the project mainly includes waste PET cleaning water and domestic wastewater from the on-site employees. Wastewater from waste PET cleaning is treated in the wastewater treatment facility to meet the requirements in The Reuse of Urban Recycling Water - Water Quality Standard for Industrial Uses (GB/T19923-2005)/55/ and the requirements in Integrated Wastewater Discharge Standard (GB 8978-1996)/56/. Part of the treated water is reused, and the rest of it is discharged into an urban sewage treatment pipeline. The domestic wastewater from daily use of employees is treated in the septic tank and then discharged into the sewage treatment facility in the project site. Through checking the Environmental Impact Assessment Acceptance Report/10/ and through onsite inspection and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that the wastewater treatment facility for the PET cleaning wastewater and the septic tank for

domestic wastewater are in use and the treated wastewater meets the requirement of national standards: (GB/T19923-2005)/55/ and (GB 8978-1996)/56/.

Therefore, the wastewater generated from the project would not cause significant impact on the surrounding environment.

### **Noise**

By checking EIA Report /8/, EIA Approval /9/ and site interview with PP, officers from local Ecology and Environment Bureau and the local residents as well as ground inspection during site visit, the assessment team confirmed that:

During construction period, the noise was from construction machineries and vehicles. To reduce the impacts of noise, the construction time and interval was controlled strictly. Moreover, use of mufflers and other sound insulation measures are carried out on high-noise equipment. Therefore, the construction noise can meet the relevant national standard. Through checking the Environmental Impact Assessment Acceptance Report/9/ and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that the noise level during the construction period was within the legal limit of the Emission Standard of environment noise for boundary of construction site (GB12523-2011)/57/.

Through onsite inspection and interview with staff, it is confirmed that during operation period, all machineries generating noise are installed indoors and the sound-absorbing materials and low noise equipment have been used. Through checking the Environmental Impact Assessment Acceptance Report/9/, and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that the noise level during operation meets the requirement of Emission standard for environmental noise at boundary of industrial enterprises> (GB 12348-2008)/58/.

Therefore, the noise generated from the project would not cause significant impact on the surrounding environment.

### **Solid Waste**

By checking EIA Report /8/, EIA Approval /9/ and site interview with PP, officers from local Ecology and Environment Bureau and the local residents as well as ground inspection during site visit, the assessment team confirmed that:

During construction period, solid waste during the project construction includes construction spoil, construction waste and domestic garbage. Part of the construction spoil was backfilled after the construction, and the rest was transported to a site designated by local authorities. Construction waste was transported to recycling facilities which are specialized in handling construction waste. Domestic waste garbage is collected in bins and handled by municipal waste treatment system regularly. Through checking the Waste collection service contract /18/, Environmental Impact Assessment Acceptance Report/9/, and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that the solid waste during the

construction period has been handled in compliance with the Management Measures for Urban Domestic Waste issued by Ministry of Urban and Rural Housing and Urban Rural Development/60/ and Standards for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes (GB18599-2001)/59/.

By checking the Waste collection service contract/18/, Environmental Impact Assessment Acceptance Report/9/, and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that during the operation period, the domestic garbage generated by the project activity is cleaned up by the municipal sanitation services which is in compliance with the Management Measures for Urban Domestic Waste/60/.

Through checking the EIA Report /8/, EIA Approval /9/ and site visit, it is validated that the hazardous solid waste produced by the project activity are waste lubricating oil for equipment operation and waste activated carbon for VOCs treatment. Through checking the Waste collection contract/18/, Environmental Impact Assessment Acceptance Report/9/, and interview with staff and officers from the Local Ecology and Environment Bureau, it is confirmed that the hazardous waste temporarily stored in the plant and disposed by qualified third party in compliance with Standard for Pollution Control on Hazardous Waste Storage (GB 18597-2001)/61/.

Therefore, the solid waste generated from the project would not cause significant impact on the surrounding environment.

In conclusion, after the above measures are performed, the negative impacts on environment will be minimized below the requirements of laws and regulations during the construction and operational period.

### 3.2.4 Public Comments

The assessment team noted that the project activity was open for public comment during 30/10/2023-29/11/2023. By checking the project interface at <https://registry.verra.org/app/projectDetail/VCS/4703> , it is confirmed that no public comment was received during the public comment period.

### 3.2.5 AFOLU-Specific Safeguards

Not applicable as this project activity is not an AFOLU project.

## 3.3 Application of Methodology

### 3.3.1 Title and Reference

The approved methodology applied in the project activity is AMS-III.AJ.: Recovery and recycling of materials from solid wastes, version 09.0.

<https://cdm.unfccc.int/methodologies/DB/LOWIXM9S6DVO7DGXB21DPVLE8N3VB9>

VMR0007 Revision to AMS-III.AJ., v1.0

[https://verra.org/wp-content/uploads/2023/09/VMR0007-Revision-to-AMS-III.AJ\\_.pdf](https://verra.org/wp-content/uploads/2023/09/VMR0007-Revision-to-AMS-III.AJ_.pdf)

Related tools are:

TOOL03: Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion (Version 03.0);

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v3.pdf>

TOOL07: Tool to calculate the emission factor for an electricity system (Version 07.0);

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

TOOL21: Demonstration of additionality of small-scale project activities (Version 13.1)

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf>

### 3.3.2 Applicability

#### Applicability conditions of “AMS-III.AJ.: Recovery and recycling of materials from solid wastes, v09.0”

Applicability criteria	VVB's opinion	Conclusion
<p>The methodology is applicable in the following two cases:</p> <p><b>Case A: Project activities that target the participation of the informal waste sector</b></p> <p>In Case A, the recycling facility is operated by the informal sector. The recycling facility may also receive wastes collected by the formal waste sector (e.g., public collection system). Waste fractions that were already being recycled in the baseline by enterprises in the formal sector cannot be included in the calculations.</p> <p><b>Case B: Greenfield facility and/or capacity addition to existing facilities with formal sector participation</b></p> <p>In Case B, the recycling facility is owned and operated by the formal waste sector. It may receive recyclable materials from the informal waste sector but has no participation of the informal sector in its organization or management functions.</p>	<p>By checking business license of the PP /4/, EIA Approval /9/, Reclaimed Material Supplier Agreement /35/, the information of the waste supply company from the National Enterprise Credit Information Publicity System/100/ and through site visit, it is confirmed that the recycling facility of the project activity is operated by informal sector who only purchases the waste PET collected by private parties, and the recycling facility is not planned, sponsored, financed, carried out nor regulated and/or recognized by the local authorities or their agents.</p>	<p>The project falls under Case A.</p>
Case A (a)	By checking the FSR /6/, Project approval /7/, EIA Approval /9/, Equipment purchase agreements	Applicable

<p>The recycling facility may be an existing facility, or a newly implemented facility.</p>	<p>/17/ and via site visit and interview, it is confirmed that the recycling facility of the project is a newly built and implemented facility, thus applicable.</p>	
<p>Case A (b) It is possible to directly measure and record the final output of the recycling facility, that is the weight of materials leaving the recycling facility (on a dry basis), segregated by type.</p>	<p>Through site inspection and checking the Equipment purchase agreements /17/, it is confirmed that the project activity is equipped with truck scale for measuring the final output of the recycling facility, which is the weight of materials leaving the recycling facility (on a dry basis). Furthermore, by checking the FSR/6/, Daily operation and maintenance records/26/ and ground inspection of the production line, it is confirmed that the PET flakes produced by the same production line are of the same type, depending on the clients' demand and can be segregated by type.</p>	<p>Applicable</p>
<p>Case A (c) Each type of recycled material is sold directly to a processing/manufacturing facility, or to a chain of intermediary retailers that are able to transfer the materials to final identifiable processing/manufacturing facilities that process the segregated fractions.</p>	<p>By checking PET products sales records /29/ and interviewing with the PP during site visit, the assessment team confirmed that PET products are sold directly to the manufacturing facility that process the recycled PET flakes into the recycled PET filament.</p>	<p>Applicable</p>
<p>Case A (d) The Project Design Document (PDD) shall explain the procedures such as contractual agreements proposed to eliminate double counting of emission reductions, for example due to the formal waste sector or the processing/ manufacturing facility, or other parties possibly claiming credits for emission reductions. Similarly, through contractual agreement and other means such as survey/analysis undertaken by a third party, credible proof shall be provided to show that the materials supplied from the recycling facility are used for processing/ manufacturing and not</p>	<p>As justified above, no formal waste sector is involved in the project activity. By checking PET products sales records /29/, it is confirmed that the recycled PET flakes produced from the project proponent facility are sold to the filament processing facility, not for other purposes such as a source of fuel or disposal.</p> <p>By checking Emission Reduction Abandonment Statement issued by upstream supplier and downstream processing facility /15/, it is confirmed that the credit for emission reductions will not be</p>	<p>Applicable</p>

<p>for other purposes such as a source of fuel or disposal.</p>	<p>claimed by upstream supplier nor downstream processor.</p> <p>Furthermore, as justified in section 3.2 of this report, by checking List of key emission enterprises in the national carbon emissions transaction quota management in 2022 in Guangdong Province /67/ issued by Department of Ecology and Environment of Guangdong Province, the project activity is not included in the mandatory emission control scheme and thus no emission cap was enforced for the project activity.</p> <p>Through checking the PP's website/16/, it is confirmed that the project proponent has made the statement regarding scope 3 supply chain emission on its website according to the instruction of section 3.24.7 of VCS Standard v4.5.</p> <p>Therefore, it is confirmed that the emission reductions will not be double counted.</p>	
<p>Case A (e)</p> <p>Emission reductions can be claimed for the difference in energy use for the production of materials from virgin inputs versus production from recycled material. In the case of paper or cardboards, emission reductions due to the avoidance of methane formation in anaerobic decay may be claimed if the baseline scenario is the waste disposal in a disposal site without methane recovery.</p>	<p>By checking VCS PD and ER calculation sheet, and interview PP through site visit, it is confirmed that emission reductions will be claimed for the difference in energy use for the production of materials from virgin inputs versus production from recycled material. By checking EIA Report /8/, Waste PET bottle supply contract /35/, PET products sales records /29/, and interviewing with the project owner during site visit, it is confirmed that the products of the project activity is recycled PET flakes, not paper or cardboards. Therefore, emission reductions due to the avoidance of methane formation in anaerobic decay are not considered as baseline scenario in the waste disposal in a disposal site without methane recovery.</p> <p>Therefore, criteria e is applicable.</p>	<p>Applicable</p>

<p>In any of the above cases the project proponent shall be able to demonstrate, using three years historic data (market data, official statistics etc.) prior to the start date of the project activity, that the finished products (HDPE, LDPE, PET, PP, steel aluminium, paper and cardboard and glass) were manufactured in the host country of the CDM project using either virgin raw materials produced in country or virgin raw materials imported from another non-Annex I country. This analysis may be limited to only those finished products where recycled materials have proven to be a technically viable option, that is those types of products that are expected to be the end products produced from materials recycled as part of the project activity.</p>	<p>As per footnote 4 of the applied methodology, a minimum of one-year data would be required if the facility is less than three years old, since this is a greenfield facility, the data for 2021 which is one year prior to the project start date has been further consulted by PP. By checking the public sectoral reports /47//48/, the assessment team confirmed that the demand consumption of bottle grade PET in 2021 is 6,943,000 tons while the bottle grade PET imported in 2021 is about 62,000 tons. The imported bottle grade PET accounts for 0.89% of the total demand consumption. To be conservative, PP has applied 1% for <math>W_{i,imported,y}</math> and 99% for <math>W_{i,in-country,y}</math> for the ex-ante ERR calculation and PP has considered the <math>B_i</math> and equation 4 of the AMS-III.AJ., version 09.0.</p>	<p>Applicable</p>
<p>As an alternative to the requirement stipulated in paragraph 8 of the methodology, the project proponents may choose to adjust the baseline emissions by using the baseline correction factor (Bi) as described under the baseline section below.</p>	<p>As justified above, PP has adjusted the baseline emissions by using the baseline correction factor (Bi) which is in line with AMS-III.AJ., version 09.0.</p>	<p>Applicable.</p>
<p>The recycling facility shall source its materials from MSW; materials from an unknown source are not eligible under this methodology. The project activity consists of separation of the recyclables from bulk MSW by means of manual or magnetic or mechanical separations. If the project activity involves the collection of wastes on a door-to-door basis, or collection at recipient's containers for the voluntary dispensing of wastes by the local community, all recyclables (paper, plastics, glass, etc.) processed by the recycling plant shall be collected together, selective collection of metals or any other wastes is excluded. As a consequence, wastes not pertaining to the identified baseline waste collection and</p>	<p>Through checking the Reclaimed Material Supplier Agreement signed between PP and the supplier /35/, Waste PET purchase records /30/ and via interviewing the project owner and waste PET supplier during site visit, it is confirmed that waste PET bottles recycled are from MSW, which is not an unknown source.</p> <p>During on-site inspection, it is confirmed that the project activity does not involve separation of the recyclables from bulk MSW.</p> <p>As confirmed with PP and by checking the Reclaimed Material Supplier Agreement signed between PP and the supplier /35/, Waste PET purchase records /30/,</p>	<p>Applicable</p>

