JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Installation of Tribrid System to mobile communication's Base Transceiver Stations in Republic of Indonesia
Reference number	ID016
Third-party entity (TPE)	Japan Quality Assurance Organization (JQA) (TPE-ID-003)
Project participant contracting the TPE	KDDI Corporation
Date of completion of this report	30/03/2018

A.2 Conclusion of validation

Overall validation opinion	☒ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☒
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☒
Application of approved JCM methodology (ies)	The project is eligible for applying applied methodology and that the applied version is valid at the time of submission of the proposed JCM project for validation.	☒
Emission sources and calculation of emission reductions	All relevant GHG emission sources covered in the methodology are addressed for the purpose of calculating project emissions and reference emissions for the proposed JCM project.	☒
	The values for project specific parameters to be fixed *ex ante* listed in the Monitoring Plan Sheet are appropriate, if applicable.	☒

Item	Validation requirements	No CAR or CL remaining
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Republic of Indonesia, in line with Indonesia's procedures.	☒
Local stakeholder consultation	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project unless a local stakeholder consultation has been conducted under an environmental impact assessment.	☒
Monitoring	The description of the Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet) is based on the approved methodology and/or Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan, and Monitoring Report. The monitoring points for measurement are appropriate, as well as whether the types of equipment to be installed are appropriate if necessary.	☒
Public inputs	All inputs on the PDD of the proposed JCM project submitted in line with the Project Cycle Procedure are taken into due account by the project participants.	☒
Modalities of communications	The corporate identity of all project participants and a focal point, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories are included in the MoC.	☒
	The MoC has been correctly completed and duly authorized.	☒
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	☒
Start of operation	The start of the operating date of the proposed JCM project does not predate January 1, 2013.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Asada	First name: Sumio
Title: Senior Executive	
Specimen signature: [redacted]	Date: 30/03/2018

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Tadashi Yoshida	JQA	Team leader	☒	Authorized	☒
Mr. ☒ Ms. ☐	Koichiro Tanabe	JQA	Internal Reviewer	☒	Authorized	☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

The PDD form was checked and confirmed as complete in accordance with the JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_ver02.1). The latest version of the JCM PDD form (JCM_ID_F_PDD_ver01.1) is used for the PDD of the proposed project (Version 1.0 dated 29/01/2018 for First edition and Version 2.1 dated 23/02/2018 for Third edition). The validation was conducted on the first edition of the PDD.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the PDD is completed using the valid version of the PDD form and drafted in line with the JCM Guidelines for Developing Project Design Document and Monitoring Report.

C.2. Project description

<Means of validation>

The purpose of the proposed project is to reduce CO_2 emissions from electricity and fossil fuel consumption by introducing Tribrid System at mobile communication's Base Transceiver Stations (BTS) in Republic of Indonesia. Tribrid System developed by KDDI Corporation is defined as a combined system of solar PV, Li-ion batteries and electric power control system, which can control and optimize the electricity supply from solar PV, diesel generator and/or grid through charge-discharge of battery. As a result, the consumption of electricity from grid and/or diesel generator and further the consumption of diesel fuel would be reduced by use of electricity from solar PV and improvement of operation efficiency of diesel generators.

The proposed JCM project plans to install Tribrid System to a total of 20 BTSs owned by PT. XL Axiata, which are located in Java island, Sumatra island, Riau islands and Kalimantan island. More than 40% of the fuel consumption for diesel generator operated at the BTS could be saved by the implementation of the proposed project. The project is expected to reduce a total of 363 tCO_2 annually.

The proposed project is implemented by PT XL Axiata Tbk from Republic of Indonesia and KDDI Corporation from Japan. The commissioning of the first BTS (Pulau Putri in Jakarta province) was completed on 29/07/2017 and the starting date of the monitoring activity is set to be 01/01/2018. The expected operational lifetime of the project is 10 years, which is sourced from the PV module specification issued by the manufacturer (Helios Solar Works).

