JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Energy saving and work efficiency improvement by introducing a new chip-on-board LED system in Vietnam
Reference number	VN006
Monitoring period	24/03/2017 – 31/12/2017
Date of completion of the monitoring report	17/08/2018
Third-party entity (TPE)	TPE-VN-002 Japan Quality Assurance Organization (JQA)
Project participant contracting the TPE	Stanley Electric Co., Ltd.
Date of completion of this report	21/08/2018

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, JQA (TPE's name) provides reasonable assurance that the emission reductions for Energy saving and work efficiency improvement by introducing a new chip-on-board LED system in Vietnam (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons>

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory: Mr. ☒ Ms. ☐

Last name: Asada First name: Sumio

Title: Senior Executive

Specimen signature: Date: 21/08/2018

[redacted]

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Koichiro Tanabe	JQA	Team leader	☒	Authorized	☐
Mr. ☐ Ms. ☒	Sachiko Hashizume	JQA	Team member	☒	Authorized	☒
Mr. ☒ Ms. ☐	Tadashi Yoshida	External Individual	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 verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

The project has been registered as a JCM project on 15/08/2018, with applying JCM Approved Methodology VN_AM008 " Installation of LED lighting equipment to fishing boats" under the scheme of Joint Crediting Mechanism between the Socialist Republic of Viet Nam (herein after referred to as Viet Nam) and Japan.

The JCM project aims to reduce CO_2 emissions by decreasing consumption of electricity generated by diesel power in the Socialist Republic of Viet Nam by replacing existing High-Intensity Discharge (HID) lamp used as fishing lights for diesel powered fishing boats with Light Emitting Diode (LED) light . The proposed JCM project involves replacement of HID fishing lights with LED fishing lights in 40 fishing boats in Quang Tri province, Vietnam.

The project participant from Vietnam is Department of Science and Technology of Quang Tri Province (herein after referred to as DOST) and the project participants from Japan is Stanley Electric Co., Ltd (herein after referred to as Stanley).

The JCM website indicates the starting date of the project operation is 24/03/2017 and this monitoring period starts from the same day. It was confirmed that project participants started the monitoring after the installation and quality check by using a

list of 18 check items including the operating conditions of the monitoring equipment.

Through a review of relevant documents, the verification team assessed whether the project implementation and operation after the starting date of project operation complied with the eligibility criteria of the applied methodology during the monitoring period. After the desk review, an on-site assessment was conducted on 17 January 2018. The verification team conducted a physical inspection and interviews with project participants and other entities involved in the project as listed in Section F of this verification report.

The assessment results regarding the eligibility criteria of the registered PDD are summarized as below:

Criterion 1: The project newly installs LED lights or replaces existing lamps with LED lights as fishing lights for diesel powered fishing boats whose horsepower is over 90 in Vietnam.

Through reviewing supporting documents and an on-site inspection, the project information of Criterion 1 described in the PDD, was checked and confirmed as below with a satisfactory result:

- Project participants established a list of 40 fishing boats installed LED fishing lights under the proposed JCM project. A check list for each fishing boat was also created at the time of installation, for the purpose of quality control and record keeping.
- Through reviewing the list and checklists, it was confirmed that a project fishing boat can be identified by its licence number. The licence number can be confirmed in the picture attached to each checklist. The licence number is also indicated in the boat registration certificate issued by Quang Tri Department of Agriculture and Rural Development, the fishery authority of the local government.
- The boat registration certificate includes basic information of the fishing boat such as the size, horse power and ownership of the fishing boat. Through reviewing these documents, it was confirmed that the project replaces the existing HID lamps with LED lights for 40 diesel powered fishing boats whose horse power is over 90 in two fishing towns near Dong Ha of Quang Tri Province in Vietnam.
- The verification team conducted an on-site inspection to check the accuracy of the information on the list mentioned above by applying sampling. The verification team checked 7 sampled fishing boats in line with the “Standard for sampling and

surveys for CDM project activities and programme of activities" for large scale CDM projects. Through the check, it was confirmed that the licence number is clearly indicated on the body of each fishing boat, and the information on the list including the number of installed LED is accurate.

As a result, the verification team confirmed that the project implementation and operation complied with above eligibility criterion.

Criterion 2: Project LED lighting meets the following specification
- Water proof and dust proof: equal to or higher than the international standard IP65

A test under IP 66 requirement was conducted for project LED lighting system by Cosmos corporation, a testing laboratory of IP in Japan. Through reviewing the test report, it was confirmed that the project LED lighting system passed the test with satisfactory result. As a result, the verification team confirmed that the project implementation and operation complied with above eligibility criterion.