<p>destination stream that would not be delivered to the baseline disposal site and/or treatment plant (e.g. incineration) are not eligible.</p>	<p>the waste PET suppliers only supply the waste PET bottles to PP, no wastes are not pertaining to the identified baseline waste collection. Through site visit and interview with PP, it is confirmed that waste PET bottles collected by supplier would otherwise be delivered to the disposal site, incineration or landfill.</p>	
<p>In the specific case of metals, the methodology excludes collection of the scraps generated from the production process of primary/secondary/ finished metal and materials or in the processing of the finished metal and materials into final products, and it covers only postconsumer obsolete wastes. Project proponents shall provide evidence that the materials recycled under the project activity are recovered only from end-of-life-wastes and project activity does not divert waste from any historically existing informal or formal recycling activity.</p>	<p>By checking FSR /6/, Project approval /7/, EIA Approval/9/, through site inspection and interviewing the project owner during site visit, it is confirmed that waste PET bottles are recycled and utilized. No metals are recycled and utilized.</p>	<p>Not applicable.</p>
<p>The amount of fuel and electricity consumed by the recycling facility can be measured and recorded.</p>	<p>Through checking the monitoring equipment during site inspection and interview with PP, it is confirmed that electricity meter is installed to measure the amount of electricity consumed by the recycling facility and the flow meter is installed to measure the amount of natural gas consumed.</p>	<p>Applicable</p>
<p>Project proponents shall demonstrate that the properties of the materials produced from waste recycling are the same as those from virgin materials. For example, if the waste materials such as recycled plastic bottles are converted into building blocks or roof tiles, the emission reductions based on displacement of original virgin materials cannot be claimed under this methodology. For recycled materials, project proponents shall provide documentation proving that the properties of the materials produced are comparable according</p>	<p>By checking Testing report of the PET products /37/, it is confirmed that the properties of the recycled PET flakes produced from waste recycling are the same as those traditional PET flakes produced from virgin materials.</p>	<p>Applicable</p>

to standard testing methods for each material.		
Measures are limited to those that result in aggregate emission reductions of less than or equal to 60ktCO <sub>2</sub> equivalent annually.	By checking the FSR/6/, ex-ante ER calculation spreadsheet /2/, it is confirmed that annual estimated emission reductions of the project activity is 35,890 tCO <sub>2</sub> e which is less than 60 ktCO <sub>2</sub> e.	Applicable

The assessment team confirmed that the application of the baseline methodology is transparent and conservative and confirms that the chosen baseline and monitoring methodology i.e. AMS-III.AJ., Version 09.0 is applicable to the project activity.

For related tools, the assessment team confirms all applicable criteria have been met as follows:

<b>TOOL03: Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion (Version 03.0)</b>		
<b>Applicability criteria</b>	<b>VVB's opinion</b>	<b>Conclusion</b>
It can be used in the cases where CO <sub>2</sub> emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties.	Through interview with PP and checking the natural gas invoices/33/ and diesel purchase receipts/31/, it is confirmed that the fossil fuel combusted is recorded in order to calculate project emissions.	Applicable
<b>TOOL07: Tool to calculate the emission factor for an electricity system (Version 07.0)</b>		
<b>Applicability criteria</b>	<b>VVB's opinion</b>	<b>Conclusion</b>
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	Through checking the FSR/6/ and applied methodology AMS-III.AJ., Version 09.0/93/, it is confirmed that use of waste PET bottles to produce PET flakes in the project scenario will use less electricity provided by the grid than in the baseline scenario where PET flakes are produced directly from raw materials. Thus, the project activity results in savings of electricity that would have been provided by the grid. Thus, the applicability condition is met.	Applicable
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of	The emission factor for the project electricity system is calculated only for the grid power plants.	Applicable

<p>the tool are available to the project participants, i.e., option II a and option II b. If option II a is chosen, the conditions specified in “Appendix 1: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.</p>		
<p>In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.</p>	<p>The project is located in China, not an Annex I country. Thus, the applicability condition is met.</p>	<p>Applicable</p>
<p>Under this tool, the value applied to the CO<sub>2</sub> emission factor of biofuels is zero</p>	<p>Not relevant since there is no biofuel involved.</p>	<p>Applicable</p>

#### TOOL21: Demonstration of additionality of small-scale project activities (Version 13.1)

Applicability criteria	VVB's opinion	Conclusion
<p>The use of the methodological tool “Demonstration of additionality of small-scale project activities” 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.</p>	<p>Not relevant since the project does not propose new methodologies.</p>	<p>Applicable</p>
<p>Project participants and coordinating/managing entities may also apply “TOOL19: Demonstration of additionality of microscale project activities” as applicable.</p>	<p>Not relevant as this project is not a micro-scale project.</p>	<p>Applicable</p>

### 3.3.3 Project Boundary

As per AMS-III.AJ., Version 09.0, the project boundary includes the physical geographical sites of:

- (a) Waste collection sites (e.g. door-to-door collection);
- (b) The recycling facility;
- (c) Processing/manufacturing facility;
- (d) Virgin material production;
- (e) MSW disposal site or treatment plant in the baseline scenario.

The sources and GHG gases involved for the Project activity are as below.

	Source	Gas	Included?	Justification/Explanation
Baseline	Electricity Consumption	CO <sub>2</sub>	Yes	The major source of emissions in the baseline
		CH <sub>4</sub>	No	Excluded for simplification. This is conservative.
		N <sub>2</sub> O	No	Excluded for simplification. This is conservative.
		Other	No	Excluded for simplification. This is conservative.
	Fuel Consumption	CO <sub>2</sub>	Yes	The major source of emissions in the baseline
		CH <sub>4</sub>	No	Excluded for simplification. This is conservative.
		N <sub>2</sub> O	No	Excluded for simplification. This is conservative.
		Other	No	Excluded for simplification. This is conservative.
Project	Electricity Consumption	CO <sub>2</sub>	Yes	Main emission source.
		CH <sub>4</sub>	No	Excluded for simplification. This emission source is assumed to be very small.
		N <sub>2</sub> O	No	Excluded for simplification. This emission source is assumed to be very small.
		Other	No	Excluded for simplification. This emission source is assumed to be very small.
	Diesel and natural gas Consumption	CO <sub>2</sub>	Yes	Main emission source.
		CH <sub>4</sub>	No	Excluded for simplification. This emission source is assumed to be very small.
		N <sub>2</sub> O	No	Excluded for simplification. This emission source is assumed to be very small.
		Other	No	Excluded for simplification. This emission source is assumed to be very small.

### 3.3.4 Baseline Scenario

CTI undertaken the independent assessment by checking three years (2019-2021) historical data from UN Comtrade (International Trade Statistics Database) /81/ and the customs statistics /82/, the assessment team confirmed that China exported PET more than it imported in the last three years prior to the project start. Furthermore, by checking public information: "Analysis of supply and demand status of China's polyester (PET) industry market in 2021"/83/ and the Report on the Current Situation Investigation of China's PET Raw Materials and Prospect Development Trend Prediction/104/, it is confirmed that domestic PET produced by virgin materials was always higher than domestic PET consumption. Therefore, it is confirmed that prior to the start date of the project activity, downstream filament processing plants purchased traditional PET flakes which are produced by virgin raw materials in China. Thus, the business-as-usual scenario of the project activity is confirmed to be that the PET flakes is produced by using the crude oil and nature gas from the oil exploitation as raw material. As per AMS-III.AJ., version 09.0, the baseline emission includes emissions associated with energy consumption for the plastic production from the virgin plastic materials.

As per CDM Validation and Verification Standard for project activities Version 3.0, "where the baseline scenario is not prescribed in the approved methodology, the DOE shall assess the list of identified credible alternatives to the project activity in the PD selected to determine the most realistic baseline scenario." As the selected small-scale methodology did not prescribe the baseline scenario further analysis on baseline is required. For the project activity, the list of identified credible alternatives were:

**Alternative (a):** the implementation of project activity without VCS.

**Alternative (b):** the continuation of current business-as-usual scenario, PET product would be produced by using the crude oil and nature gas from the oil exploitation as raw material.

The assessment team confirms that the PD conforms to the VCS Standard version 4.5 /89/ and other VCS rules /90/-/91/under the guidance of VCS Validation and Verification Manual version 3.2 /92/and CDM Validation and Verification Standard for project activities Version 3.0.

The project activity produces PET flakes by utilizing waste PET bottles. In the absence of the project activity, the same PET product would be produced by using the crude oil and nature gas from the oil exploitation as raw material. This complies with all national and local regulations /51/, and is the most common case in China which has been verified above through checking the three years historical data and public information /83//104/.

The assessment team confirms that the Project has been approved by the government by checking Environmental Impact Assessment (EIA) approval /9/. By checking related laws and regulations /51/, it is confirmed that the project activity is in complicate with all laws and regulations in China.

In conclusion, the baseline scenario is confirmed to be Alternative (b): the continuation of current business-as-usual scenario, PET product would be produced by using the crude oil and nature gas from the oil exploitation as raw material.

### 3.3.5 Additionality

As per section 3.14.1 of VCS Standard, version 4.5: “The project shall demonstrate regulatory surplus at validation”, the project proponent has stated in the section 3.5 updated PD that the project is not mandated by any law, statute, or other regulatory framework in the host country i.e., in China. CTI has checked the relevant laws and regulations /51//69/ regarding PET recycling industry:

- Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution,
- Environmental Protection Law of the People's Republic of China;
- Catalogue for the Guidance of Industrial Structure Adjustment;
- Clean Production Promotion Law of the People's Republic of China;
- Technical specification for recycling of waste plastics

and the CMS Expert Guide to plastics and packaging laws in China /103/, it is confirmed that although Chinese government has been encouraging the recycling of plastics in recent years, none of the laws nor regulations mandated the application of PET recycling activities. Therefore, the regulatory surplus of the proposed project has been sufficiently demonstrated.

As per AMS-III.AJ., version 09.0, TOOL21 “Demonstration of additionality of small-scale project activities” /97/shall be used to demonstrate additionality of the project activity.

As justified above, the aggregate size of the project activity is less than SSC thresholds (emission reductions of the project activity is less than 60 ktCO<sub>2</sub>e/y), the project activity is not comprised of any technologies from the positive list under TOOL32 Positive lists of technologies, version 04.0 /98/, and the aggregate size of the project activity is larger than MSC thresholds (emission reductions of the project activity is greater than 20 ktCO<sub>2</sub>e/y). As per “Appendix. Provisions of small-scale and microscale tools for automatic additionality” of TOOL21 /97/, such project activity use regular additionality procedure.

Based on TOOL21, Project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- (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.

By checking the Board meeting minutes /13/, FSR /6/ and interviewing with PP during site visit, it is confirmed that the investment decision of the project was made on 03/09/2019 with serious consideration of VCS development.

By checking Financial analysis in the FSR /6/ of the project activity issued by a third party - Meizhou Zhengming Construction Supervision Co., Ltd. and the IRR calculation spreadsheet /3/ it is confirmed that the project activity is not financial attractive and will face investment barrier. However, a financially more viable alternative to the project activity (baseline scenario) would have led to higher emissions.

### **Choice of approach**

Alternative (b) is the continuation of current business-as-usual scenario, PET product would be produced by using the crude oil and nature gas from the oil exploitation as raw material, which does not involve an investment from the project participants and has no barrier, therefore no investment analysis is required for this scenario.

Alternative (a) is the implementation of project activity without VCS. As the project generates financial and economic benefits other than VCS related income through the sales of PET flakes. A Benchmark Analysis was chosen and conducted for investment analysis of alternative (a) and the financial indicator equity IRR (post-tax), was chosen.

### **Benchmark Selection**

The project activity produces PET flakes. As per Notice on Adjusting the Financial Benchmark Rate of Construction Projects in some Industries /71/ issued by National Development and Reform Commission and the Ministry of Housing and Urban-Rural Development, the project belongs to “Manufacture of plastics and synthetic resins in primary form” in the “Petrochemical industry”, and the benchmark equity IRR (post-tax) for this category is 16%. Therefore, the benchmark equity IRR (post-tax) for this project activity is determined as 16%.

Thus, the assessment team was able to confirm the suitability of this benchmark.