The proposed project is implemented as the Demonstration Project under the Memorandum of Understanding (MoU) between New Energy and Industrial Technology Development Organization (NEDO) of Japan and the Directorate General of Metal, Machinery, Transportation Equipment, and Electronic Industry, Ministry of Industry of the Republic of Indonesia (ILMATE) signed on 16/03/2017. The objective of NEDO's JCM demonstration project is to contribute to the reduction of energy consumption for the operation of base transceiver stations through the demonstration and verification of the Tribrid System. The implementation cost of the proposed project is partially financed by the government of Japan through NEDO's JCM demonstration project program. Furthermore, the implementation of the proposed project is expected to promote the transfer of low-carbon technologies into Indonesia. KDDI Corporation has provided technical knowhow to the local staffs through the on-the-job-training during the construction, installation, operation and maintenance of the project's facilities and the comprehensive staff training was conducted on 26-27/03/2018.

JQA has assessed the PDD and the supporting documents through the desk review and on-site assessment conducted on 24-25/01/2018 to validate the requirements about accuracy and completeness of the project description. The details of the persons interviewed and documents reviewed are provided in Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the description of the proposed project in the revised PDD complies with the supporting documents and information obtained through the desk review, on-site visit and the interview with the PPs, and the description is accurate and complete.

C.3. Application of approved methodology (ies)

<Means of validation>

The approved methodology JCM_ID_AM014_ver01.0 "Installation of Tribrid Systems to mobile communication's Base Transceiver Stations Ver01.0" is applied to the proposed project. The methodology was approved by the JC on 04/12/2017 (JC7, Annex 3) and its version was valid at the time of the validation.

JQA has assessed whether the selected methodology is applicable to the proposed project. The project applicability was checked against five eligibility criteria contained in the approved methodology. The project information for each eligibility criterion and the assessment/ conclusion about its applicability to the proposed project are summarized in the following table.

Eligibility criteria	Descriptions specified in the methodology	Project information	Assessment and conclusion
Criterion 1	The project installs Tribrid system(s) to new and/or existing BTS.	The Tribrid system(s) are installed in 20 existing BTSs.	It is confirmed through the review of the relevant documents provided by the PPs, on-site visit and the interview with the PPs that the Tribrid System is installed at 20 existing BTSs by the end of January 2018. Hence, JQA concludes that the Criterion 1 is satisfied.

Criterion 2	The project BTS is located at the telecom tower sites equipped with diesel generator.	All 20 BTSs covered by the project are located at telecom tower sites equipped with diesel generator.	It is confirmed through the review of the relevant documents provided by the PPs, on-site visit and the interview with the PPs that all 20 BTSs are located at the telecom tower sites equipped with diesel generators, which are owned by PT XL Axiata Tbk. Hence, JQA concludes that the Criterion 2 is satisfied.
Criterion 3	The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646, or IEC 62108), and safety qualification (IEC 61730-1 and IEC 61730-2) at the time of validation based on the latest version of international or national standard.	The PV modules installed in the project have been certified for IEC 61215, IEC 61730.	It is confirmed through the review of manufacturer's specification, on-site visit and the interview with the PPs that the PV modules have been certified with design qualification (IEC 61215) and safety qualification (IEC 61730). Hence, JQA concludes that the Criterion 3 is satisfied.
Criterion 4	The battery installed by the project is Li-ion battery.	All batteries installed at all 20 sites by the project are Li-ion batteries.	It is confirmed through the review of the relevant documents provided by the PPs, on-site visit and the interview with the PPs that lead-acid batteries existed at 20 BTS sites are replaced with Li-ion batteries by the end of January 2018. Hence, JQA concludes that the Criterion 4 is satisfied.

Criterion 5	In the case of replacing existing Lead-Acid battery with the project Li-ion battery, lead contained in existing Lead-Acid battery is not released to the environment.	Lead-Acid batteries will be replaced with Li-ion batteries by the project. After removal, Lead-Acid batteries are either reused at other BTS sites or stored in warehouse. Therefore no lead contained in Lead-Acid battery will be released to the environment.	It is confirmed through the review of the Standard of Procedure (SOP) provided by the PPs and the interview with the PPs that lead-acid batteries are re-used at other BTS sites or stored in warehouse. Therefore, no lead will be released to the environment. Hence, JQA concludes that the Criterion 5 is satisfied.

