GROUPED COMMERCIAL ELECTRIC VEHICLES PROJECT OF INTELLIGENT LINK

Document Prepared by Search Co2(Shanghai) Environmental Science & Technology Co. Ltd

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1 PROJECT DETAILS

1.1 Summary Description of the Project

In China, the new energy vehicles used for logistical distribution in urban accounted for 8% of all new energy vehicles till 2020[1], and 3.521 million new energy vehicles were sold out in 2021, accounting for 13.4% market sales[2]. Due to problem like lack of supporting infrastructure, and high price of power batteries, the fuel vehicles were commonly used in commercial transportation services.

The grouped project is carried out by Zhejiang Green Intelligent Link Co., Ltd. (hereafter Green Intelligent Link or Intelligent Link), which is a platform supplying environmental transport capacity and smart vehicle networking, to provide rental services by commercial electric vehicles in China.

The initial project activity instances of the grouped project compromise truck project activity instance (including two commercial electric vehicle categories, light truck and mini truck) and van project activity instance (including two commercial electric vehicle categories, light van and minivan), include a total of 16,246 commercial electric vehicles. Project vehicles are owned by project proponent while rented by individuals or companies to carry goods. The whole project vehicles are estimated to be added up to 80,000 in 2024 and 150,000 in 2025 all around the project area. And it is estimated that in the crediting period from 2026 to 2031, no more project vehicles will be added into the project.

As an electric vehicle runs on electricity instead of fossil fuel (diesel or gasoline), the vehicle emits no exhaust from a tailpipe, which leads to lower GHG emissions per distance driven. The smart vehicle networking is achieved by Telematics-BOX (T-BOX) equipped in project vehicles, Intelligent Link Control Platform and smartphone application. Traveling mileage, operation status, location, state of charge and other information of project vehicles can be transferred from T-BOX to Intelligent Link Control Platform, where information are managed, and smartphone application, and manipulation codes can be transferred form smartphone application to T-BOX to control project vehicle.

The annual estimated emission reductions for the initial instances are 66,067 tCO_2e. The total emission reductions for the initial instances over the period of 10 years of crediting years are 660,669 tCO_2e.

[1] https://view.officeapps.live.com/op/view.aspx?src=http%3A%2F%2Fwww.gov.cn%2Fzhengce%2Fzhengceku%2F2021-11%2F18%2F5651656%2Ffiles%2F5ed9e2cdf80042fdb26535314dc62ffb.doc&wdOrigin=BROWSELINK

[2] http://lwzb.stats.gov.cn/pub/lwzb/tzgg/202205/W020220511403033109667.pdf

During the monitoring period from 08-October-2021 to 30-April-2023, a total of 25,105 tCO_2e GHG emissions were reduced. Therefore, the number of VCUs issued to the project during this Monitoring period is 25,105 tCO_2e.

The project contributes in a significant manner to sustainable development, which are below:

Project activity creates a need for electric vehicles maintenance staff;

Project reduces the per capita negative environmental impact of cities within project area, especially the air quality improvement due to reduced vehicle exhaust emission;

Project reduces GHG emission reduction due to implementation of electric vehicles and reducing fossil fuel-based vehicles.

The project is in the first monitoring period of the ten-year fixed crediting period.

Audit Type	Period	Program	VVB Name	Number of years
Validation	19-June-2023 to 20-June-2023 (Validation date)	VCS	CTI	N/A
1st Verification	08-Ocotober-2021 to 30-April-2023 (1st monitoring period)	VCS	CTI	1.58 years
Total	08-Ocotober-2021 to 30-April-2023	VCS	CTI	1.58 years

1.2 Sectoral Scope and Project Type

The project is categorized as sectoral scope 7 “Transport” under VERRA as justified in section 1.3, although the AMS-III.C. methodology is approved under sectoral scope of CDM.

The project is a grouped project.

1.3 Project Eligibility

According to the section 2.1 of VCS Standard version 4.4, this grouped project activity meets the first and fourth scopes of the scopes of the VCS program:

1) The seven Kyoto Protocol greenhouse gases.
2) Ozone-depleting substances (ODS).
3) Project activities supported by a methodology approved under the VCS Program through the methodology development and review process.
4) Project activities supported by a methodology approved under CDM, an approved GHG program.

5) Jurisdictional REDD+ programs and nested REDD+ projects as set out in the VCS Program document Jurisdictional and Nested REDD+ (JNR) Requirements.

Accordingly, this project produces carbon dioxide (CO2) emission reductions, which is one kind of the seven Kyoto Protocol GHGs. Besides, this project activity is supported by the CDM small-scale methodology: Emission reductions by electric and hybrid vehicles version 16.0, which is approved under a VCS approved GHG program – United Nations Clean Development Mechanism and it is not explicitly excluded under the terms of Verra approval.

According to the section 3.1 of VCS Standard version 4.4, this grouped project activity established a consistent and standardized certification process and meets certain high-level requirements as set out below.

1) This project meets all applicable rules and requirements set out under the VCS Program, and is guided by the principle set out in Section 2.2.1 of VCS Standard version 4.4.

2) The project applies CDM small-scale methodology: Emission reductions by electric and hybrid vehicles version 16.0, which is approved under a VCS approved GHG program – United Nations Clean Development Mechanism. This methodology is full applied, including the full application of any tools referred to by the methodology. This methodology is validated and available on the CDM website.*3*

3) The project applies the latest version of the applicable methodology in all cases.

4) The project and the implementation of project activities have not led to the violation of any applicable law, regardless of whether or not the law is enforced. For each project vehicle, operation permit was legally obtained according to the People's Republic of China road transport regulations[4]. And the discarded batteries will be disposed according to Interim Measures for the Management of New Energy Vehicle Power Battery Recycling Regulating[5].

5) The methodology applied in the project does not use any model.

6) In VCS Methodology Requirements version 4.3 section 3.4.6, third-party default factor or standard include economic and engineering analyses and models, peer-reviewed scientific literature, case studies, empirical data, and common practice data. The project use IPCC's default factor to ascertain GHG emission data.

[3] https://cdm.unfccc.int/methodologies/DB/HLOH5R7J6M96A23TFECTQ1BVIE24CK

[4]https://www.pds.gov.cn/upload/files/2022/2/12/%E4%B8%AD%E5%8D%8E%E4%BA%BA%E6%B0%91%E5%85%B1%E5%92%8C%E5%9B%BD%E9%81%93%E8%B7%AF%E8%BF%90%E8%BE%93%E6%9D%A1%E4%BE%8B.pdf

[5] http://www.gov.cn/xinwen/2018-02/26/content_5268875.htm

7) The project used a CDM methodology, AMS-III.C.: Emission reductions by electric and hybrid vehicles version 16.0, and developed as a VCS project. Relevant rules and requirements are not conflict with the rules and requirements of the VCS Program.

8) The methodology from CDM applied in the project conforms with any capacity limits (see the VCS Program document VCS Program Definitions for the definition of capacity limit) and any other relevant requirements set out with respect to the application of the methodology and/or tools referenced by the methodology under those programs. In this methodology applied in this project, AMS-III.C.: Emission reductions by electric and hybrid vehicles version 16.0, the capacity limit refers to emission reductions being less than or equal to 60 $ktCO_2$ equivalent annually. According to VCS Standard, version 4.4, section 3.6.9, no project activity instance of grouped project shall exceed such limit.

9) Once the new rules are published by VERRA, this project will also be updated in accordance with the new rules.

Therefore, this project is eligible to the scope of the VCS Program.

1.4 Project Design

This project has been designed to be a grouped project and is structured to allow the expansion of multiple project activities after project validation. The geographic area of the grouped project lies in the whole China except Hong Kong, Macao and Taiwan. Now the initial project activity instances are operated in the project geographic area except Qinghai province, Tibet Autonomous Region and Xinjiang Uygur Autonomous Region. The following project activity instances may be developed in the project geographic area whether initial project activity instances are implemented or not.

Eligibility Criteria

The grouped project has one project activity type and one geographic area, and there is one kind of baseline scenario and one demonstration of additionality. In view of grouped projects shall include one or more sets of eligibility criteria for the inclusion of new project activity instances. At least one set of eligibility criteria for the inclusion of new project activity instances shall be provided for each combination of project activity and geographic area specified in the project description. Where grouped projects include multiple baseline scenarios or demonstrations of additionality, such projects will require at least one set of eligibility criteria for each combination of baseline scenario and demonstration of additionality specified in the project description. There is one set of eligibility criteria for the inclusion of new project activity instances.

The eligibility criteria for new project instances to be introduced to grouped project comprise as follows:

Meet the applicability conditions set out in AMS-III.C. version 16.0 applied to the project.

Use the technologies or measures specified in the project description, specifically, the smart vehicle networking system consist of Telematics-BOX (T-BOX) equipped in project commercial electric vehicles, Intelligent Link Control Platform and smartphone application.

Apply the technologies or measures in the same manner specified in the project description, specifically, traveling mileage, operation status, location, state of charge and other information of project commercial electric vehicles are transferred from T-BOX to Intelligent Link Control Platform and managed.

Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area. Specifically, before new project activity instances introduced, vehicles used for logistics transportation are still commonly fossil fuel vehicles.

The new project activity instances shall face the same financial barrier as the initial instances in section 3.5.

Inclusion of New Project Activity Instances

Grouped projects provide for the inclusion of new project activity instances subsequent to the initial validation of the project. New project activity instances shall:

1) Occur within one of the designated geographic areas specified in the project description. In this grouped project, new project activity instance shall occur within China expect Hong Kong, Macao and Taiwan, which is specified in section 1.12.

2) Conform with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial conformance with multiple sets of eligibility criteria is insufficient. In this grouped project, new project activity instances shall conform with one set of eligibility criteria in section 1.4.

3) Be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate conformance with the applicable set of eligibility criteria and enable evidence gathering by the validation/verification body. In this grouped project, new project activity instances shall be included in the monitoring report with annual operation vehicles and distances of project vehicles monitored by the Intelligent Link Control Platform.

4) Be included in an updated project description, with updated project location information (as set out in VCS Standard version 4.4 Section 3.11), which shall be validated at the time of verification against the applicable set of eligibility criteria. In this grouped project, once the new project activity instances be included, the project description shall be updated, including project location information, and shall be validated at the time of verification against the applicable set of eligibility criteria.

5) Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the

date upon which the project activity instance began reducing or removing GHG emissions). In this grouped project, the project proponent shall provide project vehicles inventory to claim project ownership from the respective start date of each project activity instance.

6) Have a start date that is the same as or later than the grouped project start date. In this grouped project, project vehicles in new project activity instances are operated the same as or later than the grouped project start date, so the start date of new project activity instances are the same as or later than the grouped project start date.

7) Be eligible for crediting from the start date of the project activity instance through to the end of the project crediting period (only). In this grouped project, new project activity instances are eligible for crediting from the start date of the project activity instance through to the end of the project crediting period, that is 07-October-2031.

8) Only eligible for crediting from the start of the verification period in which they were added to the grouped project. In this grouped project, new project activity instances shall conform the complete set of eligibility criteria in section 1.4 and is eligible for crediting from the start of the verification period in which they were added to the grouped project.

9) Not be or have been enrolled in another VCS project. In this grouped project, new project activity instances shall not be or have been enrolled in another VCS project.

10) Adhere to the clustering and capacity limit requirements for multiple project activity instances set out in VCS Standard version 4.4 section 3.6.8 – 3.6.9. In this grouped project, the annual emission reductions of new project activity instances shall less than or equal to 60 $ktCO_2e$.

1.5 Project Proponent

Organization name	Zhejiang Green Intelligent Link Co., Ltd.
Contact person	Hao Chen
Title	Manager
Address	Floor 24th, Guotai Technology Building, No.479 Minhe Road, Xiaoshan District, Hangzhou City, Zhejiang Province, China
Telephone	+86-0571-83826613
Email	gil.co2@geely.com

Zhejiang Green Intelligent Link Co., Ltd. (hereafter Green Intelligent Link or Intelligent Link), headquartered in Hangzhou, Zhejiang Province, is an environmental transport-sharing platform invested by Zhejiang Geely Holding Group (commercial vehicles) and Transfer Zhilian. With the vehicle and intelligent logistics platform, and cored with scene customization, Green Intelligent

Link provides customers with full life cycle operation and management services of new energy vehicles such as car rental of Intelligent Link, car service of Intelligent Link and smart control of Intelligent Link.

1.6 Other Entities Involved in the Project

Organization name	Search Co2(Shanghai) Environmental Science & Technology Co. Ltd
Role in the project	Consultant
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Search Co2(Shanghai) Environmental Science & Technology Co. Ltd (hereinafter referred to as Search Co2) is founded in 2018 with a registered capital of 5 million and 20 full-time employees. Search Co2 has developed more than 200 offset projects in China, ranging from wind, solar and forestry, under various standards including VCS, Gold Standard and CCER.

1.7 Ownership

All the project vehicles are purchased from Zhejiang Geely new energy Commercial Vehicle Group Co., Ltd. Project vehicles belong to Intelligent Link, which can be demonstrated by the inventory. Project vehicles will be rented to individuals or companies to transport goods. During the stakeholder meeting before the project, the project proponent claimed that the ownership of this project belongs to Intelligent Link, and all emission reductions/removals are granted to the company, and all the stakeholders had no objection. The same claim about the project and project emission reductions has also been updated in the APP.

1.8 Project Start Date

According to VCS standard (V4.4), the project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals. For this project, following the requirements of the applied AMS-III.C. methodology, the grouped project start date is determined by the time when the operation permission is ready and start to operate, which is

08-October-2021 for initial project activity instances.[6] Therefore, the project start date is 08-October-2021.

1.9 Project Crediting Period

A 10-year fixed crediting period is selected for the project activity. Therefore, the crediting period for the project will be 10 years, from 08-October-2021 to 07-October-2031.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	√
Large project	

Table 1-1 Estimated GHG emission reductions or removals of initial instances

Year	Estimated GHG emission reductions or removals of initial instance(tCO_2e)
2021(08-October-2021 to 31-December-2021)	199
2022(01-January-2022 to 31-December-2022)	14,613
2023(01-January-2023 to 31-December-2023)	30,879
2024(01-January-2024 to 31-December-2024)	89,619
2025(01-January-2025 to 31-December-2025)	86,312

[6] According to the project vehicle inventory of project proponent, the first project vehicle was registered and started to operate in 08-October-2021, so the project start date is 08-October-2021.

2026(01-January-2026 to 31-December-2026)	83,037
2027(01-January-2027 to 31-December-2027)	79,795
2028(01-January-2028 to 31-December-2028)	76,586
2029(01-January-2029 to 31-December-2029)	73,408
2030(01-January-2030 to 31-December-2030)	70,263
2031(01-January-2031 to 07-October-2031)	55,958
Total estimated ERs	660,669
Total number of crediting years	10
Average annual ERs	66,067

1.11 Description of the Project Activity

The grouped project is to operate commercial electric vehicles around China, the initial instances including 16,246 vehicles. Comparing with operating fossil fuel commercial vehicles commonly occurred in China, emissions reductions are achieved. Project vehicles are purchased from vehicle manufacturers and after operation permission abstained, project vehicles will then lease to individuals or companies to transport goods.

There is a smartphone application named Green Intelligent Link launched by project proponent for vehicle rental, charging and vehicle maintenance. After registering, individuals and companies can browse different types of project vehicles and lease services, and then book directly or consult further details by phone. After confirming the rental demand with the sales staff, vehicle lessees will sign the rental contract with project proponent and pay the rent. When picking up the project vehicle, the staff will explain the precautions of vehicles, providing operation training, charging training, and driving skills training, and the later service process. After the completion of the rental contract, lessees shall pay the follow-up rent and maintain project vehicles on time.

During the operation, each project vehicle is equipped with T-BOX, used for control and track vehicle status, then the data will be uploaded to the Intelligent Link Control Platform. The platform

also collects information of charging piles, service stations and vehicle bills. Project proponent have access to the platform for all information. Lessees can manage rented project vehicles on APP, charge and maintain project vehicles nearby, where the corresponding information connected to the Intelligent Link Control Platform, as showing in *Figure 1-1*.

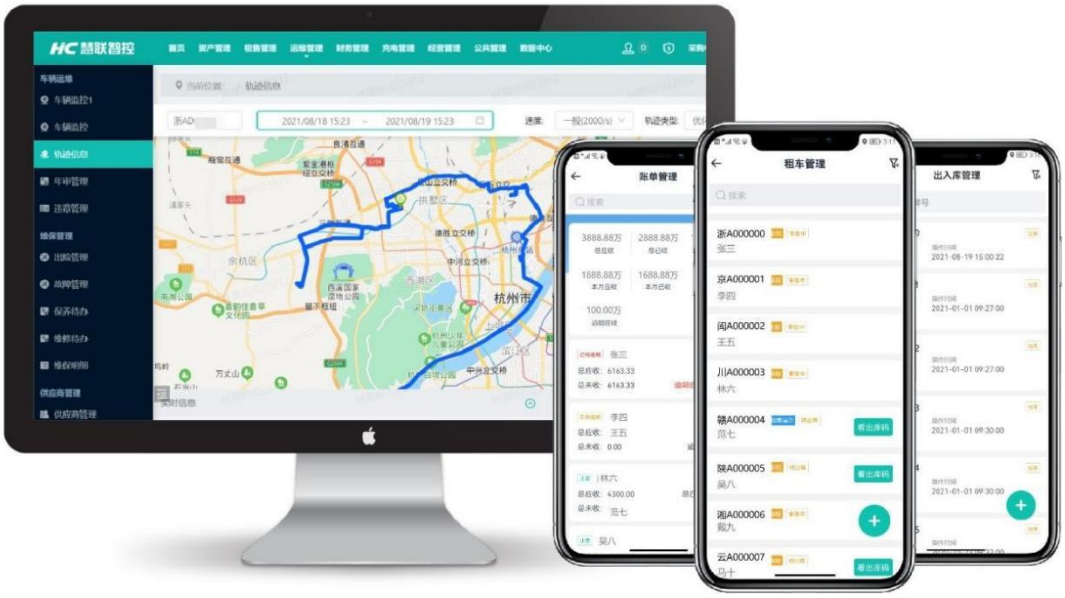


Figure 1-1 The Intelligent Link Control Platform on the web and mobile application

Specifically, the Intelligent Link Control Platform collects all information about project vehicles, including vehicle categories, vehicle numbers, inventory status, vehicle status (in use or not), operation status (normal or not), real-time geographic information, each day mileage and charged electric quantity, etc. Lessees could know on the APP if the rented project vehicles are active, where they are, how long they have driven and residual electric capacity. The platform also collects mainstream charging piles all around the whole China, including charging piles companies, charging station address, business hours, fast charge and slow charge time, price, voltage and power, as showing in *Figure 1-2*. When the rented project vehicles need to be charged, lessees can find an appropriate charging station nearby, and pay the bill for electricity after full charge on the APP. If the rented project vehicles act up, lessees could call the after-sales service number, repair on-site, drive to nearby maintenance station shown on the APP, or use stand-by vehicles provided by project proponent if the maintenance time is more than one day. At the end of the lease, lessees shall return rented project vehicles and pay the rent on the APP. All the information on the platform will be updated according to the operation of lessees.