### **Crosscheck of input parameters**

The parameters used in the financial calculations have been validated based on a review of the input presented in the PD sourced from FSR /6/ of the project activity through a cross-check with the other sources i.e., Methods and Parameters of Economic Evaluation of Construction Projects /72/, Financial Audit Report /20/ issued by the third party accounting firm, Statement on the Investment and Financial Status /75/, the Equipment purchase agreements and construction contracts /17/, Staff roster and the payroll of employees /41/, Financial Statement on the

operational cost /76/, public information including: “Average annual wage of employees in private sector of China”/43/, Conditional conditions for comprehensive use of waste plastics /77/, Financial Evaluation Practice and Analysis of Difficult Problems-Feasibility study and evaluation of Bank loan projects /84/, Compilation method of municipal engineering investment estimation issued by Ministry of Construction of China /73/, Accounting Standard for Business Enterprises: Basic Standard/85/ published by the Ministry of Finance of P.R.C, and the public information on Price of waste PET and reproduced PET products /79/ as well as the judgement from the financial expert in the assessment team. The Financial analysis in the FSR of the project activity was completed by a qualified third-party - Meizhou Zhengming Construction Supervision Co., Ltd.. in 08/2019 which is less than one month prior to the investment decision date of the project, therefore it’s unlikely that the input values have significantly changed. Additionally, confirmation with the following documents and/or sources demonstrates that the parameters are plausible and acceptable under the project situation:

Income Tax Law of the People's Republic of China for Enterprises issued by the Chairman of the People's Republic of China;

Interim Regulation of VAT of the People's Republic of China issued by State Council;

Tax Law of the People's Republic of China on Urban Maintenance and Construction.

The assessment team compared the values stated in the PD with values determined in the FSR of the project activity and was able to confirm that the input values are applied correctly in the PD. The detailed assessment of each input parameter is shown below.

#### Calculation and comparison of financial indicators

Parameter	Unit	Value	Source
Annual post-consumer PET purchase	t	65,000	FSR /6/
Post-consumer PET price	CNY/t	4,600	FSR /6/
Annual PET production	t	55,000	FSR /6/
Reproduced PET price	CNY/t	6,500	FSR /6/
Static total investment	CNY	122,600,000	FSR /6/
Annual O&M cost (total)	CNY	36,275,536	FSR /6/
Annual salary and benefit cost	CNY	7,980,000	FSR /6/
Annual material cost	CNY	13,000,000	FSR /6/
Annual electricity cost	CNY	9,462,700	FSR /6/
Annual water cost	CNY	93,600	FSR /6/
Annual maintenance cost	CNY	2,886,863	FSR /6/

Annual insurance cost	CNY	577,373	FSR /6/
Annual other cost	CNY	2,275,000	FSR /6/
VAT	/	13%	Announcement on deepening the relevant policies of VAT reform /51/
VAT refund rate	/	50%	Notice on Adjusting and Improving VAT Policies for Comprehensive Utilization of Resources and Labor Services /51/
Income tax	/	25%	Enterprise Income Tax Law of the People's Republic of China /51/
Urban maintenance and construction tax	/	5%	Tax Law of the People's Republic of China on Urban Maintenance and Construction /51/
Surtax for education	/	5%	Decision of The State Council on Amending the Interim Provisions on Levying Additional Education Fees /51/
VcUs' price	CNY/t	80	Based on the carbon market and the optimistic expectation about the prospects of the carbon market
Project operational lifetime	years	20	FSR /6/

The accuracy and suitability of the input values for the investment analysis were crosschecked as below:

**Total Static Investment: 122,600,000 CNY**

By checking FSR /6/ and IRR calculation spreadsheet /3/, it is confirmed that total Static Investment is 122,600,000 CNY. By checking the Statement on the Investment and Financial Status /75/, the Equipment purchase agreements and construction contracts /17/, the assessment team confirmed that the actual investment cost of the project activity amounts to 131,825,300 CNY, which is 7.52% higher than the value of static total investment that estimated in the FSR. If the actual investment cost is applied for financial analysis, the IRR of the project activity will be even lower. Therefore, the assessment team was able to confirm that the static total investment estimated in the FSR was reasonable and conservative.

**O&M cost: 36,275,536 CNY**

The O&M cost is consistent of annual personnel cost, annual material cost, annual electricity cost, annual water cost, annual maintenance cost, annual insurance cost and annual other cost. By checking the Financial Audit/20/ and Statement on the operational cost/76/ and interview with financial staff during site visit, it is confirmed that the actual O&M cost during April to December in 2022 is  $2,724.36 \times 10^4$ RMB and the actual O&M cost in 2023 is  $3,631.65 \times 10^4$ RMB which are slightly higher than the estimation in FSR. Thus, the O&M cost in the FSR is not over estimated. Each component has been verified by the assessment team.

**a) Annual personnel cost (salary and welfare): 7,980,000 CNY**

Annual personnel cost was estimated to be 140 persons\*50,000CNY/person (salary + welfare) = 7,980,000 CNY/year. According to public information: "Average annual wage of employees in private sector of China in 2019" /43/, the average wage of employees in private sector in China of year 2019 is 53,604 CNY/year. The value used for IRR calculation is slightly lower than the national average which can be considered reasonable and conservative. Furthermore, by cross-checking with Staff roaster and the payroll of employees /41/, it is confirmed that the total number of employees in 2022 is 140 which is consistent with that in the FSR and the annual average salary of the employees are higher than the estimation in FSR. Therefore, it's considered that the wage and welfare is not over estimated.

**b) Annual material cost: 13,000,000 CNY**

The annual material fee was estimated as 13,000,000 CNY in FSR, which is calculated as: unit material fee per tonne waste PET \* the estimated amount of consumed waste PET per year = 200 CNY/tonne \* 65,000 tonne = 13,000,000 CNY. By checking Statement on the operational cost /76/ and the Financial Audit Report completed by the third party accounting firm /20/, the actual unit material fee per tonne waste PET is higher than the estimation in the FSR and therefore, it is confirmed that the unit material fee per tonne waste PET in the FSR of the project activity is conservative. Therefore, it is concluded that the annual material fee is conservative and reasonable.

**c) Annual electricity cost 9,462,700 CNY**

The annual electricity cost was estimated as 9,462,700 CNY in the FSR, which is calculated as: the amount of electricity consumed per tonne waste PET \* the estimated amount of waste PET consumed per year \* electricity price per unit = 0.251 MWh/tonne \* 65,000 tonne \* 580 CNY/MWh = 9,462,700 CNY. By checking EIA approval /9/, it is confirmed that the amount of electricity consumed per tonne waste PET of the project activity is lower than domestic industry level stated in the Conditional conditions for comprehensive use of waste plastics /77/ issued by Ministry of Industry and Information Technology P.R.C i.e. less than 0.5MWh/tonne and is deemed by the assessment team as conservative. By checking public information /50/, it is confirmed that the electricity price is 580 CNY/MWh for industrial use which is consistent with the actual electricity price shown on the Electricity invoices/32/ of electricity consumption issued

by the grid company. Therefore, it is validated by the annual electricity cost is reasonable and conservative.

**d) Annual water cost: 93,600 CNY**

The annual water cost was estimated as 93,600 CNY in Financial analysis report, which is calculated as: the amount of water consumed per tonne recycled PET \* the estimated amount of recycled PET per year \* electricity price per unit = 0.8 tonne water/tonne recycled PET \* 65,000 tonne \* 1.8 CNY/tonne water = 93,600 CNY. By cross-checking with “Conditional conditions for comprehensive use of waste plastics” /77/ issued by Ministry of Industry and Information Technology of P.R.C, it is confirmed that the comprehensive fresh water consumption of recycled PET flakes should be lower than 1.5 tons / ton waste plastic. Furthermore, by checking the Financial Audit Report /20/, Statement on the operational cost /76/, Invoices of Water consumption /34/ and Waste PET purchase records /30/, it is confirmed that the actual water consumption per ton waste PET is higher than the estimation. Therefore, it is confirmed that the unit water consumption is reasonable and conservative. By checking public information /49/, it is confirmed that the water price is 1.8CNY/tonne water for industrial use which is consistent with the water price shown on the Invoices of Water consumption /34/. The assessment team confirmed the amount of water consumed per tonne recycled PET is lower than the level of same industry in China by comparing with newly built 31,000 tons waste plastics recycling project owned by Jiangsu Runhong Building Material Technology Co., Ltd., and therefore it is validated by the assessment team that the annual water cost is reasonable and conservative.

**e) Annual maintenance cost: 2,886,863 CNY**

The annual maintenance cost was estimated as 2,886,863CNY in IRR calculation, which accounts for 2.5% of fixed asset investment. The assessment team did not find suitable guidelines for maintenance cost of the specific project activity. The rate 2.5% of annual maintenance cost is considered by the financial expert in the assessment team as appropriate and conservative because as per the publication issued by China Planning Press - Financial Evaluation Practice and Analysis of Difficult Problems-Feasibility study and evaluation of Bank loan projects /84/, such rate is 3%~5%.

Meanwhile, the assessment team has crosschecked the cost rate against public available information. According to the Accounting Standard for Business Enterprises: Basic Standard/85/ published by the Ministry of Finance of P.R.C that as the common practice, a rate of 3%~5% is adopted as the ratio of maintenance cost to the fixed assets value for investment projects in China. Therefore, the maintenance cost rate estimated in the project activity is considered not over estimated.

**f) Annual insurance: 577,373 CNY**

The annual insurance was estimated as 577,373 CNY in Financial analysis report, which accounts for 0.5% of the fixed assets. The assessment team did not find suitable guidelines for equipment insurance of the specific project activity. The rate 0.5% of fixed assets is considered

by the financial expert in the assessment team as appropriate and conservative because the value was below the reasonable range (0.3%~0.6%) mentioned in Compilation method of municipal engineering investment estimation issued by Ministry of Construction of China /73/ and public available at internet.

**g) Annual other cost: 2,275,000 CNY**

The annual other fee was estimated as 2,275,000CNY in FSR, which is calculated as: unit other fee per tonne waste PET \* the estimated amount of consumed waste PET per year = 35CNY/tonne \* 65,000 tonne = 2,275,000 CNY. The unit other cost is lower than the registered VCS project 3603/100/ with a unit other cost of 42 CNY/tonne, thus, it is confirmed that the unit other fee per tonne waste PET in the FSR of the project activity is conservative. Therefore, it is concluded that the annual other cost is conservative and reasonable.

In general, each component of the O&M cost has been crosschecked with plausible evidences and sources.

**Waste PET consumed: 65,000 t**

**Annual PET production: 55,000 t**

By checking Project approval/7/ and EIA Approval /9/, it is confirmed the annual PET production is 55,000t. By checking the Daily operation and maintenance records/26/, PET product sales record/29/, the actual production of PET in 2022 and 2023 is 40,500t and 53,500t which are within the expected production capacity, furthermore, considering the treatment capacity of the equipment confirmed through ground inspection during site visit, the production capacity of the project activity as approved in the EIA Approval /9/, the assessment team validated that the estimated amount of consumed waste PET per year is reasonable.

**Post-consumer PET price: 4,600 CNY/t**

**Reproduced PET price: 6,500 CNY/t**

By checking FSR /6/, it is confirmed that the post-consumer PET price is 4,600 CNY/t and the reproduced PET price is 6,500 CNY/t. By checking the public information /79/, the Waste PET purchase records /30/ and PET products sales records /29/, the assessment team confirmed that the actual waste PET price and reproduced PET price of the project in 2022 was 4,400 - 4,800 CNY/t and 6,400 - 6,500 CNY/t respectively. Therefore, it is confirmed that the estimated post-consumer PET price and the reproduce PET price are reasonable.

**Taxes: see below**

The taxes applied in the financial assessment are listed as:

Item	Value
Value Added Tax (VAT) for PET Product and Waste PET	13%

Value Added Tax (VAT) refund	50%
Urban maintenance and construction tax	5%
Surtax for education	5%
Income tax	25%

Value Added Tax (VAT) for PET Product and Waste PET is determined as 13% in the FSR which is consistent with that in Announcement on deepening the relevant policies of VAT reform /51/. Value Added Tax (VAT) refund for waste plastic is determined as 50% in the FSR which is consistent with that in Notice on adjusting and improving value-added tax policies on products and Labor services for comprehensive Utilization of resources /51/.

By cross checking with the national taxation regulations, sectoral regulations and other evidences, i.e. the Tax Law of the People's Republic of China on Urban Maintenance and Construction and Decision of The State Council on amending the Interim Provisions on levying Additional Education Fees /51/, the assessment team was able to confirm that the Urban maintenance and construction tax and Surtax for education in the financial assessment are all in line with national regulations.

An income tax of 25% is consistent with the Income Tax Law of the People's Republic of China on Enterprises /51/ issued by the Chairman of the People's Republic of China on 16/03/2007.