Regarding the handling of the lead-acid battery replaced with Li-ion battery, JQA raised CL 02 and this issue was resolved as explained in "Findings".

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL 02

It is not clear how to ensure that lead removed is not eventually released to the environment.

Resolution of CL 02 by the PPs :

Standard of Procedures (SOP) for fixed assets management and the screenshot of database to explain how to manage the replaced battery were provided by the PPs. It is confirmed through the review of these documents and the interview with the PPs that the lead-acid batteries replaced with Li-ion battery are re-used at other BTS sites or appropriately stored in warehouse. Thus, CL 02 is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the relevant information contained in the PDD complies with all eligibility criteria listed in the approved methodology ID_AM014_ver01.0. The issue raised by the validation team is fully clarified.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The proposed project aims to reduce CO_2 emissions from electricity and fossil fuel

consumption by introducing Tribrid System to 20 existing BTSs. Tribrid System can improve the operational efficiency of diesel generator, *i.e.*, reduce fuel consumption by diesel generator through the control of charge - discharge of battery. Therefore, both reference emissions and project emissions are sourced from grid electricity and/or captive electricity which is consumed at the BTS.

Reference emissions are estimated by summing the emissions from grid electricity consumption and the emissions from fuel consumption of diesel generator. The emissions from grid electricity consumption are calculated from the total electricity consumption at BTS_i, hours for which electricity is available from grid and grid CO_2 emission factor, whereas the emissions from fuel consumption are calculated from the designed efficiency of diesel generator operated at the project BTS at the time of validation at 25% load, operation hours of diesel generator, and CO_2 emission factor, net calorific value and density of diesel fuel. The total electricity consumption at project BTS_i is measured by monitoring the amount of grid electricity consumed at BTS_i and the amount of electricity generated by both the project diesel generator and the project solar PV system at BTS_i. In conclusion, the reference emissions are calculated by using the following equation (1):

$$REp = \sum(EC_{i,p} \times \tau_{i,p}/T_{i,p} \times EF_{grid} + \varphi_i \times (T_{i,p} - \tau_{i,p}) \times \rho_{diesel} \times 10^{-6} \times NCV_{diesel} \times EF_{diesel} \times 10^{-3})$$

$$EC_{i,p} = EC_{i,grid,p} + EC_{i,disel,p} + EC_{i,solar,p} \quad \text{----------} \quad (1)$$

Where:

RE_p : Reference emissions during the period *p* [tCO_2/p]

$EC_{j,p}$: Total electricity consumption at BTS_i during the period *p* [MWh/p]

$EC_{i,grid,p}$: The amount of grid electricity consumed at BTS_i during the period *p* [MWh/p]

$EC_{i,diesel,p}$: The amount of electricity generated by the project diesel generator at BTS_i during the period *p* [MWh/p]

$EC_{i,solar,p}$: The amount of electricity generated by the project solar PV system at BTS_i during the period *p* [MWh/p]

$\tau_{i,p}$: Hours for which electricity is available from grid at BTS_i during the period *p* [h/p]

$T_{i,p}$: Total hours of operation of BTS_i during the period *p* [h/p]

EF_{grid} : Grid CO_2 emission factor [tCO_2/MWh]

φ_i : Design efficiency of diesel generator operated at the project BTS at the time of validation at 25% load to be installed at BTS_i [L/h]

ρ_{diesel} : Weighted average density of diesel [kg/L]

NCV_{diesel} : Net calorific value of diesel [TJ/Gg]

EF_{diesel} : Diesel CO_2 emission factor [$kgCO_2$/TJ]

Project emissions are calculated by Equation (2), based on the amount of grid electricity consumed at BTS_i and the quantity of diesel fuel consumed at BTS_i:

$$PE_p = \sum(EC_{i,grid,p} \times EF_{grid} + FC_{i,diesel,p} \times \rho_{diesel} \times 10^{-6} \times NCV_{diesel} \times EF_{diesel} \times 10^{-3}) \quad \text{---------- (2)}$$