Figure 1-2 The information of charging station on the APP

According to AMS-III.C. version 16.0, the baseline of the comparable vehicles (the comparability of baseline and project vehicles to be demonstrated as per indicators in paragraph 11 of AMS-III.C. version 16.0) that would have been used to provide the same transportation service. The project vehicles are commercial vehicles used for logistics transportation. According to the Chinese Industry Report of Automotive Economy, 121,000 new energy commercial vehicles were sold out in 2020, accounting for 2.34% of commercial vehicles.7 In 2021, the sales of new energy commercial vehicles increased 49.4%, but still accounted for 3.75% of commercial vehicles.8 So, in China, commercial vehicles used for goods transportation are commonly driven by fossil fuel, so the baseline scenario is to operate fossil fuel vehicles to supply logistics services. And before the operation of the grouped project, the project proponent didn't run fossil fuel vehicles to transport goods. Comparing with operating fossil fuel commercial vehicles commonly occurred in China, commercial electric vehicles operation produces less GHG emissions. The grouped project activity is designed following CDM Methodology AMS-III.C. Emission reductions by electric and hybrid vehicles version 16.0. Based on emission reduction calculation of applicable CDM

[7] http://lwzb.stats.gov.cn/pub/lwzb/tzgg/202107/W020210723348607396983.pdf

[8] http://lwzb.stats.gov.cn/pub/lwzb/tzgg/202205/W020220511403033109667.pdf

methodology AMS-III.C. Emission reductions by electric and hybrid vehicles version 16.0, all emission reduction of project activity will be no more than 60,000 tCO2e/year.

The grouped project comprises two project activity instances (truck instance and van instance), four categories (light truck, mini truck, light van, minivan, as shown in Figure 1-3). The main parameters of each project vehicle categories i.e., the load capacity, maximum design total mass, maximum speed, battery capacity, rated power distance per charge and lifetime of battery are shown in:

(a)

(b)

(c)

(d)

Figure 1-3 Project vehicle categories: (a) light truck, (b) light van, (c) mini truck, (d) minivan

Table 1-2 Parameters of light truck, mini truck, light van and minivan

Parameters	Truck instance		Van instance	
	Light truck	Mini truck	Light van	Minivan
Load capacity (kg)	1050~1475	1170~1920	1270~1365	965~1380
Maximum design total mass (kg)	4495	3495~4200	3400~3495	2510~3000
Maximum speed (km/h)	90~100	80~90	100	90

Rated power (kW)	50 to 65	50	40	30
Battery capacity (kWh)	80.64~96.76	50.23	54.72	41.86
Distance per charge (km)	200	235	270	260~280
Depth of discharge	100%			
Battery cycles (times)	2,000			
Warranty lifetime of battery (month)	72 or 60 or 96 months			

The milestone for implementing the project are as follows:

Date	Milestone (s) in the project's development and implementation
03-August-2021	Zhejiang Green Intelligent Link Co., Ltd. held a general meeting of their stockholders and they decided to develop this project as a carbon trading project.
10-August-2021	The stakeholder meeting was held in Intelligent Link's meeting room.
08-October-2021	The first operation permission of project vehicle was obtained on 08-October-2021 and started to operate in the same day, which means the project activity was started on 08-October-2021.
03-May-2023 to 02-June-2023	Public comment period in VCS website.
02-June-2023	The draft joint PD&MR was completed.
12-June-2023	The ex-post stakeholder meeting was held in Intelligent Link's meeting room.
19-June-2023 to 20-June-2023	VVB on-site visit.

1.12 Project Location

Intelligent Link has set regional operation centres in more than 40 core cities across China, suppling services in more than 150 cities, which has formed a national network layout[9]. In addition to Hong Kong, Macao and Taiwan, project vehicles owned by Intelligent Link run in the rest of whole China. For the same baseline scenario and demonstration of additionality, the grouped project has one geographic area, which is China except Hong Kong, Macao and Taiwan. The geographic area of initial project activity instances doesn't include Qinghai Province, Tibet Autonomous Region and Xinjiang Uygur Autonomous Region. The geographical coordinates of initial project activity instances is between 92°20'20" and 135°2'30" east longitude and between 3°31'00" and 53°33'00"north latitude. The geographical coordinates of the grouped project is between 73°29'59.79" and 135°02'30" east longitude and between 3°31'00" and 53°33'00"north latitude. Such geographic area has been specified using geodetic polygons in *Figure 1-5*, and the KML file has also been submitted.

Figure 1-4 The map of China

[9] This can be proved by the enterprise credit report of Intelligent Link in Qcc.com.

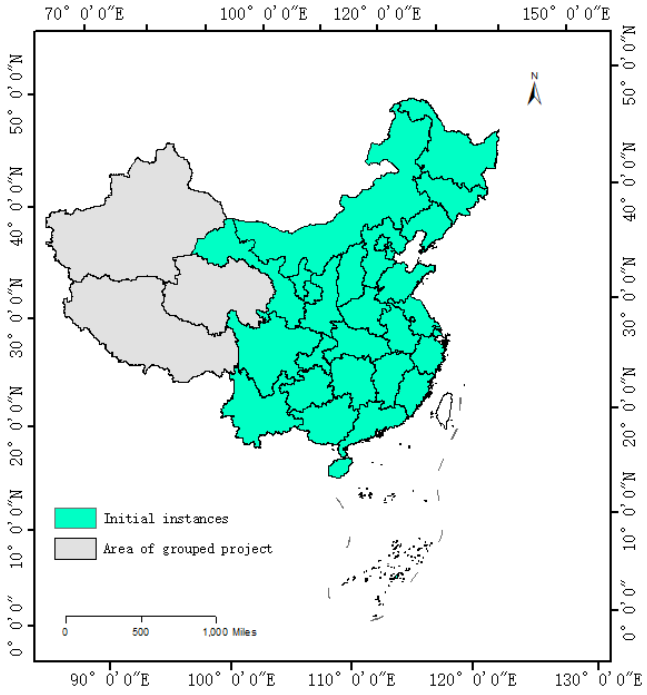


Figure 1-5 The map of project area-China, expert Hong Kong, Macao and Taiwan

1.13 Conditions Prior to Project Initiation

The project proponent didn't operate fossil fuel vehicles prior to project initiation. The baseline scenario is illustrated in section 3.4, i.e. the operation of the comparable fossil fuel vehicles to provide the same transportation service as the project activity.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

There is no mandatory law by the government to operate the electric vehicles in the project area, whilst nonetheless the project conforms to the requirements of Chinese laws and regulations. The current Chinese government and local government policies related to new energy vehicles are included but not limited to the following:

- The Notice on the Issuance of the New Energy Vehicle Industry Development Plan (2021-2035) (General Office of the State Council [2020] No.39)[10]

[10] https://wap.miit.gov.cn/cms_files/filemanager/1226211233/attach/20224/73d4bf7a9abf4e1994b0fd211986641f.pdf

- The Notice on the Issuance of Zhejiang Province Intelligent Vehicle Innovation and Development Plan (2020-2025) (Zhejiang Development and Reform Commission [2019] No.449)[11]
- The Notice on the Issuance of the 14th Five-year Plan of Zhejiang Province New Energy Vehicle Industry Development (Zhejiang Development and Reform Commission [2021] No.107)[12]

The project vehicles are electric vehicles. As an electric vehicle runs on electricity instead of fossil fuels, lower GHG emission per distance driven will achieved. By developing electric vehicles, this project activity complies with The Notice on the Issuance of the New Energy Vehicle Industry Development Plan (2021-2035) to cope with climate change and promote sustainable development. Those electric vehicles supply logistic services in urban areas, which provided and development by the proponent, Zhejiang Green Intelligent Link Co., Ltd. So, this project also complies with the Zhejiang Province Intelligent Vehicle Innovation and Development Plan, where it mentioned more demanded electric vehicles and intelligent control system in logistic transportation system. During the crediting period, more electric vehicles will be added in this project, therefore more fuel-powered vehicles in logistics transportation will be replaced by electric vehicles. This project also complies with the 14th Five-year Plan of Zhejiang Province New Energy Vehicle Industry Development, which intends to improve energy-saving and new energy vehicles high-end industrial chain by supporting the transformation and upgrading of fuel-powered vehicles, actively developing new-energy vehicles, and expanding the power battery industry.

In conclusion, the project conforms to the requirements of Chinese laws and regulations and the project activity also will contribute to implementation of relative regulation and policies.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The project has not been registered or is seeking registration under any other GHG programs.

1.15.2 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG programs.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

[11] http://www.china-nengyuan.com/news/china-nengyuan_news_147814.pdf

[12] https://www.zj.gov.cn/art/2021/4/22/art_1229203592_2270218.html

The GHG emissions reduction of this project does not include any activities that included in an emissions trading program or any other mechanism that includes GHG allowance trading.

According to China's national emissions trading scheme, only the high-emission industries are included, covering thermal power generation, petrochemical, chemical, building materials, iron and steel, non-ferrous, paper, aviation, and other key emission industries that emitted at least 26,000 tCO_2e in any one year from 2013 to 2016, without renewable project. Moreover, the project proponent, including this project activity, is except for a mandatory emission control scheme[13]. Therefore, this project will not and cannot be double-counted.

The project proponent declared and promised that this project is not involved in an emission trading program or any other mechanism that includes GHG allowance trading and has not been rejected by other GHG programs. Besides, GHG emission reductions and removals generated by the project during this monitoring period will not be used for compliance under any programs or mechanisms[14].

1.16.2 Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related credit, including renewable energy certificates.

1.16.3 Supply Chain (Scope 3) Emissions

The project activity is operating electric commercial vehicles, owned by the project proponent, not includes manufacturing or selling products. The project's GHG emission reductions or removals are not in a supply chain, and there are no producer or retailers of the impacted goods or services involved in the project. The GHG emission reductions/removals produced by the project are only be issued as VCUs, and will be not issued as GHG allowances or other types of GHG credits, such as RECs, CCER, etc. The project proponent declared that GHG emission reductions/removals will not be double-claimed.

1.17 Sustainable Development Contributions

1.17.1 Sustainable Development Contributions Activity Description

This project operates electric commercial vehicles instead of fossil fuel vehicles in China cities. The Intelligent Link also provides training service and intelligent management platform to ensure normal and further improved operation. The project activity will contribute to sustainable development goals and provide many benefits that will help achieve China's Sustainable Development Goals as follows.

[13] https://www.mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/t20201230_815546.html

[14] The project proponent has made a Declaration of no double counting of the project.

- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

  The employment of local people with the necessary technical qualifications for the required post is prioritised and enhanced by all project activities during the vehicles' operation. As a result, increased job opportunities and project business activities partially eliminate local poverty and unemployment. Moreover, in the scope of the project activity, there will be a series of training organised on electric vehicles that include project staff.

  The project implemented the policy of *"The 14th Five-Year Plan for Promoting Employment"*[15] which contribute to the sustainable development priority of employment. The number of labor contract will be used to monitor and report the Goal.

- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

  The project promotes and supports the transition to electric vehicles thereby reducing consumption of gas and encouraging electric vehicles. As a result, this project supports in making human settlements inclusive, safe, resilient and sustainable.

  The project implemented the policy of *" Opinions on Promoting Sustainable Development of Urban and Rural Construction"*[16] which contribute to the sustainable development priority of urban construction. The annual air pollution situation in cities will be used to monitor and report the Goal.

- Goal 13: Climate Action

  The project activity is to operate electric vehicles to provide transportation services, which can reduce greenhouse gas emissions by using electric vehicles instead of fuel vehicles. The project's emission reduction logic is that when fuel vehicles are running, the combustion of fossil fuel generates greenhouse gases. In contrast, the carbon emissions of electric cars mainly come from electricity of the national grid, and the electric vehicles carbon emissions at the fuel use end are zero, making the emissions of electric vehicles significantly fewer than that of fuel vehicles.

  The project implemented the policy of *"National Climate Change Plan"*[17] which contribute to the sustainable development priority of mitigating climate change. The calculation results of annual GHG emission reductions will be used to monitor and report the Goal.

1.17.2 Sustainable Development Contributions Activity Monitoring

[15] http://www.gov.cn/zhengce/content/2021-08/27/content_5633714.htm

[16] http://www.gov.cn/zhengce/2021-10/21/content_5644083.htm

[17] http://www.gov.cn/zhengce/2021-10/27/content_5646697.htm

During this monitoring period, there are 16,246 electric commercial vehicles running in the project area. Through replacing fossil fuel vehicles by commercial electric vehicles, the project provides significant local contributions to the United Nations Sustainable Development Goals (SDGs) and help provide long-lasting benefits to the local people and their prosperity in the project zone.

- More job opportunities and growth of the local economy (Goal 8);
- Lower air pollution concentration harmful to residents (Goal 11);
- Sequester greenhouse gas and mitigate climate changes (Goal 13)

Table 1-3: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	8.5	Number of employees hired to maintain the electric commercial vehicle service	Implemented activities to increase	During this monitoring period, the project increased 223 staffs to provide platform operation and maintenance service.[18]	Since the project started operation, the project increased 223 staffs to provide repair service, maintenance service and electric vehicle driving training.
2)	11.6	Amount of fine particulate matter (e.g. PM2.5) reduced by the project activity within the project area	Implemented activities to decrease	During this monitoring period, 8,783 kg PM2.5 reduced[19].	Since the project started operation, 8,783 kg PM2.5 decreased over the project lifetime.

[18] Staff list and contract provided by Intelligent Link

[19] Fact sheet of PM2.5 during this monitoring period

3)	13.0	Tonnes of greenhouse gas emissions avoided	Implemented activities to increase	During this monitoring period, by operating 16,246 electric commercial vehicles, this project has prevented the release of 25,105 tonnes of carbon into the atmosphere during the monitoring period.[20]	Since the project started operation, prevented the release of 25,105 tonnes of carbon into the atmosphere.

[20] Fact sheet of emission reduction during this monitoring period

To determine which of the sustainable development contributions described in Table 1 of this report contributes to the achievement of any nationally stated sustainable development priorities, including any monitoring and reporting requirements, the following tables are presented:

Gaol 8	More job opportunities acquired to maintain the project activity
How the project contributes to achieving China sustainable development priorities	The project activity increased job opportunities, which contributes to implementation the policy of *"The 14th Five-Year Plan for Promoting Employment"*[21]
Provisions for monitoring and reporting the Goal	The number of labor contract will be used to monitor and report the Goal.

Gaol 11	Improved air environment in urban
How the project contributes to achieving China sustainable development priorities	The project displaced fossil fuel vehicles by electric commercial vehicles and reduced the air pollution in urban, which helped to implement the policy of *" Opinions on Promoting Sustainable Development of Urban and Rural Construction"*[22]
Provisions for monitoring and reporting the Goal	Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities

Gaol 13	CO_2 emission reduction through the project activity
How the project contributes to achieving China sustainable development priorities	The project vehicles are electricity-driven, which emit no greenhouse gas. The GHG remission reduction achieved by project activity also contribute to the policy of *"National Climate Change Plan"*[23]
Provisions for monitoring and reporting the Goal	The fact sheet of emission reduction calculation during the monitoring period.

1.18 Additional Information Relevant to the Project

[21] http://www.gov.cn/zhengce/content/2021-08/27/content_5633714.htm

[22] http://www.gov.cn/zhengce/2021-10/21/content_5644083.htm

[23] http://www.gov.cn/zhengce/2021-10/27/content_5646697.htm

Leakage Management

According to applied methodology: AMS-III.C. Emission reductions by electric and hybrid vehicles version 16.0, no leakage calculation is required. So, leakage does not need to be considered.

Commercially Sensitive Information

None of the project documents will be considered as commercially sensitive information, and all the documentation is available to any stakeholders.

Further Information

There is no further information that may have a bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals.

2 SAFEGUARDS

2.1 No Net Harm

Although the project is a carbon emission reduction project, there might exist potential negative impacts on environment and socio-economy, so the project takes proactive measures to deal with them. The specific impacts and mitigation are summarized in the following tables:

Environmental		Socio-Economic	
Potential Negative Impacts	Actions	Potential Negative Impacts	Actions
Potential environmental risks of disposal of discarded batteries.	Intelligent Link will assume the responsibility of power battery recycling according to the Interim Measures for the Management of New Energy Vehicle Power Battery Recycling Regulating [24] recycling solves the battery disposal problem.	Potential Socio-Economic risks from using batteries	Maintenance and warranty of the power battery are detailed in the user service manual[26], which stated that no fire sources should be close to the power battery, operating and storage temperature of the power battery, etc. to prevent spontaneous combustion of project vehicles resulting public hazards.

[24] http://www.gov.cn/xinwen/2018-02/26/content_5268875.htm

[26] User service manual

	Specifically, the project proponent will replace the vehicle batteries as energy storage devices when they have been out of life in electric vehicles according to the Automobile Product Producer Responsibility[25].		In addition, the project proponent regularly organises fire prevention training for drivers of electric vehicles.

2.2 Local Stakeholder Consultation

The procedures or methods used for engaging local stakeholders

The implementation schedule of stakeholder consultation is listed as follows:

Date	Milestone (s) in the project's development and implementation
03-August-2021	Zhejiang Green Intelligent Link Co., Ltd. held a general meeting of their stockholders and they decided to develop this project as a carbon trading project.
10-August-2021	The ex-ante stakeholder meeting was held in Intelligent Link's meeting room and organized a stakeholder questionnaire survey.
12-June-2023	The ex-post stakeholder meeting was held in Intelligent Link's meeting room and organized a stakeholder questionnaire survey.

The procedures or methods used for documenting the outcomes of the local stakeholder consultation

Stakeholder consultation included an ex-ante questionnaire survey and stakeholder meeting, where stakeholders were asked about the knowledge of carbon trading and their opinions and willingness to participate in the project design. According to the operation of Intelligent Link, commercial electric vehicles are purchased from Zhejiang Geely new energy Commercial Vehicle Group Co., Ltd., and then rented to individuals or companies. Regional operation centres of Intelligent Link were set in core cites in China. And Intelligent Link cooperates with charging pile companies, whose charging piles are available for project vehicles. Therefore, Zhejiang Geely new energy Commercial Vehicle Group Co., Intelligent Link, vehicle drivers, regional operation companies, charging pile companies are identified as stakeholders of the project.

Before the project started, on 10-August-2021, project proponent conducted the stakeholder meeting in the office in Zhejiang Green Intelligent Link Co., Ltd. in Xiaoshan District, Hangzhou City, Zhejiang Province, P.R. China. Participants included Intelligent Link representatives,

[25] http://www.gov.cn/zhengce/zhengceku/2021-06/10/content_5616601.htm

manufacturer representatives, regional operator representatives, driver representatives, and charging pile representatives, a total of 22 people, who were all received meeting notice by phone about one week before the meeting. During the ex-ante stakeholder meeting, all representatives were consulted their opinions about the project application, and their background information were also collected. Detailed questions and survey results are summarized in Table 2-1 and Table 2-2. As a result, all stakeholder participants agreed the project proponent to develop an electric commercial vehicles emission reduction project.