#### **VCUs' price**

Through checking the PD, the VCUs price used in the investment analysis was determined by PP based on the global carbon market and the optimistic expectation about the prospects of the global carbon market. Through checking the market report by Carbon credit capital/108/, it is verified that each carbon permit soared from 8 euros (63 CNY) a tonne to around 25 euros (198CNY) a tonne in the EU ETS. Also, the highest price of each tonne has reached 7.81 euros (62 CNY)/109/ in the China's carbon emissions trading system in 2019. Furthermore, through interviewing with PP, it is confirmed that PP acknowledges that Verra is the world's leading standards for climate action and sustainable development. Everything they do is in service of increasingly ambitious climate and sustainable development goals – and an accelerated transition to a sustainable future /100/, so PP has great confidence in Verra and holds optimistic expectation against the VCUs price. Therefore, it is confirmed that the VCUs' price used in the investment analysis by PP of 80 CNY is reasonable and acceptable.

#### **Depreciation period and residual rate: 15 years and 5%**

As per the FSR /6/, the residual rate is determined as 5% of the fixed assets, and the depreciation period is 15 years. As per Article 31 of the “Rules for the Provisional Regulations on Enterprise Income Tax of the People's Republic of China” /51/, the ratio of residual value shall be within 5% of the original value and shall be determined by the enterprise. Therefore, the assessment team was able to confirm that a rate of 5% is reasonable.

According to the “Enforcement Regulation of Income Tax Law of the People's Republic of China for Enterprises” /51/ issued by State Council, it stipulates that the depreciation period of production equipment should be at least 10 years. Thereby the 15 years of depreciation periods of the project activity is appropriate.

The depreciation rate of 6.33% is determined based on a depreciation period of 15 years and a residual rate of 5%.

#### **Lifetime: 20 years**

The lifetime of the project activity was estimated to be 20 years in the FSR. By checking technical specifications, it is confirmed the life time of the main equipment is 20 years. Therefore, the assessment team was able to confirm that the lifetime estimated in the FSR is reasonable.

In conclusion, based on the information validated, the assessment team confirms that all the input values for investment analysis are in reasonable ranges. In addition, the assessment team was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the project. Therefore, the assessment team confirms that the assumptions is investment analysis are appropriate and the financial calculations are correct. The equity IRR of the project without VCUs revenue is confirmed to be 7.44% which is below the benchmark of 16%, while the equity IRR of the project with VCUs revenue is 10.08% which indicates that the financial status with VCUs revenue will be improved.

#### **Sensitivity analysis**

4 variables, i.e. static total investment and annual O&M cost which constitute more than 20% of total project costs, and variables that will impact total project revenues, i.e. annual amount of recycled PET production and reproduced PET price are considered in the sensitivity analysis. Since the total waste PET cost equals to “waste PET consumption \* waste PET price”, and the waste PET consumption is strong positively correlated with reproduced PET production while waste PET price is strong positively corelated with reproduced PET price, the sensitivity analysis of waste PET cost has been therefore combined with annual PET production and reproduced PET prices respectively, which was validated to be reasonable. As validated above, no other variables would constitute more than 20% of either total project costs or total project revenues. A departure variation of a range of +10% and -10% is applied which is consistent with the applicable CDM and VCS requirements.

As a result of sensitivity analysis, within the reasonable variation ( $\pm 10\%$ ) of above variables, the IRR of project without VCS revenues is still lower than the benchmark.

Meanwhile, the assessment team assessed the possibility of the extreme points of the 4 variables to reach the benchmark 16%.

**Total static Investment:** If the total static investment decreased by 42.03%, the IRR would reach 16%. However, by checking the Statement on the Investment and Financial Status /75/ of the PP, the assessment team confirmed that the actual investment cost of the project activity was

131,825,300 CNY, which is higher than the value of static total investment that estimated in the FSR. Therefore, it's impossible that the static total investment decreased by 42.03%.

**Annual PET production:** if annual PET production is increased by 45.41%, the IRR would reach 16%. However, as the production capacity of the project activity approved by local department is fixed and by checking the Daily operation and maintenance records/26/, PET product sales record/29/, the actual production of PET in 2022 and 2023 is 40,500t and 53,500t which are within the expected production capacity, thus, it is unlikely to increase the amount of reproduced PET products by 45.41%.

**Annual O&M cost:** if the annual O&M cost is decreased by 31.65%, the IRR would reach 16%. However, as per the data published by National Bureau of Statistics/78/, the indices of urban employees' wages were 109.6, 114.2, 115.764, 109.322 and 111.403 (the value of the previous year taken as 100) for the last five years from 2017 to 2021, which are all higher than 100. Furthermore, by checking the Financial Audit/20/ and Statement on the operational cost/76/ and interview with financial staff during site visit, it is confirmed that the actual O&M cost during April to December in 2022 is  $2,724.36 \times 10^4$ RMB and the actual O&M cost in 2023 is  $3,631.65 \times 10^4$ RMB which are slightly higher than the estimation in FSR. Therefore, considering the increasing index and the actual O&M cost since commissioning, the assessment team validated that the annual O&M cost is unlikely to decrease by 31.65%.

**Reproduced PET price:** If reproduced PET price is increased by 22.91%, the IRR would reach 16%. However, by checking PET products sales records /29/, the assessment team confirmed that the actual reproduced PET price of the project in 2022 was 6,400 - 6,500 CNY/t which is consistent with the estimation in FSR. Therefore, although the reproduced PET price fluctuates, the assessment team validated that the it is unlikely that the reproduced PET price increases by 22.91%.

It is assessment team's conclusion that sensitivity analysis used is appropriate and reasonable. Alternative (a), which is the implementation of project activity without VCS, is not financially attractive to the project proponent.

CAR03 was raised here and has been successfully closed, details please refer to Appendix 4.

### 3.3.6 Quantification of GHG Emission Reductions and Removals

The assessment team checked the baseline, project and leakage calculation and confirm that the evaluation of baseline, project and leakage is as per the approved methodology and formula used to calculate the same is correct. The detail analysis is as below:

#### Baseline emissions

As per AMS-III.AJ. Version 09.0, baseline emissions include:

(a) For the production of plastic, the emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials: included in the project activity;

(b) For paper and cardboard, the emissions associated with the anaerobic decay within a disposal site may be claimed: not involved in the project activity;

(c) For the production of glass, emissions associated with the energy consumption for the production of virgin container glass corresponding to the preparation and mixing of raw materials before the melting stage: not involved in the project activity;

(d) For the production of metals, emissions associated with energy consumption for the production from virgin materials: not involved in the project activity.

Baseline emissions shall be determined as:

$$BE_y = BE_{plastic,y} + BE_{paper,y} + BE_{glass,y} + BE_{metal,y} \quad \text{Equation (1)}$$

Where:

$BE_y$  = Baseline emissions in year y (tCO<sub>2</sub>e)

$BE_{plastic,y}$  = Baseline emissions associated with the recycling of plastic in year y (tCO<sub>2</sub>e)

$BE_{paper,y}$  = Baseline emissions associated with the recycling of paper and cardboard year y (tCO<sub>2</sub>e)

$BE_{glass,y}$  = Baseline emissions associated with the recycling of glass year y (tCO<sub>2</sub>e)

$BE_{metal,y}$  = Baseline emissions associated with the recycling of metals in year y (tCO<sub>2</sub>e)

As per FSR/6/, EIA and its approval /8//9/ and via on-site inspection, it is confirmed that the project only recycles and fabricated the plastic product (PET flakes) and does not involve the recycling of paper, glass or metal, thus, the baseline emissions associated with the other materials, i.e. paper, glass and metal, are equal to 0, therefore:

$$BE_y = BE_{plastic,y} \quad \text{Equation (2)}$$

Baseline emissions associated with the recycling of plastics type i from virgin inputs are calculated based on the consumption of plastic type i is produced in the host Country as well as imported, using the equation below (following the VMRO007 Revision to AMS-III.AJ):

$$BE_{plastic,y} = \sum_i [Q_{i,y} \times (1-DF) \times L_i \times (w_{i,in-country,y} \times SE_{i,in-country,y} + w_{i,imported,y} \times SE_{i,imported,y})] \quad \text{Equation (3)}$$

Where:

$BE_{plastic,y}$	=	Baseline emissions associated with the recycling of plastic in year $y$ (tCO <sub>2</sub> e)
$i$	=	Indices for material type $i$ ( $i = 1,2,3,4$ for HDPE, LDPE, PET and PP)
$Q_{i,y}$	=	Quantity of plastic type $i$ recycled in year $y$ (t/y)
$L_i$	=	Net to gross adjustment factor to cover degradation in material quality and material loss in the production process of the final product using the recycled material (use 0.75)
$DF$	=	Discount factor for upstream displacement (30%)
$w_{i,in-country,y}$	=	Percentage of plastics produced in the host Country out of total plastic consumed in year $y$ (%)
$SE_{i,in-country,y}$	=	Specific emissions in the baseline for the production of virgin plastics type $i$ in the host Country in year $y$ (tCO <sub>2</sub> /t <sub>i</sub> )
$w_{i,imported,y}$	=	Percentage of imported plastics out of total plastic consumed in year $y$ (%)
$SE_{i,imported,y}$	=	Specific emissions in the baseline for virgin plastics type $i$ imported in year $y$ (tCO <sub>2</sub> /t <sub>i</sub> )

Specific emissions in the baseline for the production of virgin plastics type  $i$  in the host Country ( $SE_{i,in-country,y}$ ) are determined based on the equation below:

$$SE_{i,in-country,y} = (SEC_{BL,i} \times EF_{BL,el,y}) + (SFC_{BL,i} \times EF_{BL,FF,CO_2}) \quad \text{Equation (4)}$$

Where:

$SEC_{BL,i}$	=	Specific electricity consumption in the production of virgin material type $i$ (MWh/t <sub>i</sub> )
$EF_{BL,el,y}$	=	Emission factor for the baseline electricity consumption for virgin plastic production in the host party (tCO <sub>2</sub> /MWh)
$SFC_{BL,i}$	=	Specific fuel consumption for the production of virgin material type $i$ (GJ/t <sub>i</sub> )
$EF_{BL,FF,CO_2}$	=	CO <sub>2</sub> emission factor of the baseline fossil fuel (tCO <sub>2</sub> /GJ). Project participants shall assume that the baseline fuel is natural gas when it's not possible to identify the type of fuel consumed for the production of plastics from virgin materials

By checking public sectoral reports /47/ /48/, it is confirmed that the demand consumption of bottle grade PET is 6,943,000 ton in 2021 and the bottle grade PET imported in 2021 was 62,000 ton which accounts for 0.89% of the consumption. Therefore, to be conservative, percentage of imported plastics out of total plastic consumed in year  $y$  ( $w_{i,imported,y}$ ) are determined as 1% and percentage of plastics produced in the host Country out of total plastic consumed ( $w_{i,in-country,y}$ ) is 99%.

Therefore, for the project activity, baseline emissions are calculated as:

$$BE_{plastic,y} = Q_{i,y} \times L_i \times (1-DF) \times \left( (SEC_{BL,i} \times EF_{BL,el,y} + SFC_{BL,i} \times EF_{BL,FF,CO_2}) \times w_{i,in-country,y} + B_i \times (SEC_{BL,i} \times EF_{el,imported,y} + SFC_{BL,i} \times EF_{FF,imported,CO_2}) \times w_{i,imported,y} \right) \quad \text{Equation (5)}$$

Determination of  $SEC_{BL,i}$  and  $SFC_{BL,i}$ ,  $B_i$ , and  $EF_{el,imported}$

As per AMS-III.AJ. Version 09.0, the values of the parameters  $SEC_{BL,i}$ ,  $SFC_{BL,i}$ ,  $B_i$ , and  $EF_{el,imported}$  are illustrated in the table below:

Plastic types	$SEC_{BL,i}$ (MWh/t)	$SFC_{BL,i}$ (GJ/t)	$B_i$ (-)	$EF_{el,imported}$ (tCO <sub>2</sub> /MWh)
PET	1.11	15	0.6	0.24

The following conservative assumptions were made to derive the default values contained in the table above:

1. The energy needed for the production of the virgin monomers Ethylene Glycol and Terephthalic Acid<sup>1</sup> through thermal cracking of olefins is supplied by natural gas; A conservative value of 15 GJ/tons of energy needed to produce ethylene was selected from Table 4.3 of the report “Tracking Industrial Energy Efficiency and CO<sub>2</sub> emissions” published by the International Energy Agency (IEA, 2007)/86/;
2. The energy needed for the production of the polymers is supplied by electricity: For PET, a conservative value of 4.0 GJ/t (divided by 3.6 to convert MWh/t) was sourced from Table 1 of SAYGIN et al (2011) /88/;
3. The remaining steps of virgin pellet production (melting and shaping, pelletizing, compounding) require relatively negligible amounts of energy and hence are ignored.