Where:

PE_p : Project emissions during the period *p* [tCO_2/p]
$EC_{i,p}$: The amount of grid electricity consumed at BTS_i during the period *p* [MWh/p]
EF_{grid} : Grid CO_2 emission factor [tCO_2/MWh]
$FC_{i,diesel,p}$: The quantity of diesel consumed at BTS_i during the period *p* [L/p]
ρ_{diesel} : Weighted average density of diesel [kg/L]
NCV_{diesel} : Net calorific value of diesel [TJ/Gg]
EF_{diesel} : Diesel CO_2 emission factor [$kgCO_2$/TJ]

Thus, the GHG emission reductions during the period *p* are calculated by Equation (3), in line with the approved methodology:

$$ERp = REp - PEp \quad \text{---------- (3)}$$

Where:

ER_p : Emission reductions during the period *p* [tCO_2/p]
RE_p : Reference emissions during the period *p* [tCO_2/p]
PE_p : Project emissions during the period *p* [tCO_2/p]

Here, grid CO_2 emission factor (*ex-post*) used for the calculation of reference/project emissions is sourced from the latest data (2015) of national grid where each BTS is located, which is available from "Emission Factors of Electricity Interconnection Systems" issued by National Committee on CDM Indonesian Designated National Authority (DNA).

The *ex-ante* value of the emission reductions per year is calculated as follows:

$$ERp = REp - PEp$$
$$= \sum(EC_{i,p} \times \tau_{i,p}/T_{i,p} \times EF_{grid} + \varphi_i \times (T_{i,p} - \tau_{i,p}) \times \rho_{diesel} \times 10^{-6} \times NCV_{diesel} \times EF_{diesel} \times 10^{-3}) - \sum(EC_{i,grid,p} \times EF_{grid} + FC_{i,diesel,p} \times \rho_{diesel} \times 10^{-6} \times NCV_{diesel} \times EF_{diesel} \times 10^{-3})$$
$$= 805.4 - 441.6$$
$$= 363\ tCO_2$$

The installation of the Tribrid System to 20 existing BTSs has been completed by the end of January 2018 and the first monitoring activity of the proposed project started on 01/01/2018 at 11 BTS sites. The emission reductions of the proposed project are 363 tCO2 per year and the sum of the emission reductions for the period of 2018 – 2020 is estimated to be 1,078 tCO_2.

It is confirmed through the review of relevant documents and on-site assessment that all GHG emission sources specified by the applied methodology are identified, and the reference emissions, project emissions and emission reductions in the PDD (ver.02.1) and Monitoring Plan Sheet are correctly calculated, in accordance with the methodology ID_AM014_ver01.0.

Regarding the values of $EC_{i,diesel,p}$, $EC_{i,solar,p}$ and $FC_{i,diesel,p}$ in Table 1 of the MPS, JQA raised CL 01 and this issue was resolved as explained in "Findings".

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL 01

The figure of 9.1 in the equation of $EC_{i,diesel,p}$ the figure of 1.3 in the equation of $EC_{i,solar,p}$ and the figure of 2.9 in the equation of $FC_{i,diesel,p}$ in Table 1 of the MPS are to be clarified.

Resolution of CL 01 by the PPs :

The figure of 9.1 kw/h in equation of $EC_{i,diesel,p}$ is measured data of electricity generated by diesel generator through the trial test at Pulau Putri (Document No.31). The value of $EC_{i,diesel,p}$ is estimated by multiplying 9.1 kw/h by operation hours of generator and 365 days. The values of $EC_{i,diesel,p}$ for other sites are calculated based on the data of Pulau Putri.

The figure of 1.3 kW/day in equation of $EC_{i,dsolar,p}$ is average daily electricity generation from solar PV through the trial test at Pulau Putri. The value of $EC_{i\ solar,p}$ is estimated by multiplying 1.3 kW/day by 365 days. The values of $EC_{i,solar,p}$ for other sites are calculated based on the data of Pulau Putri.