Table 2-1 Structure of stakeholder survey for this project

Item / Distribution		Quantity	Percentage
Gender	Male	14	63.64%
	Female	8	36.36%
Age	<30	6	27.27%
	30-45	12	54.55%
	>45	4	18.18%
Education	Junior high school or below	2	9.09%
	Senior high school	2	9.09%
	College or above	18	81.82%
Occupation	Worker	3	13.64%
	Management personnel	13	59.09%
	Unspecified	6	27.27%

Table 2-2 Survey results summary sheet

NO.	Question	Attitude or Opinion	Amount	Percentage
1	Do you know the purpose of this project?	Yes	18	81.82%
		No	4	18.18%
2	Do you think the project will improve the local employment situation?	Yes	16	72.73%
		NO	1	4.55%
		Don't know	5	22.73%
3	Do you think the project will improve the local environment?	Yes	19	86.36%
		NO	0	0%
		Don't know	3	13.64%
4	What obstacle do you think to promote the commercial electric vehicles?	Technology	3	13.64%
		Cost	5	22.73%
		Base installation	12	54.55%
		Don't know	2	9.09%
5	Do you support this project?	Support	21	95.5%
		Against	0	0%

		Indifferent	1	4.5%

According to these two tables above, stakeholders attended the meeting includes 3 front-line vehicle drivers, 13 management personnel and 6 persons from other various departments. Over 80% stakeholders got college degree or above. As for the opinions about the project development, over 70% stakeholders thought that the project will improve the local employment situation and local environment. The most obstacle that would hinder the project promotion lies in base installation, accounted for 54.55%. The base installation refers to charging stations and charging piles. In order to mitigate the inconvenient of charging, project proponent would cooperate with more charging pile companies and improve charging station. All other stakeholders accepted this mitigation way. Finally, most of the stakeholders on the meeting supported the project.

The mechanism for on-going communication with local stakeholders

In the early stage of the project, the project proponent, Intelligent Link, was committed to building an efficient training system by strengthening the management of the instructor training team and providing a series of technical training and lectures to the drivers of local passenger transportation companies. The Intelligent Link Control Platform, a computerized numerical control platform of Intelligent Link, provides online-hiring, online car control and online billing services. During the project period, any problems occurred will be documented on the Intelligent Link Control Platform or reported by the lessees through after-sales service system. And other stakeholders can communicate with the project proponent on phone.

During this monitoring period, on 12-June-2023, the project proponent conducted an ex-post stakeholder meeting and a questionnaire survey in the office of Intelligent Link. 3 Intelligent Link staff, 3 regional operators, 8 project vehicle drivers and 1 worker from charging pile company attended. The survey results are summarized below:

NO.	Question	Survey result
1	Do you know commercial electric vehicles of Intelligent Link have been used to develop emission reduction project?	All the people at the meeting know about it.
2	Do you know Intelligent Link has right to the emission reductions produced by the project vehicles?	All the people at the meeting know about it.
3	Does project have negative impact on your operation management to vehicles?	All the regional operators indicated that the project didn't impact negatively on their operation management to vehicles.

4	Which category of project vehicle you rented? Light truck, mini truck, light van or minivan?	Most drivers rented light truck and light van.
5	How long your vehicle rented could run after full charged?	From 200 to 280 km.
6	Does project have negative impact on your operation of charging piles?	The personal of charging pile indicated that the project didn't impact negatively on their operation.
7	Did you accept any train when you rent the project vehicle? If did, what is the train time? And please simply introduce the training content.	Every vehicle driver was trained at the time of picking up vehicle. Staff of Intelligent Link taught them how to drive electric vehicle, how to charge and vehicle maintenance.
8	Did the vehicle break down during lease period? If did, have you enjoyed the after-sale service or not?	Most vehicles didn't break down during lease period. Once the vehicle breaks down, staff of Intelligent Link would repair it at once.
9	Did your transportation line and range changed after the implementation of the project?	Half drivers' transportation line and range changed after the implementation of the project.
10	Did your logistics work be negatively affected after the implementation of the project?	All the drivers think the project didn't affect their logistics work negatively.
11	Do you think the project will reduce environmental pollutions?	All the people at the meeting think the project will reduce environmental pollutions.

No comments from the stakeholder were received during this monitoring period.

How due account of all and any input received during the consultation has been taken

Any comments from stakeholders on the project received during the project operation period would be feedback to project proponent leader, then he will contact principle of relative departments to deal with.

During this monitoring period, the stakeholders have no opinions on the project implementation, and there is no need to change the project design.

2.3 Environmental Impact

According to the List of Classified Management of Environmental Impact Assessment of Construction Projects[27] issued by Ministry of Ecology and Environment of the People's Republic of China, the grouped project is about commercial electric vehicle operation, which is not included in the list, therefore the grouped project doesn't need apply for an environmental impact assessment (EIA) report. The environmental impacts, both positive and negative, generated during the operation and recycling periods of the Intelligent Link project activity, and the mitigation of negative impacts, are summarized as follows:

Stages	Positive impact	Negative impact	Mitigation of negative impact
Operation period	High energy efficiency and diversification: The energy efficiency of electric vehicles have exceeded that of gasoline engine cars, especially in urban operation, where fuel cars can't run at a high speed, while electric cars are more suitable. Besides, electric cars do not consume electricity when they stop, and the electric motor can be automatically converted into a generator to realize the reuse of energy during braking deceleration. Compared with conventional fuel vehicles, electric vehicles greatly reduce noise pollution, which is one of the environmental pollutions. Instead of using fuel as the energy to drive the car, pure electric vehicles use electric energy, so no car exhaust is emitted during the driving	Battery shell materials, binders, etc. are non-recyclable waste products. End-of-life disposal is a big problem, which can release harmful toxic gases that would cause air pollution. And the heavy metal elements in waste batteries may cause severe damage to water and soil if not properly handled.	Operations have been stipulated in the user service manual [28] that disassemble the battery box or battery module without permission is not allowed. This could avoid environmental pollution caused by random disposal of battery parts. When the capacity of the vehicle power battery cannot be used or scrapped, the project proponent should drive the vehicle to the service network or recycling agency for power battery disassembly and replacement. All the waste power batteries will be processes according to Measures for The Management of Cascade Utilization of Power Batteries for New Energy Vehicles [29], New Energy

[27] https://www.mee.gov.cn/xxgk2018/xxgk/xxgk02/202012/W020210928608333204642.pdf

[28] User service manual

[29] https://www.gov.cn/zhengce/zhengceku/2021-08/28/content_5633897.htm

	process, and thus no pollution to the environment. The advantages of less emissions make pure electric vehicles more adaptable to future technology development.		Vehicle Waste Power Battery Comprehensive Utilization Industry Standard Conditions[30] and Comprehensive Utilization of Used Power Batteries for New Energy Vehicles Interim Measures for The Administration of Industry Standard Announcements[31]. During this monitoring period, all batteries ensure the normal operation of project vehicles and don't need to be changed or recycled.
Recycling period	The recycling reduces reliance on raw materials like cobalt and lithium. It also reduces carbon footprint of electric vehicles, which accelerates the abatement plans.		

2.4 Public Comments

The project documents have been open on VCS websites for public comments from 03-May-2023 to 02-June-2023[32], and stakeholders can easily download them from the website.

No comments have been received during the public comments period.

2.5 AFOLU-Specific Safeguards

Not applicable, the project is not an AFOLU project.

[30]https://wap.miit.gov.cn/cms_files/filemanager/oldfile/miit/n1146295/n1652858/n1652930/n4509607/c5360250/part/5360259.pdf

[31]https://wap.miit.gov.cn/cms_files/filemanager/oldfile/miit/n1146295/n1652858/n1652930/n4509607/c5360250/part/5360260.pdf

[32] https://registry.verra.org/app/projectDetail/VCS/4335

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

The small-scale methodology AMS-III.C.: Emission reductions by electric and hybrid vehicles version 16.0[33] is used. Also, the project proponent shall apply the "General guidelines for SSC CDM methodologies version 23.1"[34].

The TOOL 21 "Demonstration of Additionality of Small-scale Project Activities version 13.1"[35] is used to demonstrate the additionality.

And the TOOL 05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation version 3.0"[36] is used in the project.

TOOL 07 "Tool to calculate the emission factor for an electricity system version 07.0"[37] is used in the project.

Tool 27 "Investment analysis version 13.0"[38] is used in the project.

3.2 Applicability of Methodology

The baseline and monitoring small-scale methodology AMS-III.C. version 16.0 is applicable to the proposed project, because the project meets all the applicability criteria for operation of electric vehicles for providing transportation services stated in the methodology as illustrated below.

No.	Methodology Applicability Criteria	Conditions of the project
1	This methodology applies to project activities introducing new electric and/or hybrid vehicles that displace the use of fossil fuel vehicles in passenger and freight transportation.	The project activity introduced new electric vehicles that displace the use of fossil fuel vehicles in freight transportation industry.
2	The methodology is not applicable for project activities that involve a switch from fossil	The project activity is a project introduced new commercial electric

[33] https://cdm.unfccc.int/UserManagement/FileStorage/O74L1U9KACQDM3RVPZJE0FHW8I2NTB

[34] https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210211212225226/MethSSC_Guid25ver23.1.pdf

[35] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf

[36] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf

[37] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

[38] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v13.pdf

	fuels to biofuels in transportation; those project activities shall consider using another Type III methodology (e.g., "AMS-III.T.: Plant oil production and use for transport applications" and "AMS-III.AK.: Biodiesel production and use for transport applications").	vehicles that displace the use of fossil fuel commercial electric vehicles in freight transportation industry, and is not a switch from fossil fuels to biofuels in transportation.
3	In cases where the project vehicles use a replaceable, chargeable battery there must be documented measures in place to ensure that vehicle owners have access to replacement batteries of comparable quality.	The project vehicles use replaceable and chargeable batteries. All vehicle owners have access to replacement batteries of comparable quality according to the user service manual[39] and Quality Assurance Instructions for Replacing Batteries of Intelligent Link[40].
4	The project design document (PDD) shall explain the proposed approach for introducing/distributing the electric/hybrid vehicles, which shall allow for tracking of the project vehicles. It shall also explain how the proposed project activity will: (a) Demonstrate that the baseline vehicles being displaced are those consuming fossil fuels. This can be done, for example, through documentation of the market share per fuel type per vehicle category in the project region (e.g., based on representative sample surveys or official data or peer reviewed literature); (b) Ensure compliance with prevailing regulations pertaining to battery use and disposal.	The platform of Intelligent Link documented all the vehicle information about vehicle category, licenses, vehicle identification number (VIN), usage, etc. Vehicles will be identified and tracked by the licenses and VIN of the project vehicles. (a) The baseline vehicles being displaced are those consuming fossil fuels in freight transportation industry, which is not belong to the project proponent. In China, the new energy vehicles used for logistical distribution in urban accounted for 8% of all new energy vehicles till 2020 [41], There were 395 million vehicles in China in 2021, and 7.84 million electric vehicles. The market

[39] User service manual.

[40] Quality Assurance Instructions for Replacing Batteries of Intelligent Link

[41] https://view.officeapps.live.com/op/view.aspx?src=http%3A%2F%2Fwww.gov.cn%2Fzhengce%2Fzhengceku%2F2021-11%2F18%2F5651656%2Ffiles%2F5ed9e2cdf80042fdb26535314dc62ffb.doc&wdOrigin=BROWSELINK

		share of electric vehicles is 2.60%[42]. Hence, based on the market data, the baseline vehicles being displaced by the project are those consuming fossil fuel vehicles in the project area. (b) China has regulations, including New Energy Vehicle Waste Power Battery Comprehensive Utilization Industry Standard Conditions[43] and Comprehensive Utilization of Used Power Batteries for New Energy Vehicles Interim Measures for The Administration of Industry Standard Announcements [44] , in place for battery use and disposal, which are applicable and enforced and controlled by the proposed project activity. The project electric vehicle manufacturers have a complete battery use and disposal and have a whole warranty system and specific measures for battery recycling to ensure that the project electric vehicles are not affected in use, for example, Specification for The Reutilization of Waste Power Batteries in Vehicles [45] and Measures for The Management of Waste Power Battery Recycling System[46]. And Intelligent Link also published a document named the

[42] http://www.gov.cn/xinwen/2022-01/12/content_5667715.htm

[43]https://wap.miit.gov.cn/cms_files/filemanager/oldfile/miit/n1146295/n1652858/n1652930/n4509607/c5360250/part/5360259.pdf

[44]https://wap.miit.gov.cn/cms_files/filemanager/oldfile/miit/n1146295/n1652858/n1652930/n4509607/c5360250/part/5360260.pdf

[45] The Reutilization of Waste Power Batteries in Vehicles

[46] Measures for The Management of Waste Power Battery Recycling System

		Quality Assurance Instructions for Replacing Batteries of Intelligent Link[47]. During the vehicle operation stage, when the new energy vehicle is repaired and maintained at the after-sales service outlets, information of the vehicle and the vehicle driver shall be verified. When repairing and replacing the power battery pack, the information of the one will be recorded in time, and uploaded. And the replaced waste battery pack will be transferred to the recycling service network.
5	The PDD shall include minimum performance specifications for the batteries to be used such as: depth of discharge, battery cycles, distance travelled per charge, lifetime.	The depth of discharge, battery cycles, distance travelled per charge and lifetime of each category are shown in section 1.11, Table 1-2.
6	The project proponent shall demonstrate that double counting of emission reductions will not occur e.g. via a contractual agreement with the end-user(s), maintenance of comprehensive inventory of project vehicles or unique identification of the vehicles owned by end-user(s). The steps undertaken to avoid double counting shall be documented in the PDD.	Double counting of emission reductions will not occur. Firstly, there announced in the APP of Intelligent Link that the project and emission reductions/removals belong to Intelligent Link, the project vehicles are not allowed to developed as another GHG emission reduction project, and the emission reductions are not allowed to issue in other carbon reduction mechanisms. Secondly, a comprehensive inventory of project vehicles with unique vehicle identification numbers (VIN) is maintained and made available by the project proponent. Each project vehicle is managed in the Intelligent Link Control

[47] Quality Assurance Instructions for Replacing Batteries of Intelligent Link

		Platform, and has a unique VIN number. The operation mileage is documented every day and matched to each project vehicle. And emission reductions are calculated according to the number of project vehicles in the inventory.
7	In cases where renewable energy source is used for charging the electric vehicles through a dedicated transmission/distribution line, the methodology should be combined with "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" to claim emission reductions for the amount of electricity supplied from renewable electricity source to the charging station.	In the project scenario, project proponent cooperates with charging pile companies, whose charging station is open for the project vehicles and electricity comes from the grid. So, there is no renewable energy used for charging the electric vehicles through a dedicated transmission/distribution line.
8	In cases where this methodology is combined with "AMS-I.F.: Renewable electricity generation for captive use and mini-grid", the project proponent shall separately demonstrate the additionality of each of the component (i.e. supply of renewable energy to charging station (Type I) and use of electric vehicles (Type III)). Furthermore, while combining the two components applicable requirements on start date and prior clean development mechanism (CDM) consideration shall be met in accordance with the CDM project standard and CDM project cycle procedures.	Not applicable as the project does not combine with the methodology AMS-I.F.
9	Types of hybrid/electric vehicles to be introduced include but are not limited to cars, buses, trucks, jeepneys, commuter vans, taxis, motorcycles and tricycles.	Types of electric vehicles to be introduced are truck and van.
10	Project participants shall demonstrate that the project and baseline vehicles are comparable, using the following means:	The project vehicles are separated into 2 categories, truck and van according to the vehicle structure. The loading part and the cab of truck are independent, while integrated in van .

	(a) Project and baseline vehicles belong to the same vehicle category, e.g. motorcycle, bus, taxi, truck, tricycle; (b) Project and baseline vehicle categories have comparable passenger/load capacity and power rating with a variation of no more than 20 per cent (comparing the baseline vehicle with the respective project vehicle of same category).	This project introduces new commercial electric vehicles, instead of switch from fossil fuel vehicles to vehicles consuming electricity. The baseline vehicles are trucks and vans driven by fossil fuel in the logistics transportation. Project and baseline vehicle categories have comparable passenger/load capacity and power rating with a variation of no more than 20 percent, the specific load capacity and power rating are in section 3.4.
11	Measures are limited to those that result in emission reductions of less than or equal to 60 $ktCO_2$ equivalent annually.	According to VCS Standard version 4.4, section 3.6.9, where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit. In the grouped project, no project activity instance exceeds the capacity limit, which refers to limit of emission reductions set in AMS-III.C. version 16.0.

This project also applied Tool 21 Demonstration of additionality of small-scale project activities version 13.1 and Tool 05 Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation version 03.0. The analysis of applicability about Tool 21 and Tool 05 are presented in tables below:

Tool 21		
1	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.	For the specific case of AMS-III.C. version 16.0, additionality is demonstrated using one of the options below: option 1: Demonstrate that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in TOOL21. The barrier(s) can be demonstrated for buyers/users

		and/or charging service providers of the electric vehicles even if the manufacturer or retailer of the electric vehicles is implementing the project. option 2: Demonstrate ex ante that the market penetration of project electric/hybrid vehicles is equal to or smaller than 2.5 per cent of the annual sales of the vehicles of the same category (e.g. if project vehicles are electric scooters, market penetration of electric two wheelers is equal to or smaller than 2.5 per cent of all motorized two wheelers, irrespective of the manufacturer) in the region. To determine the market penetration, the most recent three years' data available at the time of submission of the CDM-PDD or CDM-CPA-DD for validation/inclusion shall be used. This period is considered necessary to capture variations of the sales data from year to year. Exceptionally, historical sales data covering less than three years, but a minimum of one year may be used with due justifications (e.g. demonstrated unavailability of data despite the efforts made). Relevant data to demonstrate ex-ante that the market penetration of project electric/hybrid vehicles is equal to or smaller than 2.5 per cent of the annual sales of the vehicles of the same category in the project area is absence. Option 1 is adopted to demonstrate the additionality of the project.
2	Project participants and coordinating/managing entities may also	Not applicable.

	apply "TOOL19: Demonstration of additionality of microscale project activities" as applicable.	

Tool 05		
1	If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically able to provide electricity to the electricity consumer; (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid©r (c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer can be provided with electricity from the captive power plant(s) and the grid.	Under the project scenario, the project proponent cooperates with charging piles companies, whose charging stations and charging piles are available for each project vehicle of project proponent. And the electricity coms from grid only. The electricity consumed by the project vehicles comes from the grid, which belongs to scenario A.

2	This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated: (a) Scenario I: Electricity is supplied to the grid; (b) Scenario II: Electricity is supplied to consumers/electricity consuming faciliti© or (c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.	No electricity generated in the project scenario.
3	This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO_2 emissions.	The project doesn't install captive renewable power generation technologies to provide electricity in the project activity.

This project also applied Tool 07 Tool to calculate the emission factor for an electricity system version 07.0 and Tool 27 Investment analysis version 13.0. The analysis of applicability about Tool 07 and Tool 27 are presented in tables below:

TOOL07		
1	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).	The project activity is operation commercial electric vehicles, which consume electricity that is provided by the grid. TOOL 05 is used to calculate project emission of electricity consumption, where the combined margin factor for the grid in year y is required to be measure as per the "Tool to calculate the emission factor for an electricity system", which is TOOL 07.
2	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an	The emission factor for the project electricity system is been calculated for grid power plants only.

	option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa 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.	
3	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.	The project is not a CDM project, meanwhile, the project electricity system is not located in an Annex I country.
4	Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	Not applicable. The project activity does not consume biofuels.

TOOL 27		
1	This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of	The project applied methodology AMS-III.C. version 16.0, where there are two options for additionality demonstration. Option 1: Demonstrate that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in TOOL21. The barrier(s) can be demonstrated for buyers/users and/or charging service providers of the electric vehicles even if the manufacturer or retailer of the

	additionality and/or the identification of the baseline scenario.	electric vehicles is implementing the project. Option 2: Demonstrate ex ante that the market penetration of project electric/hybrid vehicles is equal to or smaller than 2.5 per cent of the annual sales of the vehicles of the same category (e.g. if project vehicles are electric scooters, market penetration of electric two wheelers is equal to or smaller than 2.5 per cent of all motorized two wheelers, irrespective of the manufacturer) in the region. To determine the market penetration, the most recent three years' data available at the time of submission of the CDM-PDD or CDM-CPA-DD for validation/inclusion shall be used. This period is considered necessary to capture variations of the sales data from year to year. Exceptionally, historical sales data covering less than three years, but a minimum of one year may be used with due justifications (e.g. demonstrated unavailability of data despite the efforts made). Option 1 is used to demonstrate additionality, and "Non-binding best practice examples to demonstrate additionality for SSC project activities" is referred to in the methodological tool.
2	In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	Not applicable.