#### Determination of $EF_{BL,FF,CO_2}$ , $EF_{FF,imported,CO_2}$

For the production of PET, it’s hard to identify the type of fuel consumed for the production, as per the methodology, the baseline fuel is natural gas.

$$EF_{BL,FF,CO_2} = EF_{FF,imported,CO_2} = EF_{natural\ gas} = 54,300^2 \text{kgCO}_2/\text{TJ} = 0.0543 \text{tCO}_2/\text{GJ}$$

#### Determination of $EF_{BL,el,y}$

As per AMS-III.AJ. Version 09.0, the emission factor for the baseline electricity consumption for virgin plastic production in the host party (parameter  $EF_{BL,el,y}$ ) shall be determined based on the weighted average consumption of electricity from the electric grid(s) and from captive power plant(s) as indicated in the equation below. Project participants may choose to fix this parameter ex-ante and update it at the renewal of the crediting period or monitor this parameter ex-post. If the parameter is fixed ex-ante, it shall be calculated using the most recent data available.

<sup>1</sup> For the production of the monomers Ethylene Glycol Terephthalic Acid, it was conservatively estimated that the energy needed is the same for the production of the same mass of ethylene through thermal cracking.

<sup>2</sup> It is the IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories which is conservative for baseline emission calculation. The Effective CO<sub>2</sub> emission factor for natural gas was not updated in the 2019 refinement to the 2006 IPCC guidelines, thus, table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories is still the latest source.

$$EF_{BL,el,y} = \frac{\sum_k EF_{BL,grid,k,y} \times EC_{BL,grid,k,y} + \sum_j EF_{BL,captive,j,y} \times EC_{BL,captive,j,y}}{\sum_k EC_{BL,grid,k,y} + \sum_j EC_{BL,captive,j,y}} \quad \text{Equation (6)}$$

Where:

- $EF_{BL,grid,k,y}$  = Emission factor of the grid  $k$  supplying electricity to produce virgin plastics in the host country in year  $y$  (tCO<sub>2</sub>/MWh)
- $EC_{BL,grid,k,y}$  = Electricity consumed from the grid  $k$  to produce virgin plastics in the host country in year  $y$  (MWh)
- $EF_{BL,captive,j,y}$  = Emission factor of the captive power plant  $j$  supplying electricity to produce virgin plastics in the host country (tCO<sub>2</sub>/MWh)
- $EC_{BL,captive,j,y}$  = Electricity consumed from the captive power plant  $j$  to produce virgin plastics in the host country in year  $y$  (MWh)

In the baseline scenario, the electricity used for producing virgin plastics is supplied by the South China Power Grid (SCPG), no electricity is consumed from the captive power plant, therefore,

$$EF_{BL,el,y} = EF_{BL,grid,k,y} \quad \text{Equation (7)}$$

The PD applies the calculation of the grid emission factor as per the latest available official guidance “2021 Baseline Emission Factors for Regional Power Grids in China” /44/ published by the National Center for Climate Change Strategy and International Cooperation (NCSC) based on the data from China Electric Power Yearbook (2016~2020) and China Energy Statistical Yearbook (2018~2020).  $EF_{grid,OM,Simple,y}$  is calculated to be 0.7722 tCO<sub>2</sub>/MWh and  $EF_{grid,BM,y}$  is calculated to be 0.1880 tCO<sub>2</sub>/MWh. The validation team has checked the website of China’s DNA and can confirm the most recent data available at the time of submission of registration request is applied in the PD. It is confirmed that the calculation is in accordance with the calculation process of the corresponding methodology and tools.

As per the “Tool to calculate the emission factor for an electricity system” (version 07.0) and based on the weight  $\omega_{OM}$  and  $\omega_{BM}$  of 0.5:0.5 by default for the first crediting period, the combined margin emission factor ( $EF_{grid,CM,y}$ ) is calculated to be 0.4801 tCO<sub>2</sub>/MWh.

Therefore,  $EF_{BL,el,y} = EF_{grid,CM,y} = 0.4801$  tCO<sub>2</sub>/MWh.

By checking EIA Report /8/, it is confirmed the waste PET consumed is 65,000 tonnes/year and the recycled PET product is 55,000 tonnes/year, therefore, the baseline emission for plastic recycling is calculated as:

$$BE_{plastic,y} = Q_{i,y} \times L_i \times (1 - DF) \times ((SEC_{BL,i} \times EF_{BL,el,y} + SFC_{BL,i} \times EF_{BL,FF,CO_2}) \times w_{i,in-country,y} + B_i \times (SEC_{BL,i} \times EF_{el,imported,y} + SFC_{BL,i} \times EF_{FF,imported,CO_2}) \times w_{i,imported,y}) = 65,000t \times 0.75 \times (1-30\%) \times ((1.11MWh/t \times 0.4801tCO_2/MWh + 15 GJ/t \times 0.0583tCO_2/GJ) \times 99\% + 0.6 \times (1.11MWh/t \times 0.24tCO_2/MWh + 15GJ/t \times 0.0583tCO_2/GJ) \times 1\%) = 45,741 \text{ tCO}_2e$$

### Project emissions

As per AMS-III.AJ. Version 09.0, project emissions include emissions associated with the energy

use at recycling facility and at the processing facility, and are calculated based on the equation below. No project emissions need to be considered in the case of paper and cardboard.

For project activities where the recycling facility includes both waste sorting and processing, project emissions are calculated through the equation below:

$$PE_y = EC_{PJ,y} \times EF_{el,PJ,y} + \sum_f (FC_{f,PJ,y} \times NCV_{f,y} \times EF_{f,CO2,y}) \quad \text{Equation (8)}$$

Where:

- $PE_y$  = Project emissions in year  $y$  (tCO<sub>2</sub>)
- $EC_{PJ,y}$  = Electricity consumed by the recycling facility in year  $y$  (MWh)
- $EF_{el,PJ,y}$  = Emission factor of the electric grid supplying electricity to the latest version of the recycling facility in year  $y$  (tCO<sub>2</sub>/MWh)
- $FC_{f,PJ,y}$  = Fuel type  $f$  consumed by the recycling facility in year  $y$  (unit mass or volume/t)
- $NCV_{f,y}$  = Net calorific value of the fossil fuel type  $f$  consumed in the recycling facility in year  $y$  (GJ/unit mass or volume)
- $EF_{f,CO2,y}$  = CO<sub>2</sub> emission factor of the fossil fuel type  $f$  consumed at the recycling facility in year  $y$  (tCO<sub>2</sub>/GJ)

As justified above, the project activity falls under Case A of AMS-III.AJ. Version 09.0, the parameters  $EC_{PJ,y}$  and  $FC_{f,PJ,y}$  may be estimated based on the nameplate specific energy consumption of the equipment used and the average time of operation and level of service delivered, or based on measurement campaigns of the energy consumption under typical operation conditions.

During site inspection and document review, it is confirmed that grid electricity is consumed at most of the sub-units of the recycling facility while natural gas is consumed at the washing and drying system. Furthermore, by site inspection of the PET recycling and processing procedure and interview with PP, it is confirmed that diesel is used for transport by forklifts for transportation of the recycling facility. As per para 39 of the applied methodology AMS-III.AJ. Version 09.0: "Emissions associated with transportation of recyclable materials and processing/manufacturing under the project activity are considered as equivalent to the corresponding emissions for the virgin materials and therefore ignored in this methodology", the diesel used by the project for transportation is not required by the methodology, however, PP decides to still calculate the project emissions from diesel use, the assessment team considers it is reasonable and conservative.

Therefore, the project emissions are calculated as:

$$PE_y = EC_{PJ,y} \times EF_{el,PJ,y} + FC_{gas,PJ,y} \times NCV_{gas,y} \times EF_{gas,CO2,y} + FC_{diesel,PJ,y} \times NCV_{diesel,y} \times EF_{diesel,CO2,y} \quad \text{Equation (9)}$$

Through site inspection of the monitoring equipment and interview with PP, it is confirmed that electricity consumption ( $EC_{PJ,y}$ ) and natural gas consumption ( $FC_{gas,y}$ ) are determined through

direct measurement. For the consumption of diesel ( $FC_{diesel,y}$ ), PP will keep the diesel purchase receipts for the determination of the amount of diesel consumed. Since diesel used for transportation is not mandatory by the methodology as mentioned above and considering the diesel is purchased from filling stations and there is no metering equipment in the recycling facility, CTI considers it is reasonable and acceptable to use the purchase receipts for recording the amount of diesel use.

By checking the FSR /6/, it is confirmed the project activity is estimated to consume 16,300 MWh electricity; 850,000 Nm<sup>3</sup> natural gas and 30 tonnes of diesel every year. Therefore, the project emissions are calculated as:

$$PE_y = EC_{PJ,y} \times EF_{el,PJ,y} + FC_{gas,PJ,y} \times NCV_{gas,y} \times EF_{gas,CO2,y} + FC_{diesel,PJ,y} \times NCV_{diesel,y} \times EF_{diesel,CO2,y} =$$

$$16,300 \text{ MWh} \times 0.4801 \text{ tCO}_2/\text{MWh} + 850,000 \text{ Nm}^3 \times (38,931 \times 10^{-6}) \text{ GJ/Nm}^3 \times 0.0583 \text{ tCO}_2/\text{GJ}$$

$$+ 30 \text{ t} \times (42,652 \times 10^{-3}) \text{ GJ/t} \times 0.0748^3 \text{ tCO}_2/\text{GJ} = 9,851 \text{ tCO}_2\text{e}$$

### Leakage

As per AMS-III.AJ. Version 09.0, it is demonstrated that organic biogenic waste segregated in the recycling facility would otherwise have been deposited in a landfill without methane recovery in the baseline scenario, or if the baseline scenario is the incineration of the wastes, then no leakage calculation is required.

By checking FSR /6/, it is confirmed the project activity recycles waste PET which would otherwise be disposed through landfill or incineration. The project activity does not involve organic biogenic waste. As per AMS-III.AJ. Version 09.0, the baseline scenario is the incineration of the wastes and no leakage calculation is required. Therefore,  $L_y = 0$ .

### Emission Reductions

Emission reductions are calculated as follows:

The emission reductions achieved by the project activity shall be determined as the difference between the baseline emissions and the project emissions and leakage.

$$ER_y = BE_y - PE_y - L_y \quad \text{Equation (10)}$$

Where:

- $ER_y$  = Emission reductions in year y (tCO<sub>2</sub>e)
- $BE_y$  = Baseline emissions in year y (tCO<sub>2</sub>e)
- $PE_y$  = Project emissions in year y (tCO<sub>2</sub>e)

<sup>3</sup> It is the IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories as per the requirement of latest TOOL03, v03.0. The Effective CO<sub>2</sub> emission factor for diesel was not updated in the 2019 refinement to the 2006 IPCC guidelines, thus, table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories is still the latest source.

$$L_y = \text{Leakage emissions in year } y \text{ (tCO}_2\text{e)}$$

Based on the calculations of baseline emissions and project emissions as well as the discussion of the leakage emissions above, the estimated annual ER is calculated as:

$$ER_y = BE_y - PE_y - L_y = 45,741 \text{ tCO}_2\text{e} - 9,851 \text{ tCO}_2\text{e} - 0 = 35,890 \text{ tCO}_2\text{e}$$

The assessment team confirms that all data sources and assumptions are appropriate and calculations are correct, applicable to the project activity and will result in a conservative estimate of the emission reductions. In general, the assessment team is able to confirm the following:

- All assumptions and data used by the project participants are listed in the PD (version 04 dated 18/07/2024) and/or supporting documents, including their references and sources;
- All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PD (version 04 dated 18/07/2024);
- All values used in PD (version 04 dated 18/07/2024) are considered reasonable in the context of the project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, and leakage emissions;
- All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PD (version 04 dated 18/07/2024).

CAR04 and CAR05 were raised here and have been successfully closed, details please refer to Appendix 4.

### 3.3.7 Methodology Deviations

There are no methodology deviations applied for the project.

### 3.3.8 Monitoring Plan

The project applies the approved monitoring methodology AMS-III.AJ. Version 09.0. The selected monitoring methodology is applicable for the project. The monitoring plan is in accordance with the monitoring methodologies. The monitoring plan will give opportunity for real measurements of achieved emission reductions and contains principles and concepts on which it is based, operational and monitoring obligations of the project owner like resources involved in the monitoring process, training, support activities, calibration and data collection, quality assurance procedures, data management, electronic support tools.