The figure 2.9 L/h in equation of $FC_{i,diesel,p}$ is efficiency (Hourly fuel consumption rate) of project diesel generator at 50% load (Document No. 20-2). The use of 50% load is based on the result of the trial test at Pulau Putri. The value of $FC_{i,diesel,p}$ is estimated by multiplying 2.9 L/h by operation hours of generator and 365 days. The values of $FC_{i,diesel,p}$ for other sites are calculated based on the data of Pulau Putri.

It is confirmed through the review of measurement data obtained by the trial test at Pulau Putri BTS site and the interview with the PPs that the values of $EC_{i,diesel,p}$, $EC_{i,solar,p}$ and $FC_{i,diesel,p}$ in Table 1 of the MPS are correctly calculated. Thus, CL 01 is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA confirms that all emission sources and GHG types for the proposed project are appropriately identified. JQA concludes that the values of parameters to be monitored *ex-post* in the MPS are correctly estimated based on the result of trial test and the values of the project-specific parameters to be fixed *ex-ante* are also appropriately selected. As a result, the GHG emission reductions per year are correctly calculated using appropriate parameters and data.

C.5. Environmental impact assessment

<Means of validation>

The proposed project aims to reduce CO_2 emissions from electricity and fossil fuel consumption at 20 BTSs sites owned by PT XL Axiata Tbk. The PDD states that an Environmental Impact Assessment (EIA) is not required, because the proposed project only gives a limited level of potential social and environmental impact and the stakeholders identified are also limited to staff members of PT XL Axiata Tbk and PT Huawei Services who is subcontractor of PT XL Axiata Tbk for operation and maintenance of BTSs at telecom tower sites. According to the EIA Guidebook for Japanese Companies in Overseas Business Development, published by Institute for Global Environmental Strategies (IGES) on March 2015, there is no stipulations which requires EIA assessment to such kind of the technology implementation. Therefore, JQA confirms that EIA is not required.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the proposed project does not require the EIA. The implementation of the project is in line with the regulations in Republic of Indonesia and the requirements of the JCM.

C.6. Local stakeholder consultation

<Means of validation>

The PPs conducted a local stakeholder consultation at the meeting room in the office of PT XL Axiata Tbk on 06/11/2017. Prior to the meeting, the invitation letter and email were sent to the stakeholders on 31/10/2017.

The list of the participants for Local Stakeholders' Consultation Meeting is as follows:

- Indonesia JCM Secretariat
- PT XL Axiata Tbk
- PT Huawei Service
- Ministry of Industry
- Coordinating Ministry for Economic Affairs
- KDDI Corporation
- KDDI Indonesia
- Ernst & Young ShinNihon LLC

The local stakeholders provided positive comments for the proposed project. No negative issues that require actions to be taken by the PPs were raised through the consultation. It is confirmed through the review of the relevant documents and the interview with the PPs that the stakeholder consultation process was appropriately conducted to collect stakeholders' opinions on the project. The summary of the comments received in the consultation and due account of all comments taken by the PPs are fully described in the PDD.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the PPs have completed a local stakeholder consultation process and invited comments on the proposed project from the local stakeholders. The summary of the comments received is provided in the PDD in a complete manner and the PPs have taken due account of all the comments received. Further actions were not needed for all comments.

C.7. Monitoring

<Means of validation>

The Monitoring Plan consists of the Monitoring Plan Sheet (MPS) and Monitoring Structure Sheet (MSS) which comply with the approved Methodology JCM_ID_AM014_ver01.0. Three monitoring parameters for grid electricity consumed at BTS_i ($EC_{i,grid,p}$), electricity generated by the project diesel generator at BTS_i ($EC_{i,diesel,p}$), and electricity generated by the project solar PV system at BTS_i ($EC_{i,solar,p}$) are measured by current sensor. The quantity of diesel fuel consumed at BTS_i ($FC_{i,diesel,p}$) is measured by recording of