In conclusion, the grouped project is applicable for AMS-III.C. version16.0, tool 21 version 13.1 and tool 05 version 3.0, tool 07 version 07.0 and tool 27 version 13.0.

3.3 Project Boundary

In accordance with the applied methodology, the project boundary is comprised of:

(a) The vehicles of the project;

(b) The geographic boundaries where the project activity vehicles are operated;

(c) The providers of the charging service to the project activity vehicles, including the charging equipment and stations of the project activities vehicle, electric supply sources (e.g. a grid and/or renewable energy generation source connected by a dedicated line to the charging stations) and other ancillary facilities.

The project boundary includes the electric vehicles and the charging equipment and stations. This is a grouped project and involves the instances in which the electric vehicles running in all over China. The electricity will be supplied from the grid as electric supply sources.

Source		Gas	Included?	Justification/Explanation
Baseline	Fossil fuel combustion of vehicles displaced by project activities	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification
		N_2O	No	Excluded for simplification
Project	Electricity consumption of electric vehicles	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification
		N_2O	No	Excluded for simplification

Diagram of flows of energy and project boundary is given below:

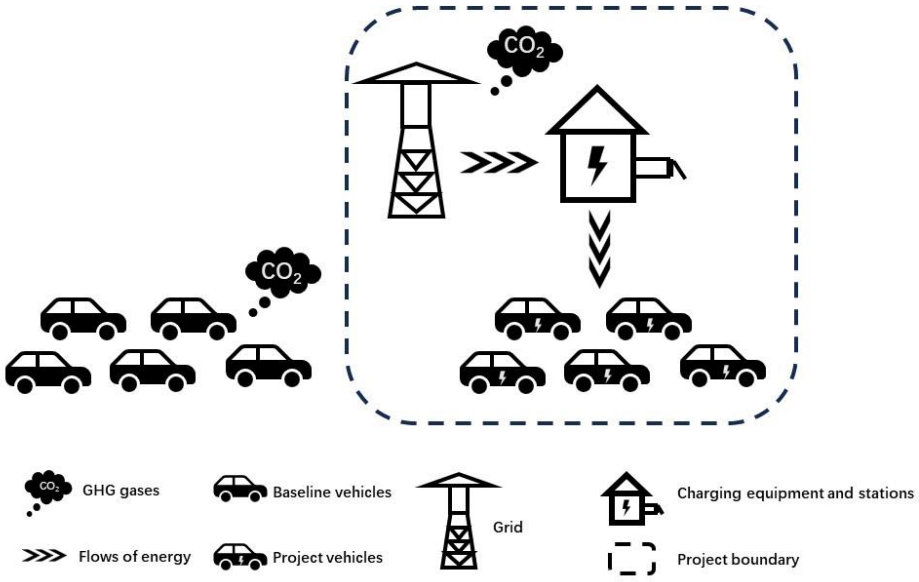


Figure 3-1 Flows of energy and project boundary

3.4 Baseline Scenario

Before the project, the project proponent didn't operate fossil fuel vehicles. The project is to introduce new commercial electric vehicles in the project area. In China, the new energy vehicles used for logistical distribution in urban accounted for 8% of all new energy vehicles till 2020[48], There were 395 million vehicles in China in 2021, and 7.84 million electric vehicles. The market share of electric vehicles is 2.60%[49]. Hence, based on the market data, the baseline scenario in the case of the operation of electric vehicles is the operation of the comparable vehicles that would have been used to provide the same transportation service.

According to the section 3.6 of VCS Standard version 16.0, the baseline scenario of grouped project has some requirements. Firstly, the grouped project has specified one clearly defined geographic area in section 1.12 within which project activity instances may be developed. Secondly, the baseline scenario and demonstration of additionality are based upon the initial project activity instances. The initial project activity instances are a total of 16,246 commercial electric vehicles. Thirdly, for there is only one geographic area identified in section 1.12, the baseline scenario for a project activity is determined for China except Hong Kong, Macao and Taiwan. This single baseline scenario can be determined for a project activity over the entirely of a geographic area.

According to the methodology applied in the project, the baseline scenario in the case of the operation of electric vehicles is the operation of the comparable vehicles that would have been used to provide the same transportation service.

The project and baseline vehicles are comparable, using the following means:

(a) Project and baseline vehicles belong to the same vehicle category, e.g. truck;

(b) Project and baseline vehicle categories have comparable passenger/load capacity and power rating with a variation of no more than 20 per cent (comparing the baseline vehicle with the respective project vehicle of the same category).

The baseline scenario involves using fossil fuel trucks or vans for logistics transportation, while the project introduces electric trucks or vans as an alternative. Both the project and baseline vehicles are categorized as trucks and vans used in logistics. Additionally, the load capacities of the project and baseline vehicles vary by no more than 20 percent, as detailed in the table below. Thus, it is confirmed that the Project and baseline vehicles are comparable.

Table 3-1 The Load Capacity of the Project and the baseline vehicles

Parameters	Truck instance		Van instance	
	Light truck	Mini truck	Light van	Minivan

[48] https://view.officeapps.live.com/op/view.aspx?src=http%3A%2F%2Fwww.gov.cn%2Fzhengce%2Fzhengceku%2F2021-11%2F18%2F5651656%2Ffiles%2F5ed9e2cdf80042fdb26535314dc62ffb.doc&wdOrigin=BROWSELINK

[49] http://www.gov.cn/xinwen/2022-01/12/content_5667715.htm

Load capacity of the Project vehicles [50](kg)	1050~1475	1170~1920	1270~1365	965~1380
Load capacity of the baseline vehicles[51] (kg)	1050~1475	985~2320	1520~1495	1080~1460
Capacity Varies	0%	17.24%~18.78%	8.7%~16.45%	5.48%~10.65%

The load capacity and power rating of project vehicles has been specified in section 1.11, Table 1-2. Baseline vehicles are those which have comparable load capacity and rated power.

Regulatory surplus

The project activity is not mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework, these can be verified by plans in section 1.14, including The Notice on the Issuance of the New Energy Vehicle Industry Development Plan (2021-2035)[52], The Notice on the Issuance of Zhejiang Province Intelligent Vehicle Innovation and Development Plan (2020-2025)[53], The Notice on the Issuance of the 14th Five-year Plan of Zhejiang Province New Energy Vehicle Industry Development[54].

[50] http://app.miit-eidc.org.cn/miitxxgk/gonggao_xxgk/index.html

[51] Source: Limits of fuel consumption for light-duty commercial vehicles and Fuel consumption limits for heavy-duty commercial vehicles published by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, Standardization Administration of China

[52] https://wap.miit.gov.cn/cms_files/filemanager/1226211233/attach/20224/73d4bf7a9abf4e1994b0fd211986641f.pdf

[53] http://www.china-nengyuan.com/news/china-nengyuan_news_147814.pdf

[54] https://www.zj.gov.cn/art/2021/4/22/art_1229203592_2270218.html

3.5 Additionality

The only one demonstration of additionality is based upon the initial project activity instances. For this grouped project, there is one geographical area which is specified in section 1.12. The area project vehicles would operate is China except Hong Kong, Macao and Taiwan. The additionality of the initial project activity instances within corresponding operation area can be demonstrated for the entirety of the project geographic area. And there is no factors relevant to the demonstration of additionality require assessment across a given area.

According to the methodology AMS-III.C. version 16.0, the methodology determines two options how to demonstrate additionality:

Option 1:

Demonstrate that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in TOOL21. The barrier(s) can be demonstrated for buyers/users and/or charging service providers of the electric vehicles even if the manufacturer or retailer of the electric vehicles is implementing the project.

Option 2:

Demonstrate ex ante that the market penetration of project electric/hybrid vehicles is equal to or smaller than 2.5 per cent of the annual sales of the vehicles of the same category (e.g. if project vehicles are electric scooters, market penetration of electric two wheelers is equal to or smaller than 2.5 per cent of all motorized two wheelers, irrespective of the manufacturer) in the region. To determine the market penetration, the most recent three years' data available at the time of submission of the CDM-PDD or CDM-CPA-DD for validation/inclusion shall be used. This period is considered necessary to capture variations of the sales data from year to year. Exceptionally, historical sales data covering less than three years, but a minimum of one year may be used with due justifications (e.g. demonstrated unavailability of data despite the efforts made).

In this project, the project proponent decided to analyse additionality according to option 1. The additionality analysis is based on the Tool 21 "Demonstration of additionality of small-scale project activities" version 13.1. In reference to the Tool 21, 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.

As the PP, Intelligent Link faces investment barriers, which is specified below.

Investment barrier:

The investment analysis is conducted through benchmark analysis. According to Section 1.2, the project is categorized as sectoral scope 7 "Transport". NPV of project shall be compared with the discount rate of 7.87% in the Table 1 of TOOL27 Version 13.0 Investment analysis, which is the value of China's transport industry.

The value of key parameters used to calculate project internal rate of return are listed below:

Parameters	Value	Unit	Source of data
Number of vehicles leased	Year: Number 2021: 2,145 2022: 13,466 2023-2031: 16,246	Number	Vehicle purchase contracts, Vehicle rental contracts and Intelligent Link Control Platform. Please refer to the investment analysis calculation sheet for specifics.
Lifetime of battery	72 ~ 96	Months	Manufacturing specification
Average purchase price per vehicle	13	10^4CNY per vehicle	Vehicle purchase contracts. Please refer to the investment analysis calculation sheet for specifics.
Average vehicle rental management system operating cost	0.036	10^4CNY per vehicle per year	Financial data of PP. Please refer to the investment analysis calculation sheet for specifics.
Other operating cost	1.65	10^4CNY per vehicle per year	Financial data of PP. Please refer to the investment analysis calculation sheet for specifics.

Number of employees	223	person	Labour contracts. Please refer to the investment analysis calculation sheet for specifics.
Average annual salary	12	10^4CNY per person	Labour contracts. Please refer to the investment analysis calculation sheet for specifics.
Average rental revenue per vehicle	3.97	10^4CNY per vehicle	Vehicle rental contracts. Please refer to the investment analysis calculation sheet for specifics.
Value-added Tax	13%	/	Current tax law of China[55]
Income tax rate	25%	/	Current tax law of China[56]
The city maintenance and construction tax rate	7%	/	Current tax law of China[57]
Education surtax rate	3%	/	Current tax law of China[58]
Unit price of VCU	30	RMB	Predicted value

All the parameters are sourced from documents provided by the project proponent including vehicle rental contracts, vehicle purchase contracts, labor contracts, which are all traceable.

The project NPV without VCUs revenues or with VCUs revenues are below:

Scenario	NPV (10^4 CNY)
Without VCUs revenues	-18,535.57
With VCUs revenues	-17,340.21

[55] https://www.gov.cn/zhengce/zhengceku/2019-10/17/content_5441139.htm

[56] https://www.chinatax.gov.cn/chinatax/n810341/n810825/c101434/c28479830/content.html

[57] https://www.chinatax.gov.cn/chinatax/n365/c5155445/content.html

[58] https://www.gov.cn/zhengce/202203/content_3338045.htm

According to the TOOL27 Investment analysis Version 13.0, a discount rate of 7.87% will be used to calculate the NPV for this project. considering the actual operating costs and benefits, in the absence of carbon revenue, the NPV of the project activities without VCU is - 185.35 million CNY, the project's NPV is negative, so there are investment obstacles in this project.

And according to table above, project NPV with VCUs revenues is higher than the project NPV without VCUs revenues, which motivates the proponent develop vehicle carbon emission reduction project.

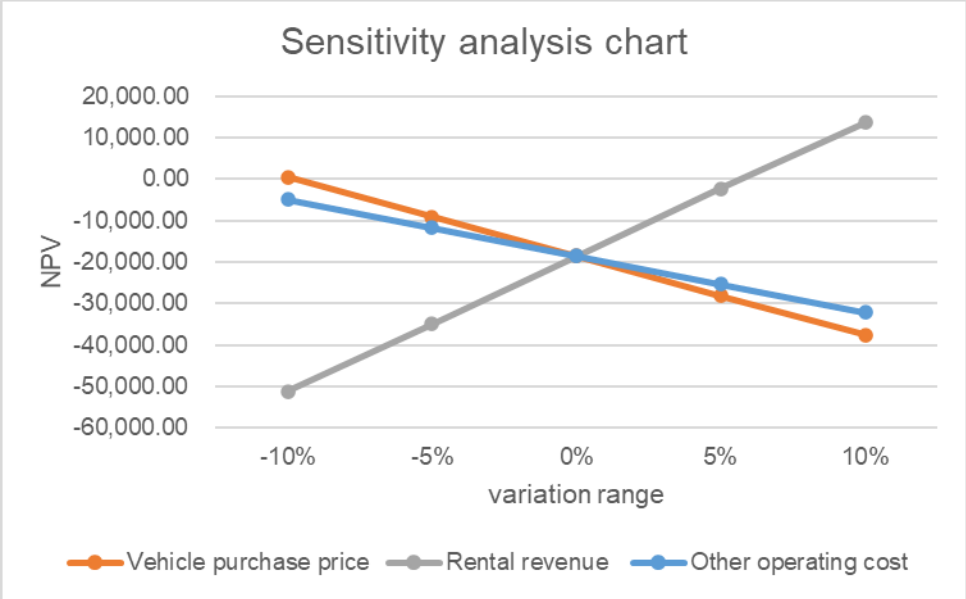
Sensitivity analysis

According to the Investment Analysis TOOL 27 Version 13.0, only variables accounting for more than 20% of the total project cost or total project revenue, should be reasonably changed (all parameter changes do not necessarily require negative or positive changes of the same magnitude). According to this guidance, sensitivity analysis were conducted on the changes of purchase price, other operating cost and rental revenue.

Assuming that the above three parameters vary in the range of -10% to +10%, the corresponding NPVs are calculated and the results are as follows.

Sensitivity analysis table

Parameters	-10%	-5%	0	5%	10%
purchase price	507.16	-9,014.20	-18,535.57	-28,056.93	-37,578.29
other operating cost	-4,912.16	-11,723.86	-18,535.57	-25,347.27	-32,158.97
Rental revenue	-51,191.12	-34,863.34	-18,535.57	-2,207.79	13,612.41



The critical point analysis results are as follows:

Item	Threshold to reach zero
purchase price	-9.73%
Other operating cost	-13.61%
Rental revenue	5.68%

For vehicles purchase price, the NPV will exceed 0 when the unit price decreases by 9.73% per year.. However, the purchase unit price of the vehicles is based on the purchase contracts for the 16,246 vehicles acquired during 2021-2023, which is a factual occurrence. Therefore, a reduction of 9.73% is not possible.

For the other operating cost, the NPV will does not exceed 0 within a range of -10% and 10% adjustment. Achieving a decrease of 13.61% in other operating costs is necessary for the NPV to exceed 0. However, this might be an unattainable target. Other operating cost including daily maintenance such as vehicle insurance, parking, inspection, cleaning, lubrication, and adjusting or replacing certain parts, office expenses, etc. As the operating time of vehicles increases, the frequency of vehicle breakdowns is likely to rise[59]. Additionally, according to data from the National Bureau of Statistics of China, labor costs and the prices of automotive spare parts increase annually[60]. These factors contribute to an increase in other operating cost. Therefore, achieving a 13.61% reduction in other operating costs may be challenging.

For rental revenue, the NPV will exceed 0 when the rental revenue increases by 5.68% each year. However, achieving an increase of 5.68% to exceed 0 is difficult.

The rental revenue will increase only when the rental of each project vehicle is growth. The factors influencing the rental revenue primarily revolve around the market competitiveness of the project's vehicles. Market competitiveness is mainly reflected in two aspects: the quantity of vehicles and their rental prices. According to the truck sales, in 2017[61], 2018[62], 2019[63], 2020[64] and 2021[65] in China, it shows an upward trend in Figure 3-2, which means the number of trucks in the market is increasing. This expands the options for renters, who will prioritize vehicles with lower rental costs. Additionally, due to factors such as the insufficient effective range of new

[59] https://www.sohu.com/a/454921780_120044219

[60] https://data.stats.gov.cn/easyquery.htm?cn=C01

[61] http://lwzb.stats.gov.cn/pub/lwzb/gzdt/201804/t20180428_4865.html

[62] http://lwzb.stats.gov.cn/pub/lwzb/gzdt/201905/t20190521_5104.html

[63] http://lwzb.stats.gov.cn/pub/lwzb/gzdt/202005/W020200528770641948487.pdf

[64] http://lwzb.stats.gov.cn/pub/lwzb/tzgg/202107/W020210723348607396983.pdf

[65] http://lwzb.stats.gov.cn/pub/lwzb/tzgg/202205/W020220511403033109667.pdf

energy logistics vehicles, the need for additional charging during transit, and the reduced cargo capacity due to carrying batteries, new energy logistics vehicles have longer operating times and fewer daily operations compared to traditional fuel vehicles, resulting in lower operational efficiency. This implies that renters would only prioritize project vehicles if the rental prices are lower than those of traditional fuel vehicles. Regarding the purchase price of project vehicles, even after factoring in purchase subsidies, the acquisition cost of new energy logistics vehicles remains higher than that of traditional fuel logistics vehicles, with a price difference of 30,000 to 100,000 CNY for equivalent models[66]. Therefore, it can be concluded that, compared to fuel vehicles, project vehicles do not have a rental cost advantage.

Therefore, it is unlikely that the rental rates for project vehicles would increase by 5.68%.

From the analysis above, the project NPV shall not exceed 0.

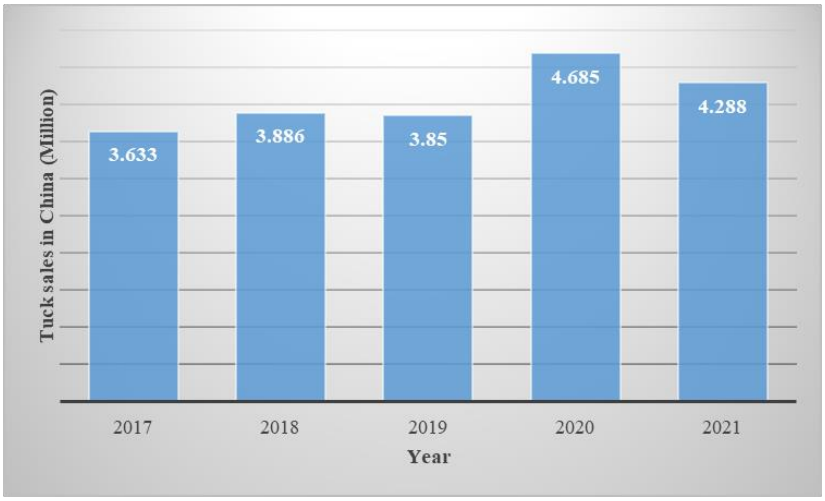


Figure 3-2 Truck sales from 2017 to 2021 in China

NPV comparison

Due to the project proponent not operating traditional fuel vehicles before, there is no accurate financial data for the baseline vehicle operations. According to the NPV analysis process for the project vehicles mentioned above, we can infer that the sensitivity factors are the vehicle purchase unit price, other operating cost and the rental revenue. The higher the vehicle purchase unit price and the lower the rental cost, the more positive the project NPV; conversely, the NPV becomes more negative. Whether operating traditional fuel vehicles or electric vehicles, there are additional operational costs. For a more straightforward comparison, it can be assumed that the other operating costs under the baseline scenario are the same as those under the project scenario.