The following data and parameters are available at validation, it is confirmed by assessment team that all parameters and values applied in the PD and calculation spreadsheet are complete, transparent and correct:

No.	Data/Parameter	Unit	Description and Unit	Value	Determination method
1.	$L_i$	/	Net to gross adjustment factor to cover degradation in material quality and material loss in the production process of the final product using the recycled material	0.75	Default value from applied methodology AMS-III.AJ. Version 09.0
2.	$B_i$	/	Correction factor based on share of production in non-Annex I countries	0.6	Default value from applied methodology AMS-III.AJ. Version 09.0
3.	DF	%	Discount factor for upstream displacement	30	Default value from VMR0007 Revision to AMS-III.AJ.: Recovery and recycling of materials from solid wastes (Version 09.0)
4.	$SEC_{BL,i}$	MWh/t <sub>i</sub>	Specific electricity consumption in the production of virgin material type <i>i</i>	1.11	Default value from section 5.2.1 of applied methodology AMS-III.AJ. Version 09.0
5.	$SFC_{BL,i}$	GJ/t <sub>i</sub>	Specific fuel consumption for the production of virgin material type <i>i</i>	15	Default value from section 5.2.1 of applied methodology AMS-III.AJ. Version 09.0
6.	$EF_{BL,FF,CO2}$	tCO <sub>2</sub> /GJ	CO <sub>2</sub> emission factor of the baseline fossil fuel	0.0543 (for natural gas)	Choice of IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the

					2006 IPCC Guidelines on National GHG Inventories <sup>4</sup> which is conservative.
7.	<b>EF<sub>FF,import,CO2</sub></b>	tCO <sub>2</sub> /GJ	CO <sub>2</sub> emission factor of the baseline fossil fuel	0.0543 (for natural gas)	Choice of IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories <sup>5</sup> which is conservative.
8.	<b>EF<sub>grid,OM,y</sub></b>	tCO <sub>2</sub> /MWh	Operating margin emission factor for the grid (CCPG) in year y	0.7722	The most recent available data from "2021 Baseline Emission Factors for Regional Power Grids in China" published by NCSC
9.	<b>EF<sub>grid,BM,y</sub></b>	tCO <sub>2</sub> /MWh	Build margin emission factor for the grid (CCPG) in year y	0.1880	The most recent available data from "2021 Baseline Emission Factors for Regional Power Grids in China" published by NCSC
10.	<b>ω<sub>OM</sub></b>	/	Weighting of operating margin emissions factor	0.5	Tool to calculate the emission factor for an electricity system" Version 07.0
11.	<b>ω<sub>BM</sub></b>	/	Weighting of build margin emissions factor	0.5	Tool to calculate the emission factor for an electricity system" Version 07.0
12.	<b>EF<sub>grid,CM,y</sub></b> (EF <sub>BL,el,y</sub> / EF <sub>el,PJ,y</sub> )	tCO <sub>2</sub> /MWh	Combined margin emission factor for the grid (CCPG) in year y	0.4801	Calculated as per "Tool to calculate the emission factor for an electricity system" Version 07.0" based on the most recent available data from "2021 Baseline Emission Factors for Regional Power Grids in China" published by NCSC
13.	<b>EF<sub>el,imported</sub></b>	tCO <sub>2</sub> /MWh	Emission factor for the baseline electricity consumption for the portion of	0.24	Default value from applied methodology AMS-III.AJ. Version 09.0

<sup>4</sup> The Effective CO<sub>2</sub> emission factor for natural gas was not updated in the 2019 refinement to the 2006 IPCC guidelines, thus, table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories still serves as the latest source.

<sup>5</sup> The Effective CO<sub>2</sub> emission factor for natural gas was not updated in the 2019 refinement to the 2006 IPCC guidelines, thus, table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories still serves as the latest source.

			plastic that is imported		
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The following data and parameters will be monitored in accordance with the applied methodology:  
AMS-III.AJ. Version 09.0:

No.	Parameter	Unit	Description	Monitoring procedure
1.	$Q_{i,y}$	t/y	Quantity of PET waste collected at the recycling facility in year y	<p>This parameter is directly monitored by truck scale installed at the Project site. The quantity of PET waste is recorded at the time of sending each consignment from recycling facility to processing / manufacturing facility. The records are crosschecked with waste PET purchase invoices or other payment documents. Through checking the contract/105/ between Xingning Tokzin Yinghui Resources Co., Ltd. and Guangdong Xingning City quality technical supervision and testing institute, it is confirmed that PP has appointed the third party Guangdong Xingning City quality technical supervision and testing institute to conduct the calibration of truck scale. The qualification of the calibration entity has been confirmed through checking the Certificate of Metrological Authorization /106/issued by Guangdong Xingning City quality and technical supervision bureau. As per the calibration contract/105/, the truck scale is calibrated checked and maintained as per relevant standard: Verification regulation for digital indicating weighing instruments (JJG539-2016)/39/ annually and the calibration entity will provide the calibration records to PP. Through checking the monitoring plan and interview with PP, it is confirmed that PP will archive and supply the records to VVB during verification.</p>
2.	$EC_{P,y}$	MWh	Electricity consumed by the recycling facility in year y	<p>This parameter is continuously monitored by electricity meter installed at the project site. The meter readings are recorded monthly. The reading records are cross-checked with the electricity purchase receipts issued by</p>

				<p>grid company. Through checking the Power supply contract /107/ signed between PP and the grid company, it is confirmed that the calibration of electricity meter is under the control of the grid company. The electricity meter will be calibrated every five year by the grid company as per relevant standard: Technical Administrative Code of Electric Energy Metering (DL/T 448-2016)/38/ and the grid company will supply the calibration records to PP. Through checking the monitoring plan and interview with PP, it is confirmed that PP will archive and supply the records to VVB during verification.</p>
3.	$FC_{gas,PI,y}$	$Nm^3$	<p>Natural gas consumption of the recycling facility in year <math>y</math></p>	<p>This parameter is continuously monitored by flow meter installed at the project site. The meter readings are recorded regularly. The reading records are cross-checked with the natural gas purchase receipts issued by gas company. Through checking the contract/105/ between Xingning Tokzin Yinghui Resources Co., Ltd. and Guangdong Xingning City quality technical supervision and testing institute, it is confirmed that PP has appointed the third party Guangdong Xingning City quality technical supervision and testing institute to conduct the calibration of flow meter. The qualification of the calibration entity has been confirmed through checking the Certificate of Metrological Authorization /106/issued by Guangdong Xingning City quality and technical supervision bureau. As per the calibration contract/105/, the flow meter will be calibrated as per relevant standard: Verification regulation of electromagnetic flow meter (JJG1033-2007)/40/ annually and the calibration</p>

				entity will provide the calibration records to PP. Through checking the monitoring plan and interview with PP, it is confirmed that PP will archive and supply the records to VVB during verification.
4.	$FC_{\text{diesel,PJ,y}}$	t	Diesel consumption of the recycling facility in year y	As assessed above, the diesel is used for transport by forklifts of the recycling facility which is not mandatory by the applied methodology. Since the diesel is purchased from filling stations and no metering equipment is available in the recycling facility, the amount of diesel consumption will be monitored through the diesel purchase receipts.
5.	$W_{i,\text{in-country,y}}$	%	Percentage of plastics produced in the host party out of total plastic consumed in year y	This parameter will be monitored annually through the Sectoral reports, peer-reviewed studies or national/sectoral statistics available.
6.	$W_{i,\text{imported,y}}$	%	Percentage of imported plastics out of total plastic consumed in year y	This parameter will be monitored annually through the Sectoral reports, peer-reviewed studies or national/sectoral statistics available.
7.	<b>Intrinsic Viscosity</b>	decilitres/gram (dL/g)	Intrinsic Viscosity of PET	The intrinsic viscosity of PET from each batch of Polymerisation will be tested by a qualified third party following the ASTM D 4603 “Standard test method for determining Viscosity of Polyethylene Terephthalate” and the testing report will be archived for at least 2 years after the final crediting period.
8.	$NCV_{\text{gas,y}}$	$\text{kJ/Nm}^3$	Net calorific value of natural gas consumed in the recycling facility in year y	This parameter will be updated according to if future version of China Energy Statistical Yearbook updates the value of net calorific value (NCV) of natural gas.

9.	$NCV_{diesel,y}$	MJ/t	Net calorific value of diesel consumed in the recycling facility in year y	This parameter will be updated according to if future version of China Energy Statistical Yearbook value of net calorific value (NCV) of diesel.
10.	$EF_{gas,CO_2,y}$	tCO <sub>2</sub> /GJ	CO <sub>2</sub> emission factor of the natural gas consumed at the recycling facility in year y.	The parameter will be updated according to any future revision of the IPCC Guidelines.
11.	$EF_{diesel,CO_2,y}$	tCO <sub>2</sub> /GJ	CO <sub>2</sub> emission factor of the diesel consumed at the recycling facility in year y.	The parameter will be updated according to any future revision of the IPCC Guidelines.

Based on the on-site visit and interviewed with staff from Xingning Tokzin Yinghui Resources Co., Ltd., The assessment team confirmed that monitoring parameter has been correctly described in the PD (version 04 dated 18/07/2024) and in compliance with the applied methodology AMS-III.AJ. Version 09.0 and VCS rules.

Furthermore, by checking the VCS project management and monitoring manual /27/, it is confirmed that the requirement in respect to training and maintenance procedures and emergency procedures for monitoring system have been clearly defined in the manual/27/. Through checking the training records /28/ and interview with monitoring staff during site visit, it is verified that the monitoring staff receive training regarding the monitoring system annually to make sure their capability to carry out the monitoring work and to deal with any emergencies if happen. Moreover, the Daily operation and maintenance records /26/ have been checked by the assessment team and it is confirmed that regular maintenance of the equipment is in place and no emergency has happened since the operation of the project.

*CL03 and CAR06 were raised here and have been successfully closed, details please refer to Appendix 4.*

### 3.4 Non-Permanence Risk Analysis

Not applicable for the project activity.

## 4 VALIDATION OPINION

CTI Certification Co., Ltd (CTI) has performed the validation of the project activity "Xingning Tokzin PET Recycling Project" in China (VCS Project ID: 4703).

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

In the course of the validation, 3 Clarification Requests (CLs), 6 Corrective Action Requests (CARs), no Forwarded Action Requests (FARs) was raised.

The review of the project design documentation and additional documents related to baseline and monitoring methodology and subsequent background investigation have provided the CTI with sufficient evidence to validate the fulfilment of the stated criteria. In detail the conclusions can be summarized as follows:

- the baseline scenario is correctly defined as per the applied methodology and relate tools;
- the project is additional;
- all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature;
- a reasonable level of assurance has been applied;
- the monitoring plan in the validated PD is as per the applied methodology AMS-III.AJ., Version 09.0;
- the project has been implemented and operated as per the PD;
- the project complies with the validation criteria for projects set out in VCS Standard Version 4.5;
- the project is likely to achieve the estimated ERRs;
- The calculation of the ex-ante emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 35,890 tCO<sub>2</sub>e are most likely to be achieved within the first 7-year renewable crediting period started from 06/04/2022.

It is CTI's responsibility to provide an independent validation statement on the Project's compliance with the VCS Program requirements as set out in the VCS Program Rules. The conclusions of this report show that the project, as it was described in the project description contained in the PD, is in line with all criteria applicable for the validation against the VCS standard version 4.5 without any qualifications or limitations.

The validated ex-ante emissions reductions for the first crediting period are as follows:

Year	Estimated GHG emission reductions or removals (tCO <sub>2</sub> e)
Year 2022 (06/04/2022 – 31/12/2022)	26,549*
Year 2023	35,890
Year 2024	35,890
Year 2025	35,890
Year 2026	35,890
Year 2027	35,890
Year 2028	35,890
Year 2029 (01/01/2029 - 05/04/2029)	9,341**
<b>Total estimated ERs</b>	<b>251,230</b>
<b>Total number of crediting years</b>	<b>7</b>
<b>Average annual ERs</b>	<b>35,890</b>

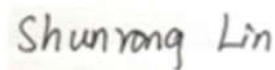
note:

\*The estimated annual ERs are 35,890 tCO<sub>2</sub>e, the period 06/04/2022 – 31/12/2022 accounts for 270days, thus the estimated ERs during 06/04/2022 – 31/12/2022 are calculated as  $35,890/365*270 = 26,549\text{tCO}_2\text{e}$ ;

\*\*The estimated annual ERs are 35,890 tCO<sub>2</sub>e, the period 01/01/2029 - 05/04/2029 accounting for 95days, thus the estimated ERs during 01/01/2029 - 05/04/2029 are calculated as  $35,890/365*95 = 9,341\text{tCO}_2\text{e}$ .