filled fuel into the fuel tank at every filling time. Hours for which electricity is available from grid at BTS_i ($\tau_{i,p}$) are measured by sensor logger and total hours of operation of BTS_i ($T_{i,p}$) are calculated based on the operation days of BTS_i. For off-grid sites (Sites No.: 1-13, 15-17), the monitoring points are appropriately located at the diesel generator, solar PV and fuel tank. For poor grid sites (Sites No.: 14, 18-20), the monitoring points are located at the entrance of the grid, diesel generator, solar PV, fuel tank and sensor logger. The measured data except diesel fuel consumption is automatically stored by the logger at BTS_i and simultaneously transmitted on-line to the server at KDDI Corporation. The data of the parameters ($EC_{i,grid,p}$, $EC_{i,diesel,p}$, $EC_{i,solar,p}$ and $\tau_{i,p}$) are continuously monitored and recorded monthly. The parameter ($T_{i,p}$) is monitored daily and recorded monthly and the data of fuel consumption ($FC_{i,diesel,p}$) is recorded at every filling time. The current sensor is replaced or calibrated in accordance with manufacture's specification.

All monitored data which are required for verification and issuance will be kept and archived electronically for two years after the final issuance of the credits.

The roles and responsibilities of the personnel are described in the MSS. The monitoring structure consists of Project Manager, Data Monitoring Manager, System Implementation Manager (based in Japan), Facility Manager and Engineer (based in Jakarta, Indonesia), and BTS owner and Manager (based in Jakarta, Indonesia). System Implementation Manager (based in Japan) and Facility Manager and Engineer (based in Jakarta, Indonesia) are responsible for data collection except fuel consumption data. The data of fuel consumption is collected and recorded by BTS owner and Manager and reported to Data Monitoring Manager. Data Monitoring Manager is responsible for approving the recorded data and archived data and further for preparing monitoring report. Project Manager is responsible for the final check of monitoring results and project implementation.

It is confirmed through the review of the relevant documents and the interview with the PPs that the monitoring plan complies with the requirements of the approved methodology and the PPs are able to implement the monitoring activity appropriately according to the monitoring plan.

Regarding the monitoring point for fuel consumption, the archiving procedure of data and the preparation of monitoring report, JQA raised CAR 01 and these issues were resolved as explained in "Findings".

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 01:

The monitoring point for fuel consumption by diesel generator is not described in the figure of C.2 of the PDD.

Resolution of CAR 01 by the PPs:

The monitoring point for fuel consumption by diesel generator is appropriately described in the figure of C.2 of the PDD, in accordance with the description in the MPS. It is confirmed through the review of the revised PDD, on-site visit and the interview with the PPs that the monitoring points for fuel consumption by diesel generator has been appropriately added in the revised PDD Thus, CAR 01 is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the description of Monitoring Plan is based on the approved methodology and JCM Guidelines for Developing Project Design Document and Monitoring Report, and the monitoring points as well as monitoring equipment for measurement are also appropriate. Thus, the PPs have demonstrated feasibility of the monitoring structure and their abilities to implement the monitoring activity appropriately.

C.8. Modalities of Communication

<Means of validation>

The MoC was provided to JQA for review by the PPs on 09/02/2018, in the valid form (JCM_ID_F_MoC_ver01.0) at the time of validation, in which KDDI Corporation is nominated as the focal point. The MoC was signed by the authorized representatives of KDDI Corporation on 12/01/2018 and by the authorized representatives of PT XL Axiata Tbk on 24/01/2018, along with the contact details.

JQA has checked the personal identities including specimen signatures and employment status of the authorized signatories directly through the interview with the PPs during on-site assessment. Primary authorized signatory of KDDI Corporation is Mr. Keiji Ito, Head of Global ICT Business Division, and alternate authorized signatory is Mr. Hiroshi Uchida, General Manager of Global ICT Business Promotion Department. Primary authorized signatory of PT. XL Axiata Tbk is Mr. Hendrik, Head of Telco Service Operation, and alternate authorized signatory is Mr. Okrisimon, Lead of IBC and Power Engineering.

It is confirmed that all corporate and personal details including specimen signatures and the information in the MoC are valid and accurate as requested in the JCM Guidelines for Validation and Verification.