[66] https://wri.org.cn/insights/5-keys-zero-emission-logistic-vehicles-promotion

Regarding the vehicle purchase unit price, it is evident from the collected information that, even with the exemption from the vehicle purchase tax for new energy commercial vehicles, they still tend to be more expensive than traditional fuel commercial vehicles of equivalent specifications[67]. Additionally, considering the lifespan of vehicles, electric vehicles typically have a lifespan of 6 to 8 years due to battery considerations, and after reaching the end of their lifespan, the batteries need replacement and maintenance to continue usage. In contrast, the lifespan of traditional fuel vehicles is generally 12 to 15 years[68], significantly longer than electric vehicles. From the perspective of the vehicle lifecycle, the purchase unit price of traditional fuel vehicles is noticeably lower than that of electric vehicles.

Regarding vehicle rental revenue, traditional fuel commercial vehicles are more attractive to users under equivalent conditions due to factors such as longer range, shorter refueling times, and fewer restrictions on charging facilities[69],[70]. Compared to electric vehicles, traditional fuel vehicles are currently more suitable for logistics transportation[71]. This implies that traditional fuel vehicles are more attractive to consumers in this type of leasing market[72]. Therefore, the rental revenue for fuel vehicles is likely to be higher.

In summary, from the comparative analysis of the vehicle purchase unit price and rental revenue, it is evident that the NPV for baseline vehicles is superior to the NPV for project vehicles.

Given those barriers, if the project is not carried out, the owner will prefer to operate fossil fuel vehicles, which is more economical but will emit more greenhouse gases.

In summary, this project is additional.

3.6 Methodology Deviations

There are no deviations from the methodology.

[67] https://wri.org.cn/insights/5-keys-zero-emission-logistic-vehicles-promotion

[68] http://www.mofcom.gov.cn/zfxxgk/article/xxyxgz/202112/20211203231250.shtml

[69] HU Yuhan. Climate, Health Impacts, and Social Costs of Electric Vehicles in China: A Cost-Benefit Analysis.

[70] https://www.evpartner.com/news/210/detail-54188.html

[71] https://www.sohu.com/a/454921780_120044219

[72] https://www.pcauto.com.cn/hj/article/2295632.html

4 IMPLEMENTATION STATUS

4.1 Implementation Status of the Project Activity

During this monitoring period, initial project activity instances including 16,246 commercial electric vehicles leased and operated normally within the project area. Project vehicle purchase record and lease contact are saved each time by the finance department of Intelligent Link. The daily operation mileage and status are transferred from the T-BOX equipped in the project vehicles to the Intelligent Link Control Platform and maintained by the technical department of Intelligent Link. Then the operation data has been used to calculate project emission reductions before fully checked the authenticity and accuracy by both project proponent leader and Search CO2. During this monitoring period, there are no events occurred that may impact the GHG emission reductions and monitoring.

5 ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline emissions are calculated based on initial project activity instances. There is no factor relevant to the determination of the baseline scenario require assessment across a given area. Baseline emissions should be calculated using one of the two approaches described below:

Approach 1: Using distance travelled by project vehicles

The baseline emissions are calculated based on the unit of service provided by the project vehicles (travelled distance) times the emission factor for the baseline vehicle to provide the same unit of service as per the equation below:

$$BE_y = \sum_i EF_{BL,km,i} \times DD_{i,y} \times N_{i,y} \times 10^{-6} \quad (1)$$

Where:

BE_y = Total baseline emissions in year *y* (t CO_2)

$EF_{BL,km,i}$ = Emission factor for baseline vehicle category *i* (g CO_2/km)

$DD_{i,y}$ = Annual average distance travelled by project vehicle category i in the year *y* (km)

$N_{i,y}$ = Number of operational project vehicles in category *i* in year *y*

Approach 2: Using the electricity used to charge the vehicles

The baseline emissions are calculated as per the equation below by transforming the electricity charged to the vehicles at the charging stations/points into travelled distance and the emission factor for fossil fuels used by the baseline vehicles to travel the same distance.

$$BE_y = \sum_i EF_{BL,km,i} \times \frac{EC_{PJ,i,y}}{SEC_{PJ,km,i,y}} \times 10^{-6} \quad (2)$$

Where:

BE_y	=	Total baseline emissions in year *y* (t CO_2)
$EC_{PJ,i,y}$	=	The electricity consumed for charging project vehicles category i at the charging stations/points in year y (kWh)
$EF_{BL,km,i}$	=	Emission factor for baseline vehicle category i (g CO_2/km)
$SEC_{PJ,km,i,y}$	=	Specific electricity consumption per km per project vehicle category i in year y (kWh/km)

The emission factor for baseline vehicle category ($EF_{BL,km,i}$) shall be determined as follows:

$$EF_{BL,km,i} = SFC_i \times NCV_{BL,i} \times EF_{BL,i} \times IR^t \quad (3)$$

Where:

SFC_i	=	Specific fuel consumption of baseline vehicle category i (g/km)
$NCV_{BL,i}$	=	Net calorific value of fossil fuel consumed by baseline vehicle category I (J/g)
$EF_{BL,i}$	=	Emission factor of fossil fuel consumed by baseline vehicle category i (g CO_2/J)
IR^t	=	Technology improvement factor for baseline vehicle in year t. The improvement rate is applied to each calendar year. The default value of the technology improvement factor for all baseline vehicle categories is 0.99
T	=	Year counter for the annual improvement (dependent on age of data per vehicle category)

"Approach 1: Using distance travelled by project vehicles" in the methodology is used by project proponent to calculate the baseline emissions.

There are 5 options in AMS-III.C. version 16.0 to determine the specific fuel consumption of baseline vehicle category i (SFC).

Option (1): Sample measurement

Option (2): Top 20 per cent of the comparable vehicles used for public/private transportation

Option (3): Using operational data of the vehicles under baseline operational conditions

Option (4): Using data from a control group of vehicles

Option (5): Existing statistics

The grouped project is operating commercial electric vehicles in the whole China except Hong Kong, Macao and Taiwan, so the baseline vehicles should be all the comparable vehicles operate in the project area. The scale of baseline vehicles is enormous and difficult to collect, so the option 1 and option 2 are not applicable. There is no operation data of the vehicles under baseline operation conditions, so the option 3 is also not applicable. Additionally, there is no specific fuel consumption of a control group or existing statistics been monitored throughout the project crediting period. So, the option 4 is also not applicable.

The first four options are not applicable due to lack of data, so other public available existing statistics could be used as industry default values, such as host country statistics (released by transportation department or other authorities), IPCC or other international data. The project proponent used Limits of fuel consumption for light-duty commercial vehicles [73] and Fuel consumption limits for heavy-duty commercial vehicles[74] published by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, Standardization Administration of China to determine the specific fuel consumption of each baseline vehicle category.

The parameters used to calculate ex-ante $EF_{BL,km,i}$ is determined and justified as below:

<table>
<tr><th>Parameter</th><th>Value</th><th>Data source</th></tr>
<tr><td>SFC_i</td><td><table><tr><td>Category</td><td>Value(g/km)</td></tr><tr><td>Light truck</td><td>100.05</td></tr><tr><td>Mini truck</td><td>65.97</td></tr><tr><td>Light van</td><td>69.60</td></tr><tr><td>Minivan</td><td>54.37</td></tr></table></td><td>Host country statistics</td></tr>
<tr><td>$NCV_{BL,i}$</td><td>42,500 J/g</td><td>Default value from IPCC 2019 Volume 2 Energy, table 1.2, the value of gasoline</td></tr>
</table>

[73] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=9CA804A15C0D4177BF63C1D3F5B90E4F

[74] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=9C036161B1CEAFDA5225B7184A67229B

$EF_{BL,i}$	0.0000675 g CO_2/J	Default value from IPCC 2019 Volume 2 Energy, table 1.4, the value of gasoline
IR^t	0.99	AMS-III.C. version 16.0, page 9

The parameters used to calculate ex-ante BE_y is determined and justified as below:

<table>
<tr><td>Parameter</td><td colspan="5">Value</td><td>Data source</td></tr>
<tr><td>$EF_{BL,km,i}$</td><td colspan="5">Calculated</td><td>Calculated</td></tr>
<tr><td>$DD_{i,y}$</td><td colspan="5"><table>
<tr><td>Project activity instances</td><td colspan="2">Truck instance</td><td colspan="2">Van instance</td></tr>
<tr><td>Vehicle categories</td><td>Light truck</td><td>Mini truck</td><td>Light van</td><td>Minivan</td></tr>
<tr><td>2021</td><td>2,073</td><td>435</td><td>1,539</td><td>796</td></tr>
<tr><td>2022</td><td>17,784</td><td>6,563</td><td>14,792</td><td>17,067</td></tr>
<tr><td>2023</td><td>13,215</td><td>9,058</td><td>9,739</td><td>8,536</td></tr>
<tr><td>2024-2031</td><td>110,000</td><td>50,000</td><td>120,000</td><td>80,000</td></tr>
</table></td><td>The data for the first monitoring period came from Intelligent Link Control Platform and the data for the later years came from the project proponent</td></tr>
<tr><td>$N_{i,y}$</td><td colspan="5"><table>
<tr><td>Project activity instances</td><td colspan="2">Truck instance</td><td colspan="2">Van instance</td></tr>
<tr><td>Vehicle categories</td><td>Light truck</td><td>Mini truck</td><td>Light van</td><td>Minivan</td></tr>
<tr><td>2021</td><td>1,036</td><td>46</td><td>338</td><td>725</td></tr>
<tr><td>2022</td><td>5,289</td><td>1,391</td><td>2,855</td><td>3,931</td></tr>
<tr><td>2023</td><td>5,843</td><td>1,691</td><td>3,061</td><td>5,651</td></tr>
<tr><td>2024-2031</td><td>5,843</td><td>1,691</td><td>3,061</td><td>5,651</td></tr>
</table></td><td>The data for the first monitoring period came from Intelligent Link Control Platform and the data for the later years came from the project proponent</td></tr>
</table>

The result of ex-ante BE_y is justified as below:

Project activity instances	Truck instance		Van instance		Total
Category	Light truck	Mini truck	Light van	Minivan	
2021	610	4	103	89	804
2022	26,459	1,693	8,264	10,256	46,672
2023	64,511	8,438	17,326	21,900	112,175
2024	177,206	15,371	70,451	67,734	330,761
2025	175,434	15,217	69,747	67,057	327,454
2026	173,680	15,065	69,049	66,386	324,179
2027	171,943	14,914	68,359	65,722	320,937
2028	170,224	14,765	67,675	65,065	317,728
2029	168,521	14,617	66,998	64,415	314,550
2030	166,836	14,471	66,328	63,770	311,405
2031	137,640	11,939	54,721	52,611	256,909
Total	1,433,065	126,494	559,020	545,006	2,663,574

5.2 Project Emissions

The project emissions are also calculated according to the initial project activity instances. And some parameters, such as grid emission factors are assessed across given areas for there are six regional grids in the project area. The project emissions achieved by initial project activity instances or grouped project need be calculated across given areas

Project emissions include the electricity and fossil fuel consumption associated with the operation of project vehicles and shall be calculated as follows:

Approach 1: Using distance travelled by project vehicles

$$PE_y = \sum_i EF_{PJ,km,i,y} \times DD_{i,y} \times N_{i,y} \quad (4)$$

Where:

PE_y = Total project emissions in year *y* (t CO_2)

$EF_{PJ,km,i,y}$ = Emission factor per kilometre travelled by the project vehicle type *i* (t CO_2/km)

$DD_{i,y}$ = Annual average distance travelled by project vehicle category *i* in the year *y* (km)

$N_{i,y}$ = Number of operational project vehicles in category *i* in year *y*

Approach 2: Using the electricity used to charge the vehicles

$$PE_y = \sum_i EF_{PJ,km,i} \times \frac{EC_{PJ,i,y}}{SEC_{PJ,km,i,y}} \quad (5)$$

Where:

$EC_{PJ,i,y}$ = Electricity consumed by the project vehicles of type i in year y (kWh)

$SEC_{PJ,km,i,y}$ = Specific electricity consumption by project vehicle category i per km in year y in urban conditions (kWh/km)

i = Vehicle types of project activities

The emission factor of the project vehicles shall be determined as follows:

$$EF_{PJ,km,i,y} = \sum_i SEC_{PJ,km,i,y} \times EF_{elect,y}/(1 - TDL_y) \times 10^{-3} + \sum_i SFC_{PJ,km,i,y} \times NCV_{PJ,i} \times EF_{PJ,i} \times 10^{-6} \quad (6)$$

Where:

$SEC_{PJ,km,i,y}$ = Specific electricity consumption by project vehicle category *i* per km in year *y* in urban conditions (kWh/km)

$EF_{elect,y}$ = CO_2 emission factor of electricity consumed by project vehicle category *i* in year *y* (kg CO_2/kWh)

$SFC_{PJ,km,i,y}$ = Specific fossil fuel consumption by project vehicle category *i* per km in year *y* in urban conditions (g/km)

$EF_{PJ,i}$ = CO_2 emission factor of fossil fuel consumed by project vehicle category *i* in year *y* (g CO_2/J)

$NCV_{PJ,i}$ = Net calorific value of the fossil fuel consumed by project vehicle category *i* in year *y* (J/g)

TDL_y = Average technical transmission and distribution losses for providing electricity in the year *y*

The grouped project is to operate commercial electric vehicles, not include hybrid vehicles, so the $SFC_{PJ,km,l,y}$, $NCV_{PJ,i}$ and $EF_{PJ,i}$ don't have to be calculate in formula 6.

"Approach 1: Using distance travelled by project vehicles" in the methodology is used by project proponent to calculate the project emissions.

The parameters used to calculate ex-ante $EF_{PJ,km,i,y}$ is determined and justified as below:

Parameter	Value	Data source

<table>
<tr>
<td>$SEC_{PJ,km,i,y}$</td>
<td>
<table>
<tr><td colspan="2">Project activity instance</td><td colspan="2">Truck instance</td><td colspan="2">Van instance</td></tr>
<tr><td colspan="2">Vehicle categories</td><td>Light truck</td><td>Mini truck</td><td>Light van</td><td>Minivan</td></tr>
<tr><td colspan="2">Value provided by manufacturers[75]</td><td>0.2292</td><td>0.2377</td><td>0.2068</td><td>0.1521</td></tr>
<tr><td rowspan="3">Monitoring Value</td><td>2021</td><td>0.3527</td><td>0.2033</td><td>0.2485</td><td>0.1390</td></tr>
<tr><td>2022</td><td>0.3265</td><td>0.2318</td><td>0.2138</td><td>0.1602</td></tr>
<tr><td>2023</td><td>0.3443</td><td>0.2609</td><td>0.2068</td><td>0.1651</td></tr>
<tr><td rowspan="3">Value used for ER calculation</td><td>2021</td><td>0.3527</td><td>0.2377</td><td>0.2485</td><td>0.1521</td></tr>
<tr><td>2022</td><td>0.3265</td><td>0.2377</td><td>0.2138</td><td>0.1602</td></tr>
<tr><td>2023</td><td>0.3443</td><td>0.2609</td><td>0.2068</td><td>0.1651</td></tr>
</table>
</td>
<td>Project proponent.

Refer to Sections 6.1 and 7.1 for details</td>
</tr>
<tr>
<td>$EF_{elect,y}$</td>
<td>
<table>
<tr><td>National power grids</td><td>$EF_{grid,OM\ Simple,y}$</td><td>$EF_{grid,BM,y}$</td><td>EFelect,y</td></tr>
<tr><td>Northeast China regional power grid</td><td>1.0826</td><td>0.2399</td><td>0.6613</td></tr>
<tr><td>North China regional power grid</td><td>0.9419</td><td>0.4819</td><td>0.7119</td></tr>
<tr><td>East China regional power grid</td><td>0.7921</td><td>0.3870</td><td>0.5896</td></tr>
<tr><td>Central China regional power grid</td><td>0.8587</td><td>0.2854</td><td>0.5721</td></tr>
<tr><td>Southern China regional power grid</td><td>0.8042</td><td>0.2135</td><td>0.5089</td></tr>
<tr><td>Northwest China regional power grid</td><td>0.8922</td><td>0.4407</td><td>0.6665</td></tr>
</table>
</td>
<td>TOOL 07 and 2019 Annual Emission Reduction Project of China's Regional Power Grid Baseline Emission Factors.

See below for details.</td>
</tr>
<tr>
<td>TDL_y</td>
<td>5.26% (2021), 4.84% (2022), 4.84% (2023-2031) The value of TDLy in 2022 is used to estimate values of TDLy in 2023-2031.</td>
<td>Measured as per procedures of TOOL 05 according to the methodology this project applied. For electricity project vehicles used comes from</td>
</tr>
</table>

[75] From operating manuals of project vehicles

		national grid, which belongs to scenario A in TOOL 05, annual average value based on the most recent data available within the host country was chosen as the source of data, which is The National Energy Administration released statistics on the country's power industry in 2022 and 2021

Determination of the emission factor for electricity generation (EFelect,y)

Scenario A of the tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" is applicable for the project for the electricity is purchased from the grid only, and either no captive power plant is installed at the site of electricity consumption.

According to the tool "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation", EFEF.ky is calculated using the "Tool to calculate the emission factor for an electricity system"(EFEFky = EFgrid.cM,y).

Details of the calculations and data follow the published data from the Ministry of Ecology and Environment of the People's Republic of China [76], which uses official national statistics.

Step 1: Identify the relevant electric power system

[76] https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml

The delineation of the project electricity system and connected electricity system as defined by Ministry of Ecology and Environment, PRC has been used to define the relevant electric power system. As explained in section 3.3 above, the electricity for the project's vehicles is sourced from China's six regional power grids. Therefore, China's six regional power grids is identified as the electric power system of the Project.

Step 2: Choose whether to include off-grid power plants in the project electricity system

Project participants may choose between the following two options to calculate the operating

margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation.

Following the calculations of the Ministry of Ecology and Environment, PRC, and the statistical data available, Option I is chosen.

Step 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor (EFgrid,OM,y) is based on one of the following methods:

(a) Simple OM, or

(b) Simple adjusted OM, or

(c) Dispatch data analysis OM, or

(d) Average OM.

Detailed information to carry out a dispatch data analysis is not publicly available; therefore,

method (b) and method (c) is not suitable for the Project.

According to “Tool to calculate the emission factor for an electricity system”, the Simple OM method is applicable to the project if low-cost resources7 constitute less than 50% of total grid generation (excluding electricity generated by off-grid power plants) in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production.

The approach 1) was chosen for calculation and low-cost/must-run resources constitute less than 50% of total grid generation in average of the five most recent years. Therefore, Method (a) Simple OM was selected.

The Simple OM can be calculated using either of the two following data vintages:

(a) Ex ante option: If the ex ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average,

based on the most recent data available at the time of submission of the PD to the DOE for validation.

(b) Ex post option: If the ex post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

Here ex-ante vintage is chosen, and the EFgrid,OM,y is fixed during the crediting period. The date of the publication of the most recent official data for the calculation of the emission factor prior to the start of validation was 29/12/2020.

Step 4: Calculate the operating margin emission factor according to the selected method

The simple OM emission factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (t CO2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

The simple OM may be calculated by one of the following two options：

(a) Option A: Based on the net electricity generation and a CO2 emission factor of each power unit; or

(b) Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Option B can only be used if:

(a) The necessary data for Option A is not available; and

(b) Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and

(c) Off-grid power plants are not included in the calculation (i.e. if Option I has been chosen in Step 2).