Mr. Feng Tian  
Team Leader  
23-July-2024



Ms. Lin Shunrong  
Technical Reviewer  
23-July-2024

# APPENDIX 1: ABBREVIATIONS

Abbreviations	Full texts
AFOLU	Agriculture, Forestry, and Other Land Use
BM	Build Margin
CDM	Clean Development Mechanism
CME	Coordinating/managing entity
CER	Certified Emission Reduction
CM	Combined Margin
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CTI	CTI Certification Co., Ltd.
DNA	Designated National Authority
EB	Executive Board
GHG	Greenhouse gas(es)
GS	Gold Standard
EIA	Environmental Impact Assessment
ER	Emission Reduction
ETS	Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NCSC	National Center for Climate Change Strategy and International Cooperation
PA	Project Activity
PD	Project Description

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PET	Polyethylene terephthalate
PP	Project Proponent
QA/QC	Quality Assurance / Quality Control
SCPG	South China Power Grid
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit
VVB	Validation/Verification Body

# APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

## CERTIFICATE OF APPOINTMENT

Mr. Tian FENG


Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification					
GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
√	√	√	√	√	-

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 8: Mining/mineral production	TA 8.1: Mining/mineral production
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:



Shunrong LIN

Technical Competent Manager

Shenzhen, 31/10/2023

## CERTIFICATE OF APPOINTMENT

Ms. Shunrong LIN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	✓	✓	✓	✓	✓	✓

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 3: Energy demand	TA 3.1: Energy demand
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation
SS 15: Agriculture	TA 15.1: Agriculture

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu LIN



Technical Competent Manager

Shenzhen, 25/10/2022

## APPENDIX 3: REFERENCE LIST

No.	Reference
/1/	Project Description (version 02 dated 17/10/2023) listing for global stakeholder consultation Project Description (version 03 dated 24/02/2024), (version 04 dated 18/07/2024)
/2/	ER calculation spreadsheet for ex-ante estimation, version 02 dated 24/02/2024, version 03 dated 17/07/2024
/3/	IRR calculation spreadsheet, version 02 dated 24/02/2024
/4/	Business License of Xingning Tokzin Yinghui Resources Co., Ltd.
/5/	Business License of Baineng New Energy (Shenzhen) Co., Ltd.
/6/	Meizhou Zhengming Construction Supervision Co., Ltd.: Feasibility Study Report of Xingning Tokzin PET Recycling Project, dated 08/2019
/7/	Xingning Development and Reform Bureau: Project Approval dated 18/12/2019
/8/	Guangdong Senhai Environmental Protection Equipment Engineering Co., Ltd.: Environmental Impact Assessment (EIA) dated 03/2020
/9/	Xingning City Environmental Protection Bureau: EIA Approval, dated 22/05/2020
/10/	Environmental Impact Assessment Acceptance Report
/11/	Xingning Municipal Housing and Urban-Rural Development Bureau: Construction permit dated 21/09/2020
/12/	Dongguan Shijie (Xingning) Industrial Transfer Area Management Committee: statement on no demolition or land acquisition
/13/	The Board meeting minutes on VCS development decision dated 03/09/2019
/14/	Declaration of non-participation in any emission trading or other binding limit program or mechanism and no desire to or receiving of another form of GHG-related environmental credit, including renewable energy certificates issued by the Project Proponents
/15/	Emission Reduction Abandonment Statement issued by upstream supplier and downstream processing facility
/16/	Xingning Tokzin Yinghui Resources Co., Ltd.: Public statement on <u>Supply Chain (Scope 3) Emissions</u> : <a href="http://www.gdintop.com/news/19675.html">http://www.gdintop.com/news/19675.html</a>
/17/	Equipment purchase agreements, construction contracts
/18/	Waste collection service contract
/19/	Construction acceptance report of the project

/20/	Financial Audit Report completed by the third-party accounting firm
/21/	Xingning Tokzin Yinghui Resources Co., Ltd.: Safety production regulations
/22/	Xingning Tokzin Yinghui Resources Co., Ltd.: Employee handbook
/23/	Xingning Tokzin Yinghui Resources Co., Ltd.: Layout of the project site
/24/	Xingning Tokzin Yinghui Resources Co., Ltd.: Stakeholder meeting notice, meeting records and filled questionnaires, ongoing stakeholder consultation mechanism including the Grievance and redress procedure
/25/	Xingning Tokzin Yinghui Resources Co., Ltd.: Statement on the construction start date and operation start date
/26/	Xingning Tokzin Yinghui Resources Co., Ltd.: Daily operation and maintenance records
/27/	Xingning Tokzin Yinghui Resources Co., Ltd.: VCS project management and monitoring manual
/28/	Xingning Tokzin Yinghui Resources Co., Ltd.: Training records
/29/	Xingning Tokzin Yinghui Resources Co., Ltd.: PET product sales record
/30/	Xingning Tokzin Yinghui Resources Co., Ltd.: Waste PET purchase records
/31/	Diesel purchase receipts
/32/	Electricity invoices
/33/	Natural gas invoices
/34/	Invoices of Water consumption
/35/	Reclaimed Material Supplier Agreement signed between PP and the supplier
/36/	Nameplate of the equipment
/37/	Guangzhou CAS Test Technical Service Co., Ltd.: (comparison between recycled PET flakes and traditional PET flakes)
/38/	Technical Administrative Code of Electric Energy Metering (DL/T 448-2016)
/39/	Verification regulation for digital indicating weighing instruments (JJG539-2016)
/40/	Verification regulation of electromagnetic flow meter (JJG1033-2007)
/41/	Xingning Tokzin Yinghui Resources Co., Ltd.: Staff roaster, the payroll and social welfare slips of employees
/42/	Xingning Tokzin Yinghui Resources Co., Ltd.: Labor contracts
/43/	State Statistical Bureau: Average annual wage of employees in private sector of China in 2019

/44/	National Center for Climate Change Strategy and International Cooperation: 2021 Baseline Emission Factors for Regional Power Grids in China dated 17/11/2023
/45/	China Electric Power Yearbook (2016-2020)
/46/	China Energy Statistical Yearbook (2018~2020)
/47/	Analysis of China's Bottle Grade PET Production Capacity, Export, and Demand Status in 2021 <a href="https://xueqiu.com/1973934190/222035951">https://xueqiu.com/1973934190/222035951</a>
/48/	China's Bottle Grade PET export and import analysis in 2021 <a href="https://m.100ppi.com/focus/detail-forecast-166188.html">https://m.100ppi.com/focus/detail-forecast-166188.html</a>
/49/	Water price for industrial use in Guangdong Province
/50/	Electricity price for general industrial use in Guangdong Province
/51/	<p>Laws and regulations</p> <p>Constitution of the People's Republic of China</p> <p>Law on the Protection of the Rights and Interests of Women and Children</p> <p>Labour Law of the People's Republic of China</p> <p>Law of the People's Republic of China on the Protection of Minors</p> <p>Environmental Protection Law of the People's Republic of China</p> <p>Clean Production Promotion Law of the People's Republic of China</p> <p>Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution</p> <p>Management Measures for Recycling of Renewable Resources</p> <p>Income Tax Law of the People's Republic of China for Enterprises issued by the Chairman of the People's Republic of China on 16/03/2007</p> <p>Enforcement Regulation of Income Tax Law of the People's Republic of China for Enterprises</p> <p>Rules for the Provisional Regulations on Enterprise Income Tax of the People's Republic of China</p> <p>Announcement on deepening the relevant policies of VAT reform</p> <p>Notice on adjusting and improving value-added tax policies on products and Labor services for comprehensive Utilization of resources</p> <p>Notice on reduce VAT of small VAT taxpayer by phases (No. 691) issued on 19/11/2017</p> <p>Tax Law of the People's Republic of China on Urban Maintenance and Construction</p> <p>14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035</p> <p>Action Plan for Carbon Dioxide Peaking Before 2030 published by the State Council on 24/10/2021</p> <p>China's National Plan on Implementation of the 2030 Agenda for Sustainable Development</p> <p>Decision of The State Council on amending the Interim Provisions on levying Additional Education Fees</p>

	"Notice on Strengthening Enterprise Greenhouse Gas Emission Report Management" issued by National Development and Reform Committee of P.R.China on 28/03/2021
/52/	Emission Limits of Atmospheric Pollutants in Guangdong Province (DB44/27-2001)
/53/	Emission Standard of Air Pollutants for Boiler (GB13271-2014)
/54/	Emission Standard of Cooking Fume (GB 18483-2001)
/55/	Water Quality Standard for Industrial Uses (GB/T19923-2005)
/56/	Integrated Wastewater Discharge Standard (GB 8978-1996)
/57/	Emission Standard of environment noise for boundary of construction site (GB12523-2011)
/58/	Emission standard for environmental noise at boundary of industrial enterprises> (GB 12348-2008)
/59/	Standards for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes (GB18599-2001)
/60/	Management Measures for Urban Domestic Waste issued by Ministry of Urban and Rural Housing and Urban Rural Development
/61/	Standard for Pollution Control on Hazardous Waste Storage (GB 18597-2001)
/62/	Code for design of machinery building architecture GB 50681-2011
/63/	Hygienic standards for the design of industrial enterprises GBZ1-2002
/64/	General Principles for Safety and Health Design of Production Equipment GB5083-1999
/65/	Code for fire prevention design of buildings GB50016-2014
/66/	Interim Regulations on the Management of Carbon Emission Trading, issued by the State Council, dated 25/01/2024
/67/	List of key emission enterprises in the national carbon emissions transaction quota management in 2022 in Guangdong Province issued by Department of Ecology and Environment of Guangdong Province
/68/	Classified Management Catalogue of Environmental Impact Assessment of Construction Projects
/69/	Technical specification for recycling of waste plastics (GB/T 37821-2019)
/70/	Standard for Recycled polyethylene terephthalate (PET) flakes (FZ/T 51008-2014)
/71/	National Development and Reform Commission and the Ministry of Housing and Urban-Rural Development: Notice on Adjusting the Financial Benchmark Rate of Construction Projects in some Industries

/72/	Methods and Parameters of Economic Evaluation of Construction Projects
/73/	Compilation method of municipal engineering investment estimation issued by Ministry of Construction of China
/74/	Conditional conditions for comprehensive use of waste plastics
/75/	Xingning Tokzin Yinghui Resources Co., Ltd.: Statement on the Investment and Financial Status
/76/	Xingning Tokzin Yinghui Resources Co., Ltd.: Statement on the operational and other cost during 2022 and 2023
/77/	Ministry of Industry and Information Technology of P.R.C: Conditional conditions for comprehensive use of waste plastics
/78/	National Bureau of Statistics: Indices of urban employees' wages from 2019 to 2021
/79/	Price of waste PET and reproduced PET products <a href="https://www.recycle366.com/Topics/suliao_pet_1.html">https://www.recycle366.com/Topics/suliao_pet_1.html</a> <a href="https://www.feipinzhan.com/quote/list-103.html">https://www.feipinzhan.com/quote/list-103.html</a>
/80/	Tax Code Query Tool: <a href="https://www.acc5.com/tools/tax_guid/">https://www.acc5.com/tools/tax_guid/</a>
/81/	UN Comtrade (International Trade Statistics Database): <a href="https://comtrade.un.org/">https://comtrade.un.org/</a>
/82/	Plastic import and export customs statistics <a href="http://www.buyplas.com/">http://www.buyplas.com/</a>
/83/	Analysis of supply and demand status of China's polyester (PET) industry market in 2021 <a href="https://www.163.com/dy/article/GKTS8D4R051480KF.html">https://www.163.com/dy/article/GKTS8D4R051480KF.html</a>
/84/	China planning press: Financial Evaluation Practice and Analysis of Difficult Problems-Feasibility study and evaluation of Bank loan projects
/85/	Ministry of Finance of P.R.C: Accounting Standard for Business Enterprises: Basic Standard
/86/	International Energy Agency (IEA 2007): Tracking Industrial Energy Efficiency and CO <sub>2</sub> emissions
/87/	Introduction of Dongguan Shijie (Xingning) Industrial Transfer Area, <a href="https://upimg.baike.so.com/doc/7533132-7807225.html">https://upimg.baike.so.com/doc/7533132-7807225.html</a>
/88/	SAYGIN, D; PATEL, M.K; WORRELL, B; TAM, C; GIELEN, D.J. "Potential of best practice technology to improve energy efficiency in the global chemical and petrochemical sector"; 2011. <a href="https://www.sciencedirect.com/science/article/abs/pii/S0360544211003446?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0360544211003446?via%3Dihub</a>
/89/	VCS Standard version 4.5
/90/	VCS Program Guide version 4.4
/91/	VCS Program Definitions, version 4.4