Regarding the provision of MoC at the time of validation, JQA raised CAR 02 and this issue was resolved as explained in "Findings".

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 02:

MoC has not been provided by the PPs at the time of validation.

Resolution of CAR 02 by the PPs:

The MoC was provided by the PP on 09/02/2018 during the validation. It is confirmed through the review of the MoC and the interview with the PPs that MoC includes all information on the corporate identity of all PPs and a focal point has been correctly completed using the valid form. Thus, CAR 02 is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the MoC is completed using the valid version of the form, and the information and the specimen signature of the PPs provided in the MoC are correct and sufficient, in compliance with the requirements of the JCM Guidelines. It is demonstrated that the MoC is correctly completed and dully authorized.

C.9. Avoidance of double registration

<Means of validation>

The representative of focal point entity in the MoC, Mr. Keiji Ito, Head of Global ICT Business Division, KDDI Corporation declares that the proposed project is not registered under any other international climate mitigation mechanism other than the JCM. It is confirmed through the check of the relevant website (e.g. UNFCCC website, Market Environmental Registry, etc.) that the proposed project is not registered under any other international climate mitigation mechanisms in terms of the name of entity, applied technology, scale and location. Thus, it can be concluded that the proposed project will not result in double counting of GHG emission reductions.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the proposed project is not registered under any other international

climate mitigation mechanisms and hence will not result in double counting of GHG emission reductions.

C.10. Start of operation

<Means of validation>

For the proposed project, the commissioning of the first project facilities installed at Pulau Putri BTS site was completed on 29/07/2017 and the starting date of monitoring activity was set as 01/01/2018. It is confirmed through the review of relevant documents, on-site assessment and the interview with the PPs that the starting date of the proposed project given in the PDD, 01/01/2018, is correct.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

JQA concludes that the starting date of project operation is set as 01/01/2018 and does not predate 01/01/2013 as required by the Guideline of the JCM project.

C.11. Other issues

<Means of validation>

No more issues are raised in the validation of the proposed project.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Not applicable.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Not applicable.

D. Information on public inputs

D.1. Summary of public inputs

In line with the JCM Project Cycle Procedure, the PDD was made publicly available for 30 days from 28/02/2018 to 29/03/2018 to invite public comments on the following JCM website: https://www.jcm.go.jp/id-jp/information/259

No public comments were received.

D.2. Summary of how inputs received have been taken into account by the project participants

Not applicable.

E. List of interviewees and documents received

E.1. List of interviewees

- Hendrik, Head, Telco Service Operation, PT. XL Axiata Tbk
- Okrisimon, Lead, IBC and Power Engineering, PT. XL Axiata Tbk
- Iman Yulianto, Engineer, IBC and Power Engineering, PT. XL Axiata Tbk
- Bilal Mahmod, General Manager, P & I, PT. Huawei Services
- Hiromi Imanari, Manager, Gov. & Ext. Relations Gr., Tech. Innovation Strategy Dept., Tech. Planning Div., KDDI Corporation
- Masanori Hirano, Director, IT Solution, PT. KDDI Indonesia
- Anton Previanto, Presales Engineer, PT. KDDI Indonesia
- Akiko Ishii, Manager, Global Public Team, Climate Change and Sustainability Services, FAAS Div., Ernst & Young ShinNihon LLC
- Hazuki Terada, Global Public Team, Climate Change and Sustainability Services, FAAS Div., Ernst & Young ShinNihon LLC

E.2. List of documents received

1. PDD, ver. 1.0, 29/01/2018; ver. 2.1, 23/02/2018
2. Monitoring Plan Sheet and Monitoring Structure Sheet, ver. 1.0, 29/01/2018; ver. 2.1, 23/02/2018
3. JCM Modalities of Communication Statement Form (MoC) dated 24/01/2018, submitted by the PPs
4. JCM Modalities of Communication Statement Form (JCM_ID_F_MoC_ver01.0)
5. JCM Approved Methodology ID_AM014_ver01.0, 04/12/2017, JC7, Annex 3