Following the calculations of the Ministry of Ecology and Environment, PRC, Option B is chosen. The criteria for Option B are met:

(a) The necessary data for Option A is not available, as indicated in the calculations of the DNA; and

(b) Only nuclear and renewable power generation are considered as low-cost/must-run power sources, and the quantity of electricity supplied to the grid by these sources is known; and

(c) Option I is chosen in Step 2.

The project uses Option B for calculating the simple OM emission factor as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_y}$$

Where:

EFgrid,OMsimple,y = Simple operating margin CO2 emission factor in year y (t CO2/MWh);

FCi,y = Amount of fuel type i consumed in the project electricity system in year y (mass or volume unit);

NCVi,y = Net calorific value (energy content) of fuel type i in year y (GJ/mass or volume unit);

EFCO2,i,y = CO2 emission factor of fuel type i in year y (tCO2/GJ);

EGy = Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year y (MWh);

i = All fuel types combusted in power sources in the project electricity system in year y;

y = The relevant year as per the data vintage chosen in Step 3.

Based on the data available, the three-year average operating margin emission factor is calculated as a full-generation-weighted average of the emission factors. Details of the calculations and data follow the published data from Ministry of Ecology and Environment, PRC, which uses official national statistics[77].

National power grids	$EF_{grid,OM\ Simple,y}$ (t CO_2/MWh)
Northeast China regional power grid	1.0826
North China regional power grid	0.9419
East China regional power grid	0.7921
Central China regional power grid	0.8587
Southern China regional power grid	0.8042
Northwest China regional power grid	0.8922

Step 5: Calculate the build margin (BM) emission factor

In terms of vintage of data, project participants can choose between one of the following two options:

(a) Option 1: for the crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time

[77] https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml

of PD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) Option 2: for the crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

For the project, option 1 is chosen to calculate Build Margin emission factor (EFgrid, BM, y).

The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:

(a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently (SET5-units) and determine their annual electricity generation (AEGSET-5-units, in MWh);

(b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEGtotal, in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEGtotal (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) (SET$\geqslant$ 20%) and determine their annual electricity generation (AEGSET-$\geqslant$20%, in MWh);

(c) From SET5-units and SET$\geqslant$20% select the set of power units that comprises the larger annual electricity generation (SET sample); Identify the date when the power units in SET sample started to supply electricity to the grid. If none of the power units in SET sample started to supply electricity to the grid more than 10 years ago, then use SETsample to calculate the build margin. Ignore steps (d), (e) and (f).

Otherwise:

(d) Exclude from SETsample the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as CDM project activities, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that

unit is fully included in the calculation) to the extent is possible. Determine for the resulting set (SET sample-CDM) the annual electricity generation (AEGSET-sample-CDM, in MWh);

If the annual electricity generation of that set comprises at least 20% of the annual electricity generation of the project electricity system (i.e. AEGSET-sample-CDM 0.2´AEGtotal), then use the sample group SETsample-CDM to calculate the build margin. Ignore steps (e) and (f). Otherwise:

(e) Include in the sample group SETsample-CDM the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);

(f) The sample group of power units m used to calculate the build margin is the resulting set (SETsample-CDM->10yrs).

The Build Margin Emission Factor (EFgrid, BM, y) is calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}}$$

Where:

EFgrid,BM,y = Build margin CO2 emission factor in year y (tCO2/MWh);

EGm,y = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh);

EFEL,m,y = CO2 emission factor of power unit m in year y (tCO2/MWh);

m = Power units included in the build margin;

y = Most recent historical year for which electricity generation data is available.

Based on the data available, the Build Margin Emission Factor (EFgrid, BM, y) is calculated as follows. Details of the calculations and data follow the published data from the Ministry of Ecology and Environment, PRC, which uses official national statistics[78].

National power grids	$EF_{grid,BM,y}$ (t CO_2/MWh)
Northeast China regional power grid	0.2399
North China regional power grid	0.4819

[78] https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml

East China regional power grid	0.3870
Central China regional power grid	0.2854
Southern China regional power grid	0.2135
Northwest China regional power grid	0.4407

The EFgrid,OM,y and EFgrid,BM,y of the crediting period of the project is calculated ex-ante and will not change during the fixed crediting period.

STEP 6: Calculate the combined margin emission factor

The calculation of the combined margin (CM) emission factor (EFgrid,CM,y) is based on one of the following methods:

(a) Weighted average CM; or

(b) Simplified CM.

The weighted average CM method (option a) should be used as the preferred option. The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where

EFgrid,OM,y = Operating margin CO2 emission factor in year y (t CO_2/MWh)

EFgrid,BM,y = Build margin CO2 emission factor in year y (t CO_2/MWh)

wOM = Weighting of operating margin emission factor (per cent)

wBM = Weighting of build margin emission factor (per cent)

According to 'Tool to calculate the emission factor for an electricity system', the weights of OM and BM for hydropower projects are as follows:

wOM = 0.5, wBM = 0.5

Therefore, the combined baseline emission factor:

National power grids	$EF_{grid,OM\ Simple,y}$ t CO_2/MWh	$EF_{grid,BM,y}$ t CO_2/MWh	$EF_{elect,y}$ t CO_2/MWh
Northeast China regional power grid	1.0826	0.2399	0.6613

North China regional power grid	0.9419	0.4819	0.7119
East China regional power grid	0.7921	0.3870	0.5896
Central China regional power grid	0.8587	0.2854	0.5721
Southern China regional power grid	0.8042	0.2135	0.5089
Northwest China regional power grid	0.8922	0.4407	0.6665

The used to calculate ex-ante $PE_y$is determined and justified as below:

<table>
<tr><td>Parameter</td><td colspan="5">Value</td><td>Data source</td></tr>
<tr><td>$EF_{PJ,km,i,y}$</td><td colspan="5">Calculated</td><td>Calculated</td></tr>
<tr><td>$DD_{i,y}$</td><td colspan="5"><table>
<tr><td>Project activity instances</td><td colspan="2">Truck instance</td><td colspan="2">Van instance</td></tr>
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<tr><td>2021</td><td>2,073</td><td>435</td><td>1,539</td><td>796</td></tr>
<tr><td>2022</td><td>17,784</td><td>6,563</td><td>14,792</td><td>17,067</td></tr>
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<tr><td>2024-2031</td><td>110,000</td><td>50,000</td><td>120,000</td><td>80,000</td></tr>
</table></td><td>The data for the first monitoring period came from Intelligent Link Control Platform and the data for the later years came from the project proponent</td></tr>
<tr><td>$N_{i,y}$</td><td colspan="5"><table>
<tr><td>Project activity instances</td><td colspan="2">Truck instance</td><td colspan="2">Van instance</td></tr>
<tr><td>Vehicle categories</td><td>Light truck</td><td>Mini truck</td><td>Light van</td><td>Minivan</td></tr>
<tr><td>2021</td><td>1,036</td><td>46</td><td>338</td><td>725</td></tr>
<tr><td>2022</td><td>5,289</td><td>1,391</td><td>2,855</td><td>3,931</td></tr>
<tr><td>2023</td><td>5,843</td><td>1,691</td><td>3,061</td><td>5,651</td></tr>
<tr><td>2024-2031</td><td>5,843</td><td>1,691</td><td>3,061</td><td>5,651</td></tr>
</table></td><td>The data for the first monitoring period came from Intelligent Link Control Platform and the data for the later years came from the project proponent</td></tr>
</table>

The result of ex-ante PE_y is justified as below:

Project activity instances	Truck instance		Van instance		Total
Category	Light truck	Mini truck	Light van	Minivan	
2021	463	3	83	54	605
2022	18,817	1,314	5,446	6,482	32,059
2023	48,510	7,199	11,165	14,422	81,296
2024	134,862	12,621	49,927	43,730	241,142
2025	134,862	12,621	49,927	43,730	241,142
2026	134,862	12,621	49,927	43,730	241,142
2027	134,862	12,621	49,927	43,730	241,142
2028	134,862	12,621	49,927	43,730	241,142
2029	134,862	12,621	49,927	43,730	241,142
2030	134,862	12,621	49,927	43,730	241,142
2031	112,385	10,518	41,606	36,442	200,951
Total	1,124,206	107,383	407,790	363,510	2,002,905

5.3 Leakage

No leakage calculation is required for this methodology.

5.4 Estimated Net GHG Emission Reductions and Removals

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (7)$$

Where:

ER_y = Emission reductions in year *y* (t CO_2e)

BE_y = Baseline emissions in year *y* (t CO_2e)

PE_y = Project emissions in year *y* (t CO_2e)

LE_y = Leakage emissions in year *y* (t CO_2e)

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
2021(08-October-2021 to 31-December-2021)	804	605	0	199
2022(01-January-2022 to 31-December-2022)	46,672	32,059	0	14,613
2023(01-January-2023 to 31-December-2023)	112,175	81,296	0	30,879
2024(01-January-2024 to 31-December-2024)	330,761	241,142	0	89,619
2025(01-January-2025 to 31-December-2025)	327,454	241,142	0	86,312
2026(01-January-2026 to 31-December-2026)	324,179	241,142	0	83,037
2027(01-January-2027 to 31-December-2027)	320,937	241,142	0	79,795

2028(01-January-2028 to 31-December-2028)	317,728	241,142	0	76,586
2029(01-January-2029 to 31-December-2029)	314,550	241,142	0	73,408
2030(01-January-2030 to 31-December-2030)	311,405	241,142	0	70,263
2031(01-January-2031 to 07-October-2031)	256,909	200,951	0	55,958
Total	2,663,574	2,002,905	0	660,669

6 MONITORING

6.1 Data and Parameters Available at Validation

Data / Parameter	SFC_i
Data unit	g/km
Description	Specific fuel consumption of baseline vehicle category i (g/km)
Source of data	Host country statistics[79][80]

[79] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=9CA804A15C0D4177BF63C1D3F5B90E4F

[80] http://c.gb688.cn/bzgk/gb/showGb?type=online&hcno=9C036161B1CEAFDA5225B7184A67229B

Value applied:	<table><tr><th>Project activity instance</th><th>Vehicle categories</th><th>Value</th></tr><tr><td rowspan="2">Truck instance</td><td>Light truck</td><td>100.05</td></tr><tr><td>Mini truck</td><td>65.97</td></tr><tr><td rowspan="2">Van instance</td><td>Light van</td><td>69.60</td></tr><tr><td>Minivan</td><td>54.37</td></tr></table> The baseline fossil fuel vehicles are comparable with project vehicles in capacity and rated power.
Justification of choice of data or description of measurement methods and procedures applied	There are 5 options in AMS-III.C. version 16.0 to determine the specific fuel consumption of baseline vehicle category I (SFC). Option (1): Sample measurement Option (2): Top 20 per cent of the comparable vehicles used for public/private transportation Option (3): Using operational data of the vehicles under baseline operational conditions Option (4): Using data from a control group of vehicles Option (5): Existing statistics The grouped project is operating commercial electric vehicles in the whole China except Hong Kong, Macao and Taiwan, so the baseline vehicles should be all the comparable vehicles operate in the project area. The scale of baseline vehicles is enormous and difficult to collect, so the option 1 and option 2 are not applicable. There is no operation data of the vehicles under baseline operation conditions, so the option 3 is also not applicable. Additionally, there is no specific fuel consumption of a control group or existing statistics been monitored throughout the project crediting period. So, the option 4 is also not applicable. The first four options are not applicable due to lack of data, so other public available existing statistics could be used as industry default values, such as host country statistics (released by transportation department or other authorities), IPCC or other international data. The project proponent used Limits of fuel consumption for light-duty commercial vehicles and Fuel consumption limits for heavy-duty commercial vehicles published by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, Standardization Administration of China to determine the specific fuel consumption of each baseline vehicle category.
Purpose of Data	Calculation of baseline emissions

Comments	N/A

Data / Parameter	IR^t
Data unit	N/A
Description	Technology improvement factor for baseline vehicle in year t. The improvement rate is applied to each calendar year.
Source of data	AMS-III.C. version16.0, page 9
Value applied:	0.99
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of Data	Calculation of baseline emissions
Comments	N/A

6.2 Data and Parameters Monitored

Data / Parameter	$DD_{i,y}$
Data unit	km
Description	Annual average distance travelled by project vehicle category i in the year y (km)
Source of data	The data for the first monitoring period came from Intelligent Link Control Platform , and the data for the later years came from the project proponent
Description of measurement methods and procedures applied	Measure the annual average distance driven by the project vehicles through: Option (A): monitoring of all vehicles or Option (B): representative sample survey of vehicles for each vehicle category. Sample vehicles shall be chosen in accordance with the latest version of the "Guidelines for sampling and surveys for CDM project activities and programme of activities" using a 90 per cent confidence interval and +/-

<table>
<tr><td></td><td>10 per cent precision to determine the sample size. The lower bound of 95 per cent confidence interval shall be used as the annual distance travelled

The annual average distance travelled by the project vehicles are provided by the project proponent through monitoring all vehicles in option A. All project vehicles are equipped with T-BOX, which can collect and transfer the operation mileage data to the project proponent.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Annually</td></tr>
<tr><td>Value applied:</td><td>
<table>
<tr><td>Project activity instances</td><td colspan="2">Truck project activity instance</td><td colspan="2">Van project activity instance</td></tr>
<tr><td>Vehicle categories</td><td>Light truck</td><td>Mini truck</td><td>Light van</td><td>Minivan</td></tr>
<tr><td>2021</td><td>2,073</td><td>435</td><td>1,539</td><td>796</td></tr>
<tr><td>2022</td><td>17,784</td><td>6,563</td><td>14,792</td><td>17,067</td></tr>
<tr><td>2023</td><td>13,215</td><td>9,058</td><td>9,739</td><td>8,536</td></tr>
<tr><td>2024-2031</td><td>110,000</td><td>50,000</td><td>120,000</td><td>80,000</td></tr>
</table>
Values of each year from 2021 to 2023 were calculated by the data from Intelligent Link Control Platform, the value of 2024-2031 is an estimated value.
</td></tr>
<tr><td>Monitoring equipment</td><td>Intelligent Link Control Platform</td></tr>
<tr><td>QA/QC procedures applied</td><td>The platform of Intelligent Link will be maintained daily by the technical staff. And the project proponent leader will document the mileage data and storage it.</td></tr>
<tr><td>Purpose of data</td><td>Calculation of project emissions

Calculation of baseline emissions</td></tr>
<tr><td>Calculation method</td><td>The total annual mileage is summed of monthly mileage of each category project vehicles, then is divided by the total annual number of operated project vehicles, then the annual average distance travelled by project vehicle category i in the year y was obtained.</td></tr>
<tr><td>Comments</td><td>N/A</td></tr>
</table>

<table>
<tr><td>Data / Parameter</td><td>$N_{i,y}$</td></tr>
<tr><td>Data unit</td><td>Number</td></tr>
<tr><td>Description</td><td>Number of operational project vehicles in category i in year y</td></tr>
<tr><td>Source of data</td><td>The data for the first monitoring period came from Intelligent Link Control Platform, and the data for the later years came from the Project proponent</td></tr>
<tr><td>Description of measurement methods and procedures applied</td><td>Establish the number of the project vehicles in operation through:

Option (A): based on annual sales records or official data on registered project vehicles cross-checked against the results from a representative sample survey vehicles to determine the percentage of vehicles in use or

Option (B): based on annual sales records or official data for registered project vehicles, multiplied by the default factor 0.9t, where t is year counter for the number of years since the vehicle was introduced (for example: if n vehicles are sold in year 1, in year 2 the number of vehicles still in operation are assumed to be equal to n*0.9, and in year 3, n*0.92, etc.)

The Intelligent Link Control Platform can monitor if the project vehicle is operation or not by T-BOX, therefore the number of project vehicle in operation can be obtained by the record in The Intelligent Link Control Platform, which applies for option (A).</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Monthly</td></tr>
<tr><td>Value applied:</td><td>
<table>
<tr><td>Project activity instances</td><td colspan="2">Truck project activity instance</td><td colspan="2">Van project activity instance</td></tr>
<tr><td>Vehicle categories</td><td>Light truck</td><td>Mini truck</td><td>Light van</td><td>Minivan</td></tr>
<tr><td>2021</td><td>1,036</td><td>46</td><td>338</td><td>725</td></tr>
<tr><td>2022</td><td>5,289</td><td>1,391</td><td>2,855</td><td>3,931</td></tr>
<tr><td>2023</td><td>5,843</td><td>1,691</td><td>3,061</td><td>5,651</td></tr>
<tr><td>2024-2031</td><td>5,843</td><td>1,691</td><td>3,061</td><td>5,651</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>Intelligent Link Control Platform</td></tr>
<tr><td>QA/QC procedures applied</td><td>The platform of Intelligent Link will be maintained daily by the technical staff. And the project proponent leader will document the rent data and storage it.</td></tr>
</table>

	Data will be cross-checked with the number of project vehicle in the renting contracts.
Purpose of data	Calculation of project emissions Calculation of baseline emissions
Calculation method	Calculated by the monthly operated project vehicle number using excel
Comments	N/A

Data / Parameter	$SEC_{PJ,km,i,y}$
Data unit	kWh /km
Description	Specific electricity consumption by project vehicle category i per km in year y in urban conditions (kWh/km)
Source of data	The platform of Intelligent Link
Description of measurement methods and procedures applied	Measure the specific electricity consumption through: Option (A): monitor electricity consumption of all project vehicles or Option (B): measure the amount of electricity consumed per km travelled for a representative sample of each vehicle category. Sample vehicles shall be chosen in accordance with the latest version of the "Guidelines for sampling and surveys for CDM project activities and programme of activities" using a 90 per cent confidence interval and +/- 10 per cent precision to determine the sample size. The upper bound of 95 per cent confidence interval shall be used for the specific fuel/electricity consumed. The project proponent chose option (A) to calculated this parameter. The value of state of charge (SOC) of all project vehicles can be monitored and transferred to the platform of Intelligent Link, then the specific electricity consumption will be calculated by the platform.
Frequency of monitoring/recording	Each year
Value applied:	

Project activity instance		Truck instance		Van instance	
Vehicle categories		Light truck	Mini truck	Light van	Minivan
	2021	0.3527	0.2377	0.2485	0.1521

	<table><tr><td rowspan="3">Value used for ex-ER calculation</td><td>2022</td><td>0.3265</td><td>0.2377</td><td>0.2138</td><td>0.1602</td></tr><tr><td>2023</td><td>0.3443</td><td>0.2609</td><td>0.2068</td><td>0.1651</td></tr><tr><td>2024-2031[81]</td><td>0.3412</td><td>0.2454</td><td>0.2230</td><td>0.1591</td></tr></table> Values above are used in this monitoring period, and during the next monitoring period, values will be updated according to project operation situation and data from the platform.
Monitoring equipment	Intelligent Link Control Platform
QA/QC procedures applied	The platform of Intelligent Link will be maintained daily by the technical staff. And the project proponent leader will document specific electricity consumption data and storage it. Data will be cross-checked against vehicle specifications (kWh/km) for urban conditions provided by the manufacturers and use the highest of the two values.
Purpose of data	Calculation of project emissions
Calculation method	The electricity consumption per kilometer is calculated by the mileage of each type of project vehicle and the power consumption in the corresponding time period by the platform. The average value was used as the specific electricity consumption of each project vehicles category. For example, the mileage and power consumption data of light trucks will be exported from the platform. The average value of light trucks' electricity consumption per km is obtained by total power consumption divided by total mileage. It is the same as mini truck, light van and minivan.
Comments	N/A

Data / Parameter	$EF_{elect,y}$
Data unit	$kgCO_2/kWh$

[81] Due to a lack of data, for the ex-ante calculations, the values for the years 2024 to 2031 are based on the average values of the current monitoring period. Posterior calculations will be based on the actual monitored values.