/92/	VCS Validation and Verification Manual version 3.2
/93/	Approved methodology AMS-III.AJ.: Recovery and recycling of materials from solid wastes, Version 09.0
/94/	VMR0007 Revision to AMS-III.AJ.: Recovery and Recycling of Materials from Solid Wastes, v1.0
/95/	TOOL03: Tool to calculate project or leakage CO <sub>2</sub> emissions from fossil fuel combustion, Version 3
/96/	TOOL07: Tool to calculate the emission factor for an electricity system, version 07.0
/97/	TOOL21: Demonstration of additionality of small-scale project activities, version 13.1
/98/	TOOL32: Positive lists of technologies, version 04.0
/99/	UNFCCC: Applicability of sectoral scopes, version 01.0
/100/	UN 17 SDGs: <a href="https://www.un.org/sustainabledevelopment/sustainable-development-goals/">https://www.un.org/sustainabledevelopment/sustainable-development-goals/</a> UNFCCC: <a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a> VCS: <a href="http://verra.org">http://verra.org</a> GS: <a href="https://www.goldstandard.org">https://www.goldstandard.org</a> CCER: <a href="http://cdm.ccchina.org.cn/ccer.aspx">http://cdm.ccchina.org.cn/ccer.aspx</a> National Enterprise Credit Information Publicity System: <a href="https://www.gsxt.gov.cn/index.html">https://www.gsxt.gov.cn/index.html</a>
/101/	Official website of Baineng New Energy (Shenzhen) Co., Ltd. <a href="https://www.cypress-newenergy.com/">https://www.cypress-newenergy.com/</a>
/102/	Baidu Encyclopaedia: introduction of Baineng New Energy (Shenzhen) Co., Ltd. <a href="https://baike.baidu.com/item/%E6%9F%8F%E8%83%BD%E6%96%B0%E8%83%BD%E6%BA%90%EF%BC%88%E6%B7%B1%E5%9C%B3%EF%BC%89%E6%9C%89%E9%99%90%E5%85%AC%E5%8F%B8/63456258?fr=ge_ala">https://baike.baidu.com/item/%E6%9F%8F%E8%83%BD%E6%96%B0%E8%83%BD%E6%BA%90%EF%BC%88%E6%B7%B1%E5%9C%B3%EF%BC%89%E6%9C%89%E9%99%90%E5%85%AC%E5%8F%B8/63456258?fr=ge_ala</a>
/103/	CMS Expert Guide to plastics and packaging laws in China: <a href="https://cms.law/en/int/expert-guides/plastics-and-packaging-laws/china">https://cms.law/en/int/expert-guides/plastics-and-packaging-laws/china</a>
/104/	Report on the Current Situation Investigation of China's PET Raw Materials and Prospect Development Trend Prediction of 2019-2025
/105/	Xingning Tokzin Yinghui Resources Co., Ltd. and Guangdong Xingning City quality technical supervision and testing institute: Contract for calibration of truck scale and flow meter
/106/	Guangdong Xingning City quality and technical supervision bureau: Certificate of Metrological Authorization of Guangdong Xingning City quality technical supervision and testing institute

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/107/	Xingning Tokzin Yinghui Resources Co., Ltd. and Power grid company: Power supply contract
/108/	Carbon credit capital: Carbon Market Value Report 2019 <a href="https://carboncreditcapital.com/carbon_market_value_report_2019/">https://carboncreditcapital.com/carbon_market_value_report_2019/</a>
/109/	Annual Review of Refinitiv Carbon Market Report: Carbon Market Value Reaches a Historical High in 2019 <a href="http://www.tanpaifang.com/tanjiaoyi/2020/0616/71557.html">http://www.tanpaifang.com/tanjiaoyi/2020/0616/71557.html</a>

# APPENDIX 4: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS, FORWARD ACTION REQUESTS (CAR/CL/FAR)

## CLARIFICATION REQUESTS

CL ID	01	Section No.	1.1	Date:	20/02/2023
<b>Description of CL</b>					
Section 1.1 of the PD does not provide enough detail on the technologies being used for the project, project description needs to incorporate a sentence summarizing the technologies of the project in section 1.1. Thus, CL is raised for further clarification.					
<b>Project proponent response</b>				<b>Date:</b> 24/02/2024	
The summary description of the technologies of the project has been added.					
<b>Documentation provided by project proponent</b>					
Update PD.					
<b>VVB assessment</b>				<b>Date:</b> 27/02/2024	
CTI confirmed that PP has updated section 1.1 of the PD to incorporate a sentence summarizing the technologies of the project, Thus, this CL is closed.					

CL ID	02	Section No.	1.11	Date:	20/02/2023
<b>Description of CL</b>					
As per PD template, version 4.2, please: Include in the description information about the age and average lifetime of the equipment based on manufacturer's specifications and industry standards, and existing and forecast installed capacities, load factors and efficiencies.					
<b>Project proponent response</b>				<b>Date:</b> 24/02/2024	
Main equipment installed for the Project includes: automatic sorting machine, wind sorting machine, crushing machine, friction cleaning machine, hot wash machine and dehydrator and it is shown in Table 1.3 of the updated PD.					
<b>Documentation provided by project proponent</b>					

Updated PD, FSR /6/, Equipment purchase agreements /17/

**VVB assessment**

**Date:** 27/02/2024

The updated PD is checked, it is confirmed that the information for main equipment as well as the production capacity have been provided and is confirmed to be correct by checking against the equipment purchase agreements/17/, FSR /6/ and site inspection. Thus, this CL is closed.

CL ID	03	Section No.	5.2	Date: 30/12/2022
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**Description of CL**

For the monitoring equipment of parameters  $Q_{i,y}$ ,  $EC_{PJ,y}$  and  $FC_{gas,PJ,y}$ , the details of the equipment including the model/type, serial number, accuracy class are not specified, further clarification is needed.

**Project proponent response**

**Date:** 24/02/2024

The information including model/type, serial number, accuracy class of the monitoring equipment for parameters  $Q_{i,y}$ ,  $EC_{PJ,y}$  and  $FC_{gas,PJ,y}$  has been provided.

**Documentation provided by project proponent**

Updated PD, Equipment purchase agreements /17/

**VVB assessment**

**Date:** 27/02/2024

By checking the updated PD, it is confirmed that PP has supplemented the information including model/type, serial number, accuracy class of the monitoring equipment for parameters  $Q_{i,y}$ ,  $EC_{PJ,y}$  and  $FC_{gas,PJ,y}$  and is confirmed to be correct by checking the Equipment purchase agreements /17/ and via onsite inspection, physically inspecting the monitoring equipment and interview with operational staff during site visit. Thus, this CL is closed.

**CORRECTIVE ACTION REQUESTS**

CAR ID	01	Section No.	1.1	Date: 20/02/2023
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**Description of CAR**

Section 1.1 of the PD does not include the audit history table as per the PD template v4.2, revision is requested.

**Project proponent response**

**Date:** 24/02/2024

The audit history table has been added.

**Documentation provided by project proponent**

Updated PD

<b>VWB assessment</b>	<b>Date: 27/02/2024</b>
The updated PD is checked and it is confirmed that the audit history table has been provided as per the PD template v4.2, thus this CAR is closed.	

CAR ID	02	Section No.	2.1	Date: 20/02/2023
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<b>Description of CAR</b>
The demonstration of No Net Harm is not in line with the requirement of VCS Standard v4.5 Sections 3.19.2, 3.19.4 – 3.19.10, revision is requested.

<b>Project proponent response</b>	<b>Date: 24/02/2024</b>
The demonstration of No Net Harm has been revised according to the VCS Standard v4.5, Sections 3.19.2, 3.19.4 – 3.19.10.	

<b>Documentation provided by project proponent</b>
Updated PD

<b>VWB assessment</b>	<b>Date: 27/02/2024</b>
The updated PD is checked and it is confirmed that the demonstration of No Net Harm is now in line with the requirement of VCS Standard v4.5 Sections 3.19.2, 3.19.4 – 3.19.10, detailed assessment please refer to section 3.2.1 of this validation report. Thus, this CAR is closed.	

CAR ID	03	Section No.	3.5	Date: 20/02/2023
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<b>Description of CAR</b>
Section 3.5 of the PD does not demonstrated the regulatory surplus as per the requirement of VCS Standard v4.5, section 3.14.1, revision is requested.

<b>Project proponent response</b>	<b>Date: 24/02/2024</b>
The relevant laws and regulations regarding plastic recycling in China are as follows:	

- Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution, in effect since September 2020, which **encourages** recycling of waste materials.
- Environmental Protection Law of the People's Republic of China which **encourages** the recycling waste materials.
- Catalogue for the Guidance of Industrial Structure Adjustment, which lists projects in three categories: encouragement category, restriction category and elimination category. The Project belongs to the **encouragement** category of the Catalogue.
- “Technical specification for recycling of waste plastics”, which stipulates technical requirements for recycling of waste plastics and it does not mandatory the recycling of waste plastics.

Despite an increasing attention China has been paying to sustainable development, none of the laws, statutes, or other regulatory framework in effect mandate PET recycling; encouragement towards reusable / recyclable packaging has not generated enough effects. Therefore, the regulatory surplus has been achieved.

#### Documentation provided by project proponent

Updated PD, relevant laws and regulations /51//69//103/regarding PET recycling industry

#### VVB assessment

**Date:** 27/02/2024

The updated PD is checked and it is confirmed that the project proponent has stated in the section 3.5 updated PD that the project is not mandated by any law, statute, or other regulatory framework in the host country i.e., in China. CTI has checked the relevant laws and regulations /51//69/ regarding PET recycling industry:

- Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution,
- Environmental Protection Law of the People's Republic of China;
- Catalogue for the Guidance of Industrial Structure Adjustment;
- Clean Production Promotion Law of the People's Republic of China;
- Technical specification for recycling of waste plastics

and the CMS Expert Guide to plastics and packaging laws in China /103/, it is confirmed that although Chinese government has been encouraging the recycling of plastics in recent years, none of the laws nor regulations mandated the application of PET recycling activities. Therefore, the regulatory surplus of the proposed project has been sufficiently demonstrated. Thus, this CAR is closed.

CAR ID	04	Section No.	4.1, ER sheet	Date: 20/02/2023
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#### Description of CAR

The equation for the baseline emission calculation does not incorporate the Discount factor for upstream displacement (DF) as per VMR0007 Revision to AMS-III.AJ.: Recovery and Recycling of Materials from Solid Wastes, v1.0. Thus, this CAR was raised for revision.

#### Project proponent response

**Date:** 24/02/2024

The equation the baseline emission calculation in the PD and ER spreadsheet has been corrected in line with VMR0007 Revision to AMS-III.AJ.: Recovery and Recycling of Materials from Solid Wastes, v1.0. The Discount factor for upstream displacement (DF) has been adopted.

#### Documentation provided by project proponent

Updated PD, updated ER calculation spreadsheet/2/

#### VVB assessment

**Date:** 27/02/2024

The updated PD and ER calculation spreadsheet/2/ are checked, it is confirmed that the equation for the baseline emission calculation in the PD and ER spreadsheet has been corrected and is consistent with VMR0007 Revision to AMS-III.AJ.: Recovery and Recycling of Materials from Solid Wastes, v1.0.

The Discount factor for upstream displacement (DF) has been correctly adopted. Thus, this CAR is closed.

CAR ID	05	Section No.	4.1, 4.2, ER sheet	Date:	20/02/2023
<b>Description of CAR</b>					
The latest “2021 Baseline Emission Factors for Regional Power Grids in China” has been published by the China DNA after the PD was published for public comment, the calculation of the grid emission factor needs to be revised accordingly.					
<b>Project proponent response</b>					<b>Date:</b> 24/02/2024
The calculation of the grid emission factor has been updated according to the latest “2021 Baseline Emission Factors for Regional Power Grids in China”.					
<b>Documentation provided by project proponent</b>					
Updated PD, updated ER calculation spreadsheet/2/, “2021 Baseline Emission Factors for Regional Power Grids in China”/44/					
<b>VWB assessment</b>					<b>Date:</b> 27/02/2024
The updated PD and ER calculation spreadsheet/2/ are checked, it is confirmed that the calculation of the grid emission factor has been updated and is in line with the latest “2021 Baseline Emission Factors for Regional Power Grids in China”/44/. Thus, this CAR is closed.					

CAR ID	06	Section No.	5.2	Date:	20/02/2023
<b>Description of CAR</b>					
The parameter Intrinsic Viscosity to be monitored is missing, revision is requested.					
<b>Project proponent response</b>					<b>Date:</b> 24/02/2024
The parameter Intrinsic Viscosity has been added in the Data and Parameters Monitored.					
<b>Documentation provided by project proponent</b>					
Updated PD					
<b>VWB assessment</b>					<b>Date:</b> 27/02/2024
The updated PD is checked, it is confirmed that the parameter Intrinsic Viscosity to be monitored is supplemented. Thus, this CAR is closed.					

#### FORWARD action requests

FAR ID	N/A	Section no.	N/A	Date:	N/A
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<b>Description of FAR</b>	
N/A	
<b>Project proponent response</b>	<b>Date: N/A</b>
N/A	
<b>Documentation provided by project proponent</b>	
N/A	
<b>VVB assessment</b>	<b>Date: N/A</b>
N/A	