6. JCM Glossary of Terms (JCM_ID_Glossary_ver02.0)
7. JCM Project Cycle Procedure (JCM_ID_PCP_ver05.0)
8. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_ver02.1)
9. JCM Project Design Document Form (JCM_ID_F_PDD_ver01.1)
10. JCM Guidelines for Validation and Verification (JCM_ID_GL_VV_ver01.0)
11. JCM Validation Report Form (JCM_ID_F_Val_Rep_ver01.0)
12. Feasibility Study Report on introduction of Tribrid System to mobile communication's
13. Base Transceiver Stations, Contracted by KDDI Corporation and EY ShinNihon LLC, Mar. 2015
14. Installation Drawings for the model project for Tribrid System in Indonesia, issued by Sanwa Comsys Engineering Corp., July 2017
15. JCM project implementation of installation of Tribrid Systems to mobile communication's Base Transceiver Stations, Evidence of 20 BTS sites
16. Company of PT XL Axiata Tbk, https://www.xl.co.id/
17. Company of KDDI Corporation, http://www.kddi.com/

17-1. MoU between ILMATE and NEDO signed 16/03/2017

17-2. Implementation agreement for the demonstration project for Tribrid System between KDDI Corporation and PT Huawei Services, 28 April 2017

18. Commissioning of BTS System installed at Pulau Putri, dated 29/07/2017

19-1. Lifetime and specification of solar PV, Helios Solar Works

19-2 IEC61215-1:2016 Terrestrial PV modules – Design Qualification and Type Approval

19-3 IEC61730-2:2016 PV Module Safety Qualification

20-1 Specification of diesel generator DENYO DCA-25ESK

20-2 Efficiency of diesel generator DCA-25ESK-DA

20-3 Replacement spare parts for routing servicing of DCA-25ESK-DA

21-1 Specification of Li-ion battery module DCB105ZK

21-2 Charge-discharge characteristics and cycle estimation of DCB105ZK

22-1 Specification of AC current sensor, issued by U.R.D Ltd.

22-2 Specification of DC current sensor, issued by U.R.D Ltd.

23. Specification of datalogger

24-1 Existing lead-acid battery labelling data

24-2 Asset transfer procedures for lead-acid battery

24-3 SOP of asset transfer

25 Copy of fuel tracking system for diesel generator at BTS

26 On-line monitoring system for data collection

27-1 Indonesia EIA Guidebook issued by IGES, March 2015

27-2 Law of the Republic of Indonesia, No. 32-2009 concerning protection and management of environment, dated 3 October 2009
28-1 Invitation to a Local Stakeholder Consultation session, dated 31 Oct. 2017
28-2 Agenda of Local Stakeholder Consultation session, dated 6 Nov. 2017
28-3 Participants list of Local Stakeholder Consultation session
28-4 Opening remarks by KDDI Corporation for Local Stakeholder Consultation session
28-5 Introduction of JCM program by Indonesian side
28-6 Introduction of JCM project activity “Tribrid System” by KDDI Corporation
28-7 MRV methodology for Installation of Tribrid System to mobile communication’s Base Transceiver Station (BTS) in Indonesia, presented by EY Japan, 6 Nov. 2017
28-8 Minutes of Local Stakeholder Consultation session
29. Schematic diagram of monitoring structure for project activity
30. 2015- Grid emission factor issued by Directorate General of Electricity, Ministry of Energy and Mineral Resources, Indonesia
31. Ex-ante calculation of electricity generation and diesel fuel consumption by diesel generator and solar PV at 20 BTS
32-1. Staff training records conducted on 26-27/03/2018
32-2. List of attendees for the staff training conducted on 26-27/03/2018
32-3. Text materials of staff training “Introduction of Tribrid project”
32-4. Text materials of staff training “Tribrid Training Manual”

Annex Certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers

Statement of competence

JQA

Name: Dr. Tadashi Yoshida

Qualified and authorized by Japan Quality Assurance Organization.

Function	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2015/11/12
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-

Statement of competence

JQA

Name: Mr. Koichiro Tanabe

Qualified and authorized by Japan Quality Assurance Organization.

Function	Date of qualification
Validator	-
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	-
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-