<table>
<tr><td>Description</td><td>CO2 emission factor of electricity consumed by project vehicle category i in year y (kg CO2/kWh)</td></tr>
<tr><td>Source of data</td><td>The 2019 annual emission reduction project of China's regional power grid baseline emission factors, which is the latest version.</td></tr>
<tr><td>Description of measurement methods and procedures applied</td><td>The geographic area of the project involves six regional power grids in China, in which all instances operate.

According to AMS-III.C. version 16.0, TOOL 05 is used to calculate this parameter. Electricity consumed comes from grid, so the project belongs to scenario A: Electricity consumption from the grid in TOOL 05. Project proponent chose option 1: Electricity consumption from the grid to calculate the parameter. And this has been calculated in the latest Baseline Emission Factors of China's Regional Power Grid.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Annually</td></tr>
<tr><td>Value applied:</td><td>
<table>
<tr><td>National power grids</td><td>$EF_{elect,y}$</td></tr>
<tr><td>Northeast China regional power grid</td><td>0.6613</td></tr>
<tr><td>North China regional power grid</td><td>0.7119</td></tr>
<tr><td>East China regional power grid</td><td>0.5896</td></tr>
<tr><td>Central China regional power grid</td><td>0.5721</td></tr>
<tr><td>Southern China regional power grid</td><td>0.5089</td></tr>
<tr><td>Northwest China regional power grid</td><td>0.6665</td></tr>
</table>
Project vehicles of each instance are operated in different provinces, which are contained in different regional power grid. Therefore, the corresponding emission factors of reginal power grid were used for calculation.
</td></tr>
<tr><td>Monitoring equipment</td><td>N/A</td></tr>
<tr><td>QA/QC procedures applied</td><td>N/A</td></tr>
<tr><td>Purpose of data</td><td>Calculation of project emissions</td></tr>
</table>

Calculation method	N/A
Comments	The value will be updated according to the latest annual emission reduction project of China's regional power grid baseline emission factors

Data / Parameter	TDL_y
Data unit	percentage
Description	Average technical transmission and distribution losses for providing electricity in the year y
Source of data	The National Energy Administration released statistics on the country's power industry in 2022 and 2021[82][83]
Description of measurement methods and procedures applied	This value shall be measured as per the procedures of TOOL 05 according to the methodology. In TOOL 05, the calculation is specified as below: In case of scenario B and scenario C, case C.II, assume $TDL_{j/k/l,y}$ = 0 as a simplification. In case of other scenarios (scenario A and scenario C, cases C.I and C.III), choose one of the following options: 1. Use annual average value based on the most recent data available within the host country; 2. Use as default values of 20% for: (a) project or leakage electricity consumption sources; (b) baseline electricity consumption sources if the electricity consumption by all project and leakage electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies is larger than the electricity consumption of all baseline electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies; 3. Use as default values of 3% for: (a) baseline electricity consumption sources; (b) project and leakage electricity consumption sources if the electricity consumption by all project and leakage electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies is smaller

[82] http://www.nea.gov.cn/2022-01/26/c_1310441589.htm

[83] http://www.nea.gov.cn/2023-01/18/c_1310691509.htm

	than the electricity consumption of all baseline electricity consumption sources to which scenario A or scenario C (cases C.I or C.III) applies Electricity consumed comes from the national grid, so the project activity belongs to scenario A. project proponent determined the parameter by option 1. National Energy Administration is publishing the rate of technical transmission and distribution losses for providing electricity on annual basis. Therefore, data will be updated on an annual basis based on published data by National Energy Administration or any other relevant literature or source.
Frequency of monitoring/recording	Annually
Value applied:	5.26% for 2021, and 4.84% for 2022 and the rest of crediting year.
Monitoring equipment	N/A
QA/QC procedures applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	$NCV_{BL,i}$
Data unit	J/g
Description	Net calorific value of fossil fuel consumed by baseline vehicle category i (J/g)
Source of data	IPCC 2019 Volume 2 Energy, table 1.2, the value of gasoline
Description of measurement methods and procedures applied	N/A

Frequency of monitoring/recording	Annually
Value applied:	42,500[84] According to the information on the China automobile energy consumption inquiry website[85] issued by Ministry of Industry and Information Technology of the People's Republic of China, the energy category consumed by fossil fuel vehicles are mainly gasoline.
Monitoring equipment	N/A
QA/QC procedures applied	N/A
Purpose of data	Calculation of baseline emissions
Calculation method	N/A
Comments	$NCV_{BL,i}$will be updated according to IPCC

Data / Parameter	$EF_{BL,i}$
Data unit	g CO2/J
Description	Emission factor of fossil fuel consumed by baseline vehicle category i (g CO2/J)
Source of data	IPCC 2019 Volume 2 Energy, table 1.4, the value of gasoline
Description of measurement methods and procedures applied	N/A
Frequency of monitoring/recording	Annually

[84] The parameters NCVBL, i, is used to calculate emissions in the baseline scenario. Therefore, for the PP, the lower limit value from the IPCC is chosen for conservatism.

[85] https://yhgscx.miit.gov.cn/fuel-consumption-web/mainPage

Value applied:	0.0000675[86] According to the information on the China automobile energy consumption inquiry website[87] issued by Ministry of Industry and Information Technology of the People's Republic of China, the energy category consumed by fossil fuel vehicles are mainly gasoline.
Monitoring equipment	N/A
QA/QC procedures applied	N/A
Purpose of data	Calculation of baseline emissions
Calculation method	N/A
Comments	$EF_{BL,i}$ will be updated according to IPCC

6.3 Monitoring Plan

Monitoring process

The Intelligent Link Control Platform will monitor all electrical energy data, operation distance and number of operated vehicles required for estimation of baseline and project emissions for the project activity with very high accuracy for measurement and recording. The projects activity represents all the electric vehicles for which electrical energy data is monitored through this system during the project activity.

- **Monitoring management structure and responsibilities**

In order to ensure complete, continuous, clear and accurate project monitoring and calculation of emission reductions during the crediting period, Intelligent Link has set up a monitoring working group for the project. The group is directly led by the project proponent leader, and there are 3 departments responsible for specific duties. The project proponent leader is fully responsible for project development, including: 1) Supervising project operation status related to monitoring data; 2) Responsible for collecting and recording monitoring data to ensure the integrity and accuracy of data. The finance department is responsible for project related financial data, including lease contract, vehicle purchase record, etc. The technical department is responsible for vehicle monitoring, maintenance, QA/QC, archiving and management of vehicle

[86] The parameters EFBL, i, is used to calculate emissions in the baseline scenario. Therefore, for the PP, the lower limit value from the IPCC is chosen for conservatism.

[87] https://yhgscx.miit.gov.cn/fuel-consumption-web/mainPage

operation data. Other departments under the coordination of project leader, cooperate with technical department to complete the monitoring related work. Meanwhile, as the consultant company, Search Co2 is responsible for VCS project development, including 1) Tracking project progress; 2) Preparation of project PD and MR; 3) Assist the owner to complete the data monitoring and check the authenticity and accuracy of the data.

In order to make sure the accuracy, reliability and authenticity of data, the project proponent leader will cross check data with Search Co2. The diagram of project monitoring team is shown in the figure below:

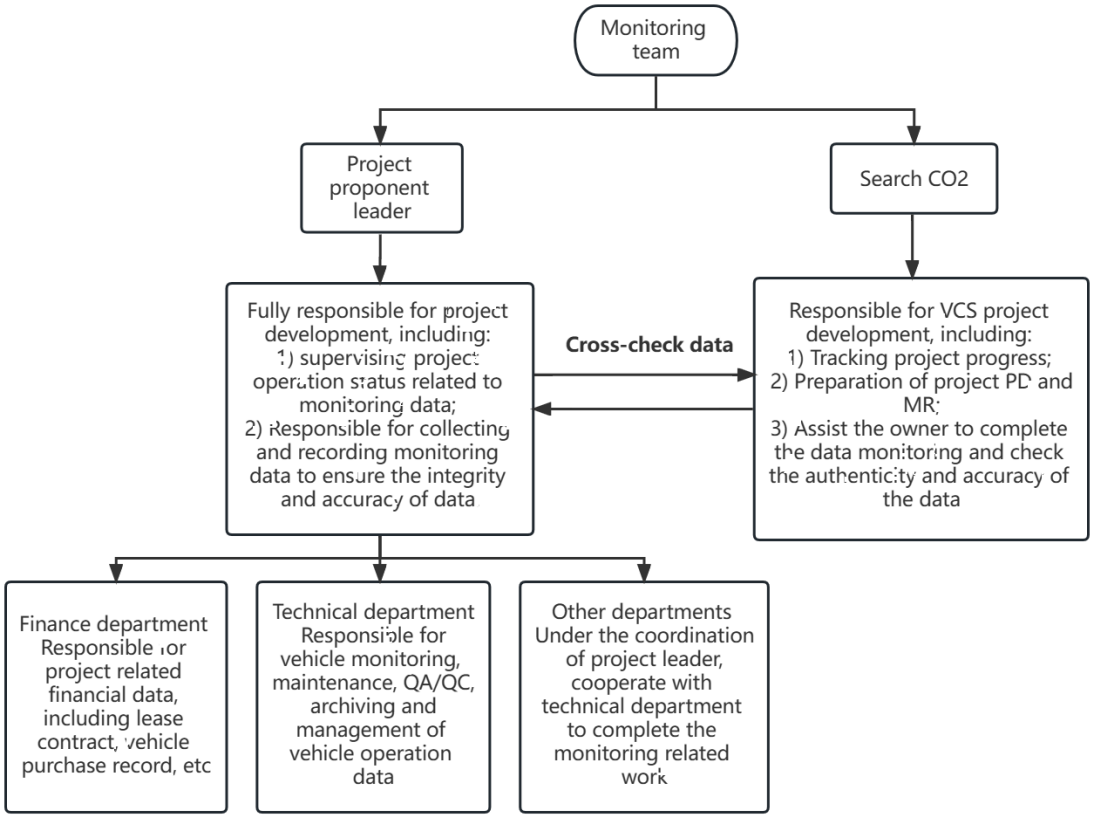


Figure 6-1 The structure of monitoring team

- **Key data to be monitored**

Five key data shall be monitored during the monitoring period, i.e. (1) $N_{i,y}$: Number of operational project vehicles in category i in year y; (2) $DD_{i,y}$: Annual average distance travelled by project vehicle category i in the year y (km) ; (3) $SEC_{PJ,km,i,y}$: Specific electricity consumption per km per project vehicle category i in year y (kWh/km); (4) $NCV_{BL,i}$: Net calorific value of fossil fuel consumed by baseline vehicle category i (J/g) ; (5) $EF_{elect,y}$: CO_2 emission factor of electricity consumed by project vehicle category i in year y (kg CO_2/kWh); (6) TDL_y: Average technical transmission and distribution losses for providing electricity in the year y; (7)$EF_{BL,i:}$ Emission factor

of fossil fuel consumed by baseline vehicle category i (g CO_2/J) And source of each parameters are summarized in the table below:

Table 6-1 Source of parameters

Parameters	Source
$N_{i,y}$	Intelligent Link Control Platform
$DD_{i,y}$	Intelligent Link Control Platform
$SEC_{PJ,i,y}$	Intelligent Link Control Platform
$NCV_{BL,i}$	IPCC
$EF_{BL,i}$	IPCC
$EF_{elect,y}$	Ministry of Energy and Environment of the People's Republic of China
TDL_y	China National Energy Administration

$N_{i,y}$, $DD_{i,y}$, and $SEC_{PJ,i,y}$ are monitored by Intelligent Link Control Platform. $NCV_{BL,i}$ and $EF_{BL,i}$ will be updated with IPCC. $EF_{elect,y}$ and TDL_y will be updated with report of Ministry of Energy and Environment of the People's Republic of China and China National Energy Administration separately.

See Section 6.2 above for detailed monitoring of each parameter.

- **Data management**

A management system for documents (including monitoring plan, preparation documents, monitoring documents, project boundary monitoring, project activity monitoring, etc.), verification documents, periodic verification documents, and handling of expired documents, etc., is established. Electronic monitoring data along with paper documents shall be kept until more than 2 years after the end of the crediting period or after the last issuance (whichever occurs later).

- **QA/QC**

A systematic internal review and correction process will be used to assure/control the quality. Firstly, the platform of Intelligent Link will be maintained daily by the technical staff. The technical staff of Intelligent Link are responsible for vehicle monitoring, maintenance, QA/QC, archiving and management of vehicle operation data once a month and cross check the data with Search Co2. When Search Co2 find some unusual data, they will feed back to technical staff and then correct the data before share it with Search Co2. Search Co2 will draft the monitoring report based on the raw data and cross-check with the technical staff. If there are not any further comments from the technical staff, Search Co2 will finalize the report. All parties are required to reply any questions raised within 30 days.

- **Emergency procedure**

In this project, it is possible to cause electric vehicle damage or missing data due to negligence and improper operation.

First of all, vehicle renters have to be trained before driving electric vehicles, including operation, charging and driving skill trainings, so as to guarantee the driving safety.

Secondly, if there is any damage, Intelligent Link will repair on time, and provide maintenance services during leasing.

If data loss or equipment damage occurs during the monitoring process, the corresponding emission reduction will be deducted in the most conservative way.

No emergency occurred during the monitoring period.

7 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

7.1 Data and Parameters Monitored

Data / Parameter	$DD_{i,y}$
Data unit	km
Description	Annual average distance travelled by project vehicle category i in the year y (km)
Value applied:	

Project activity instances	Truck project activity instance		Van project activity instance	
Vehicle categories	Light truck	Mini truck	Light van	Minivan
2021	2,073	435	1,539	796
2022	17,784	6,563	14,792	17,067
2023	13,215	9,058	9,739	8,536

Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: Intelligent Link Control Platform

	Monitoring equipment: Intelligent Link Control Platform Description of measurement methods and procedures applied: The annual average distance travelled by the project vehicles are provided by the project proponent through option A: monitoring of all vehicles. All project vehicles are equipped with T-BOX, which can collect and transfer the operation mileage data to the Intelligent Link Control Platform. Calculation method: The total annual mileage is summed of monthly mileage of each category project vehicles, then is divided by the total annual number of operated project vehicles, then the annual average distance travelled by project vehicle category i in the year y was obtained. QA/QC procedures applied: The platform of Intelligent Link has been maintained daily by the technical staff. And the project proponent leader documented the mileage data.

Data / Parameter	$N_{i,y}$
Data unit	Number
Description	Number of operational project vehicles in category i in year y
Value applied:	

Project activity instances	*Truck project activity instance*		*Van project activity instance*	
Vehicle categories	*Light truck*	*Mini truck*	*Light van*	*Minivan*
2021	1,036	46	338	725
2022	5,289	1,391	2,855	3,931
2023	5,843	1,691	3,061	5,651

Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: Intelligent Link Control Platform Monitoring equipment: Intelligent Link Control Platform Description of measurement methods and procedures applied: The Intelligent Link Control Platform can monitor if the project vehicle is operation or not by T-BOX, therefore the number of project vehicle in

	operation can be obtained by the record in The Intelligent Link Control Platform, which applies for option (A). Calculation method: Calculated by the monthly operated project vehicle number using excel and cross-check with total signed renting contracts QA/QC procedures applied: The platform of Intelligent Link is maintained daily by the technical staff. And the project proponent leader has documented the mileage data. Through cross-checking, the data on Intelligent Link Control Platform is consistent with the renting contracts.

Data / Parameter	$SEC_{PJ,km,i,y}$
Data unit	kWh/km
Description	Specific electricity consumption per km per project vehicle category i in year y (kWh/km)
Value applied:	

Project activity instance	Truck instance		Van instance	
Vehicle categories	Light truck	Mini truck	Light van	Minivan
Value provided by manufacturers[88]	0.2292	0.2377	0.2068	0.1521
Monitoring Value	2021	0.3527	0.2033	0.2485	0.1390
	2022	0.3265	0.2318	0.2138	0.1602
	2023	0.3443	0.2609	0.2068	0.1651
Value used for ER calculation	2021	0.3527	0.2377	0.2485	0.1521
	2022	0.3265	0.2377	0.2138	0.1602
	2023	0.3443	0.2609	0.2068	0.1651

Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: Intelligent Link Control Platform Monitoring equipment: Intelligent Link Control Platform Description of measurement methods and procedures applied: The project proponent chose option (A) to calculated this parameter. The value of state of

[88] From operating manuals of project vehicles.

	charge of all project vehicles can be monitored and transferred to the platform of Intelligent Link. Calculation method: The electricity consumption per kilometer is calculated by the mileage of each type of project vehicle and the power consumption in the corresponding time period by the platform. The average value was used as the specific electricity consumption of each project vehicles category. For example, the mileage and power consumption data of light trucks will be exported from the platform. The average value of light trucks' electricity consumption per km is obtained by total power consumption divided by total mileage. It is the same as mini truck, light van and minivan. QA/QC procedures applied: The platform of Intelligent Link is maintained daily by the technical staff. And the project proponent leader has documented the mileage data. Data has been cross-checked against vehicle specifications (kWh/km) for urban conditions provided by the manufacturers and use the highest of the two values.

Data / Parameter	$EF_{elect,y}$
Data unit	$kgCO_2/kWh$
Description	CO2 emission factor of electricity consumed by project vehicle category i in year y (kg CO2/kWh)
Value applied:	<table><tr><td>National power grids</td><td>Baseline emission factors</td></tr><tr><td>Northeast China regional power grid</td><td>0.6613</td></tr><tr><td>North China regional power grid</td><td>0.7119</td></tr><tr><td>East China regional power grid</td><td>0.5896</td></tr><tr><td>Central China regional power grid</td><td>0.5721</td></tr><tr><td>Southern China regional power grid</td><td>0.5089</td></tr><tr><td>Northwest China regional power grid</td><td>0.6665</td></tr></table> Project vehicles of each instance are operated in different provinces, which are contained in different regional power grid. Therefore, the corresponding emission factors of reginal power grid were used for calculation.
Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: The 2019 annual emission reduction project of China's regional power grid baseline emission factors, which is the latest version.

	Monitoring equipment: N/A Description of measurement methods and procedures applied: The geographic area of the project involves six regional power grids in China, in which all instances operate. According to AMS-III.C. version 16.0, TOOL 05 is used to calculate this parameter. Electricity consumed comes from grid, so the project belongs to scenario A: Electricity consumption from the grid in TOOL 05. Project proponent chose option 1: Electricity consumption from the grid to calculate the parameter. And this has been calculated in the latest Baseline Emission Factors of China's Regional Power Grid. Ministry of Ecology and Environment, PRC is publishing the grid emission factor on annual basis. Therefore, data will be updated on an annual basis based on published data by Ministry of Ecology and Environment, PRC or any other relevant literature or source. Calculation method: N/A QA/QC procedures applied: N/A

Data / Parameter	TDL_y
Data unit	percentage
Description	Average technical transmission and distribution losses for providing electricity in the year y
Value applied:	4.84%[89] in 2022 and 5.26%[90] in 2021. The value for 2023 will be published in the next year, so when calculating the emission reductions from January to April in 2023, the TDL_y of 2022 was applied.
Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: The National Energy Administration released statistics on the country's power industry in 2022 and 2021 Monitoring equipment: N/A Description of measurement methods and procedures applied: Electricity consumed comes from the grid, so the project activity belongs to scenario A. project proponent determined the parameter by option 1.

[89] http://www.nea.gov.cn/2023-01/18/c_1310691509.htm

[90] http://www.nea.gov.cn/2022-01/26/c_1310441589.htm

	National Energy Administration is publishing the rate of technical transmission and distribution losses for providing electricity on annual basis. Therefore, data will be updated on an annual basis based on published data by National Energy Administration or any other relevant literature or source Calculation method: N/A QA/QC procedures applied: N/A

Data / Parameter	$NCV_{BL,i}$
Data unit	J/g
Description	Net calorific value of fossil fuel consumed by baseline vehicle category I (J/g)
Value applied:	42,500 According to the information on the China automobile energy consumption inquiry website [91] issued by Ministry of Industry and Information Technology of the People's Republic of China, the energy category consumed by fossil fuel vehicles are mainly gasoline.
Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: IPCC 2019 Volume 2 Energy, table 1.2, the value of gasoline Monitoring equipment: N/A Description of measurement methods and procedures applied: IPCC default value Calculation method: N/A QA/QC procedures applied: $NCV_{BL,i}$will be updated according to IPCC

Data / Parameter	$EF_{BL,i}$
Data unit	g CO_2/J

[91] https://yhgscx.miit.gov.cn/fuel-consumption-web/mainPage

Description	Emission factor of fossil fuel consumed by baseline vehicle category i (g CO2/J)
Value applied:	0.0000675 According to the information on the China automobile energy consumption inquiry website[92] issued by Ministry of Industry and Information Technology of the People's Republic of China, the energy category consumed by fossil fuel vehicles are mainly gasoline.
Comments	Only initial project activity instances are monitored in this monitoring period. Source of data: IPCC 2019 Volume 2 Energy, table 1.4, the value of gasoline Monitoring equipment: N/A Description of measurement methods and procedures applied: IPCC default value Calculation method: N/A QA/QC procedures applied: $EF_{BL,i}$will be updated according to IPCC

7.2 Baseline Emissions

As per AMS-III.C., there are two approaches to calculate baseline emissions. The approach 1 is using distance travelled by project vehicles, and the approach 2 is using the electricity used to charge the vehicles. For electricity used to charge the vehicles is hard to collect, the approach 1 was selected to calculate baseline emissions, which are calculated as follows:

$$BE_y = \sum_i EF_{BL,km,i} \times DD_{i,y} \times N_{i,y} \times 10^{-6} \quad (1)$$

Where:

BE_y = Total baseline emissions in year *y* (t CO_2)

$EF_{BL,km,i}$ = Emission factor for baseline vehicle category *i* (g CO_2/km)

$DD_{i,y}$ = Annual average distance travelled by project vehicle category i in the year *y* (km)

$N_{i,y}$ = Number of operational project vehicles in category *i* in year *y*

The emission factor for baseline vehicle category ($EF_{BL,km,i}$) shall be determined as follows:

[92] https://yhgscx.miit.gov.cn/fuel-consumption-web/mainPage

$$EF_{BL,km,i} = SFC_i \times NCV_{BL,i} \times EF_{BL,i} \times IR^t \quad (3)$$

Where:

SFC_i = Specific fuel consumption of baseline vehicle category i (g/km)

$NCV_{BL,i}$ = Net calorific value of fossil fuel consumed by baseline vehicle category i (J/g)

$EF_{BL,i}$ = Emission factor of fossil fuel consumed by baseline vehicle category i (g CO_2/J)

IR^t = Technology improvement factor for baseline vehicle in year t. The improvement rate is applied to each calendar year. The default value of the technology improvement factor for all baseline vehicle categories is 0.99

T = Year counter for the annual improvement (dependent on age of data per vehicle category)

As per the methodology, Option 5 Existing host country statistics is taken to determine the specific fuel consumption for baseline vehicle category i (SFC_i).

This grouped project compromises two project activity instance. All electric trucks are regarded as the Truck instance, and all electric vans are regarded as the Van instance. Electric trucks and electric vans are further divided into light trucks, mini trucks, light vans and mini vans according the total mass. The fuel types and fuel consumptions come from existing host country statistics. The Specific fuel consumption of baseline vehicle category i (SFC_i), Net calorific value of fossil fuel consumed by baseline vehicle category i ($NCV_{BL,i}$), Technology improvement factor for baseline vehicle in year t.(IR^t) and Emission factor of fossil fuel consumed by baseline vehicle category i ($EF_{BL,i}$) are summarized below:

Table 7-1 SFC_i, $NCV_{BL,i}$, IR^t and $NCV_{BL,i}$ during this monitoring period

Project activity instances	Vehicle categories	SFC_i(g/km)	$NCV_{BL,i}$(J/g)	$EF_{BL,i}$(g CO_2/J)	IR^1	IR^2	IR^3
Truck instance	Light truck	100.05	42,500	0.0000675	0.99	0.99^2	0.99^3
	Mini truck	65.97	42,500	0.0000675	0.99	0.99^2	0.99^3
Van instance	Light van	69.60	42,500	0.0000675	0.99	0.99^2	0.99^3
	Mini van	54.37	42,500	0.0000675	0.99	0.99^2	0.99^3

The annual average distance travelled by each project vehicle categories and the number of operational project vehicles in each category in each year are provided by the project proponent, and the calculation results, which are summarized below:

Table 7-2$EF_{BL,km,i}$ $DD_{i,y}$, $N_{i,y}$ and BE_y during this monitoring period

Project activity instances	Vehicle categories	Year	$EF_{BL,km,i}$(g CO2/km)	$DD_{i,y}$(km)	$N_{i,y}$(number)	BE_y(t CO_2)
Truck instance	Light truck	2021	284	2,073	1,036	*610*
		2022	281	17,784	5,289	*26,459*
		2023	278	13,215	5,843	*21,504*
	Mini truck	2021	187	435	46	*4*
		2022	185	6,563	1,391	*1,693*
		2023	184	9,058	1,691	*2,813*
Van instance	Light van	2021	198	1,539	338	*103*
		2022	196	14,792	2,855	*8,264*
		2023	194	9,739	3,061	*5,775*
	Mini van	2021	154	796	725	*89*
		2022	153	17,067	3,931	*10,256*
		2023	151	8,536	5,651	*7,300*

7.3 Project Emissions

As per AMS-III.C., there are two approaches to calculate project emissions. The approach 1 is using distance travelled by project vehicles, and the approach 2 is using the electricity used to charge the vehicles. For electricity used to charge the vehicles is hard to collect, the approach 1 was selected to calculate project emissions, which are calculated as follows:

$$PE_y = \sum_i EF_{PJ,km,i,y} \times DD_{i,y} \times N_{i,y} \quad (4)$$

Where:

PE_y = Total project emissions in year *y* (t CO_2)

$EF_{PJ,km,i,y}$ = Emission factor per kilometre travelled by the project vehicle type *i* (t CO_2/km)

$DD_{i,y}$ = Annual average distance travelled by project vehicle category *i* in the year *y* (km)

$N_{i,y}$ = Number of operational project vehicles in category *i* in year *y*

The emission factor of the project vehicles shall be determined as follows:

$$EF_{PJ,km,i,y} = \sum_{i} SEC_{PJ,km,i,y} \times EF_{elect,y}/(1 - TDL_y) \times 10^{-3} \quad (6)$$

Where:

$SEC_{PJ,km,i,y}$ = Specific electricity consumption by project vehicle category *i* per km in year *y* in urban conditions (kWh/km)

$EF_{elect,y}$ = CO_2 emission factor of electricity consumed by project vehicle category *i* in year *y* (kg CO_2/kWh)

TDL_y = Average technical transmission and distribution losses for providing electricity in the year *y*

The calculation result is as follows:

Table 7-3 The calculation result of project emissions during the monitoring period

Project activity instances	Vehicle categories	Year	$SEC_{PJ,km,i,y}$ (kWh/km)	$EF_{elect,y}$ (kg CO_2/kWh)[93]	TDL_y	$DD_{i,y}$(km)	$N_{i,y}$(number)	PE_y (t CO_2)
Truck instance	Light truck	2021	*0.3527*	0.6183	5.26%	2,073	1,036	*463*
		2022	*0.3265*	0.6183	4.84%	17,784	5,289	*18,817*
		2023	*0.3443*	0.6183	4.84%	13,215	5,843	*16,170*
	Mini truck	2021	*0.3527*	0.6183	5.26%	435	46	*3*
		2022	*0.3265*	0.6183	4.84%	6,563	1,391	*1,314*
		2023	*0.3443*	0.6183	4.84%	9,058	1,691	*2,400*
Van instance	Light van	2021	*0.2485*	0.6183	5.26%	1,539	338	*83*
		2022	*0.2138*	0.6183	4.84%	14,792	2,855	*5,446*
		2023	*0.2068*	0.6183	4.84%	9,739	3,061	*3,722*
	Mini van	2021	*0.1521*	0.6183	5.26%	796	725	*54*
		2022	*0.1602*	0.6183	4.84%	17,067	3,931	*6,482*
		2023	*0.1651*	0.6183	4.84%	8,536	5,651	*4,807*

[93] The initial project instances operated in six national power grids in China, which has corresponding CO_2 emission factors of elect. Project emissions are calculated in six national power grids specified in excel. There 0.6183 is an average value, which is not used to calculate.

7.4 Leakage

No leakage calculation is required for this methodology.

7.5 Net GHG Emission Reductions and Removals

The emission reduction during this monitoring period are calculated as follow:

(1) Truck instance

a) Year 2021(08-October-2021 to 31-December-2021)

$ER_y = BE_y - PE_y - LE_y$

= 146

b) Year 2022(01-January-2022 to 31-December-2022)

$ER_y = BE_y - PE_y - LE_y$

= 8,021

c) Year 2023(01-January-2023 to 30-April-2023)

$ER_y = BE_y - PE_y - LE_y$

= 5,747

(2) Van instance

a) Year 2021(08-October-2021 to 31-December-2021)

$ER_y = BE_y - PE_y - LE_y$

= 53

b) Year 2022(01-January-2022 to 31-December-2022)

$ER_y = BE_y - PE_y - LE_y$

= 6,592

c) Year 2023(01-January-2023 to 30-April-2023)

$ER_y = BE_y - PE_y - LE_y$

= 4,546

The emission by this project during this monitoring period from 08-October-2021 to 30-April-2023 can be summarized as follow:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2021(08 October-2021 to 31-December-2021)	804	605	0	199
2022(01-January-2022 to 31-December-2022)	46,672	32,059	0	14,613
2023(01-January-2023 to 30-April-2023)	37,392	27,099	0	10,293
Total	84,868	59,763	0	25,105

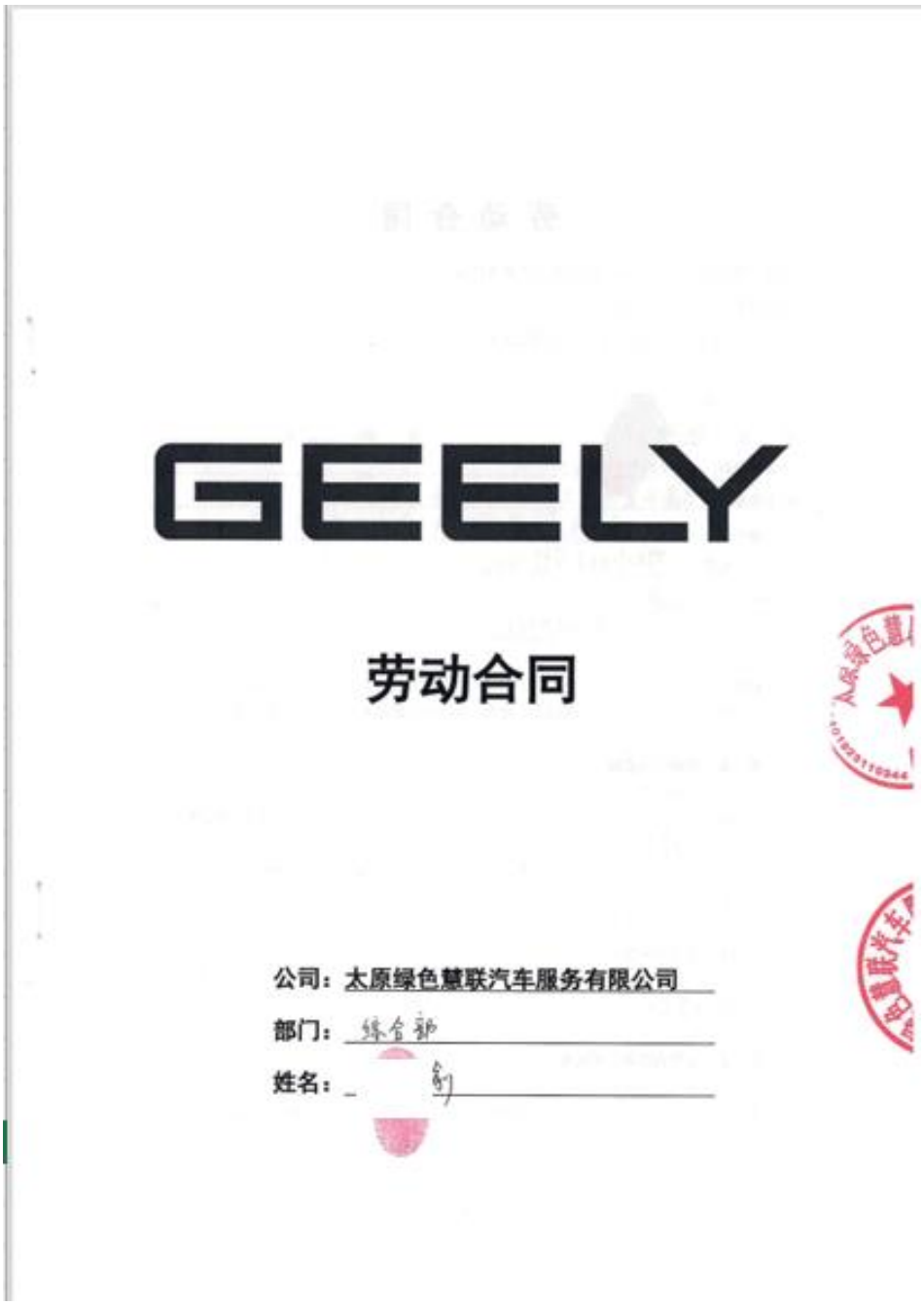
The estimated ex-ante GHG emission reductions and removals and the achieved emission reductions and removals for this monitoring period, percentage difference and justification of the difference are listed in below table for this monitoring period.

Ex-ante emissions reductions/removals	Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
2021(08-October-2021 to 31-December-2021)	199	199	0%	In this joint PD&MR report, ex-ante emissions reductions/removals during 2021 to 2023 are estimated by actual monotored values, so it is same as the acheived emissions reductions/removals.
2022(01-January-2022 to 31-December-2022)	14,613	14,613	0%	
2023(01-January-2023 to 30-April-2023)	10,293	10,293	0%	
Total	25,105	25,105	0%	

APPENDIX 1: EVIDENCE OF SDG CONTRIBUTIONS

SDG Target	SDG Indicator	Evidences
8.5	Number of employees hired to maintain the electric commercial vehicle service	The labor contract.
11.6	11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) within the project area	The sheet about annual mean levels of fine particulate matter (e.g. PM2.5) in project area
13.0	Tonnes of greenhouse gas emissions avoided	The fact sheet of emission reduction calculation during the monitoring period.

The labor contract



GEELY

劳动合同

公司：太原绿色慧联汽车服务有限公司

部门：

姓名：

The sheet about annual mean levels of fine particulate matter (e.g. PM2.5) in project area

《Technical Guide for compiling emission inventories of air pollutants from road vehicles》

Calculation of road vehicle exhaust emissions:

$$E_1 = \sum_i P_i \times EF_i \times VKT_i \times 10^{-6} \quad (2)$$

Parameter	Meaning	Value		Unit	Source	Others
VTKi	Average annual mileage of Type i motor vehicles	Light truck	2,073	km	Project proponent	2021
			17,784	km	Project proponent	2022
			13,215	km	Project proponent	2023
		Mini truck	435	km	Project proponent	2021
			6,563	km	Project proponent	2022
			9,058	km	Project proponent	2023
Pi	Number of Type i motor vehicles in operation	Light truck	1,036	/	Project proponent	2021
			5,289	/	Project proponent	2022
			5,843	/	Project proponent	2023
		Mini truck	46	/	Project proponent	2021
			1,391	/	Project proponent	2022
			1,691	/	Project proponent	2023
$EF_{PM2.5}$	The amount of pollutant PM2.5 emitted by exhaust gas per unit	Light truck	0.03	g/km	Paper:宁亚东.我国移动源主要大气污染物排放量的估算	
		Mini truck	0.01	g/km		

Light truck

Year	Pi	VTKi	$EF_{PM2.5}$	$E_{PM2.5}$
2021	1,036	2,073	0.03	0.0644
2022	5,289	17,784	0.03	2.8218
2023	5,843	13,215	0.03	2.3165

Mini truck

Year	Pi	VTKi	$EF_{PM2.5}$	$E_{PM2.5}$
2021	46	435	0.01	0.0002
2022	1,391	6,563	0.01	0.0913
2023	1,691	9,058	0.01	0.1532

Truck Project PM2.5 emission reduction (kg)

Year	$E_{PM2.5}$
2021	65
2022	2,913
2023	2,470

《Technical Guide for compiling emission inventories of air pollutants from road vehicles》

Calculation of road vehicle exhaust emissions:

$$E_1 = \sum_i P_i \times EF_i \times VKT_i \times 10^{-6} \quad (2)$$

Parameter	Meaning	Value		Unit	Source	Others
VTKi	Average annual mileage of Type i motor vehicles	Light van	1,539	km	Project proponent	2021
			14,792	km	Project proponent	2022
			9,739	km	Project proponent	2023
		Mini van	796	km	Project proponent	2021
			17,067	km	Project proponent	2022
			8,536	km	Project proponent	2023
Pi	Number of Type i motor vehicles in operation	Light van	338	/	Project proponent	2021
			2,855	/	Project proponent	2022
			3,061	/	Project proponent	2023
		Mini van	725	/	Project proponent	2021
			3,931	/	Project proponent	2022
			5,651	/	Project proponent	2023
$EF_{PM2.5}$	The amount of pollutant PM2.5 emitted by exhaust gas per unit	Light van	0.03	g/km	Paper:宁亚东.我国移动源主要大气污染物排放量的估算	
		Mini van	0.01	g/km		

Light van				
Year	Pi	VTKi	$EF_{PM2.5}$	$E_{PM2.5}$
2021	338	1,539	0.03	0.0156
2022	2,855	14,792	0.03	1.2669
2023	3,061	9,739	0.03	0.8943
Mini van				
Year	Pi	VTKi	$EF_{PM2.5}$	$E_{PM2.5}$
2021	725	796	0.01	0.0058
2022	3,931	17,067	0.01	0.6709
2023	5,651	8,536	0.01	0.4824

Van Project PM2.5 emission reduction (kg)

Year	$E_{PM2.5}$
2021	21
2022	1,938
2023	1,377

Year	Project PM2.5 emission reduction (kg)
2021(08-October-2021 to 31-December-2021)	86
2022(01-January-2022 to 31-December-2022)	4,851
2023(01-January-2023 to 30-April-2023)	3,846
Total	**8,783**