Criterion 3: In case existing lamps are replaced, a plan for proper treatment (including re-use and recycling) and disposal of replaced existing lamps is prepared and implemented according to the relevant legislation in Vietnam to avoid the mercury release to the environment.

Under this project, existing HID lamps were replaced. As there is no special regulation to treat HID lamps in Vietnam, DOST prepared a plan for proper treatment of existing lamps. Through reviewing the plan, it was confirmed that replaced HID lamps would be re-used by other fishing boats until the lamp life run out, and they would be treated properly not to destroy and leave them in fishing port or river. In addition to this, it was confirmed through reviewing relevant documents and interviews with the owners of the project fishing boats during on-site inspection, that an education about the collection method of replaced HID lamps was provided by DOST in April 2017.

As for the implementation of the prepared plan, the verification team conducted interviews with ship owners of seven sampled fishing boats. Through the interviews, verification team confirmed the following information.

- For ship owners, the highest-priority treatment of the replaced HID lamps, is selling them to other fishermen for re-use, as these lamps are their valuable

property.

- The remaining HID lamps are stored in ship owner's house until there are any opportunities to sell them out.
- Every ship owner are aware of the bad impact of releasing the mercury to the environment through the education provided by DOST in April 2017.

Based on these the prepared plan for proper treatment of existing lamps has been implemented appropriately. As a result, the verification team confirmed that the project implementation and operation complied with above eligibility criterion.

<Findings>

No out-standing issue was raised.

<Conclusion based on reporting requirements>

The verification team concluded that the actual project and its operation were in compliance with the eligibility criteria of the applied methodology during this monitoring period.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

The verification team assessed the status of the actual project and its operation with the registered PDD by a desk review, an on-site visit and interviews. The assessment results are summarized as below;

[Physical features of the project]

Through the desk review, on-site visit and interview with project participants, it was confirmed that LED lightings have been installed as fishing light to 40 fishing boats. Please refer to the description on the assessment result of compliance of eligibility criterion 1 in Section C.1 above.

Regarding the operation of the project, it was confirmed that there was a malfunction of LED lighting switch on a fishing boat and the malfunction was resolved by replacing the switch. The record of malfunction with confirmation of ship owner was provided to the verification team.

[Monitoring points]

There is only one parameter related to the GHG emission reductions of the project monitored by measuring equipment. An electricity meter is used for the monitoring of electricity consumption of the project LED lightings on each project fishing boat. This means there are 40 electricity meters used for the monitoring. Detailed information on the monitoring data of the monitoring points is described in Section C.4. Assessment of data and calculation of GHG emission reductions of this verification report.

[Monitoring structure]

Through the interview with project participants and relevant entities, it was confirmed that the monitoring structure was formed and operated in line with the registered PDD during the monitoring period.

The verification team confirms by means of an on-site visit for the first verification, that physical features of the project in the registered/validated PDD are in place and that the project participants have operated the project as per the registered/validated PDD.

<Findings>

No out-standing issue was raised.

<Conclusion based on reporting requirements>

The verification team concluded that the project implementation was in accordance with the registered PDD during the monitoring period, and no change from the registered PDD was found.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>

As stated in Section C.2 above, the verification team confirmed that there are 40 electricity meters installed for the monitoring of parameter used for GHG emission reductions calculations. Corresponding to the electricity system of each fishing boat, there are two types of electricity meters, namely single phase electricity meter and three phase electricity meters among those 40 electricity meters. All of those are manufactured by Electric Measuring Instrument Co., Ltd (EMIC). The compliance of calibration frequency is confirmed as bellow.

In the monitoring plan, it is requested that “in case a calibration certificate issued by an entity accredited under national/international standards is not provided, such

electricity meters are required to be calibrated, unless the meters are installed and managed by the electrical utilities of Vietnam". Through reviewing the calibration certificate for each electricity meter and the interview with PP, it was confirmed that the monitoring equipment have been calibrated as per DL VN 07:2012, "Alternating current induction watt-hour meters Verification procedures", the national regulations on measurement of Vietnam, by certification entities accredited by Bureau of Accreditation Vietnam.

It was confirmed that the validity of the calibration for single phase electricity meter is five years, and three phase is two years. It was also confirmed all of those 40 calibration certificates are valid thorough out this monitoring period. Therefore, it was confirmed that the electricity meter was calibrated in line with the national regulations as required in the monitoring plan.

Regarding the description on calibration in the MRS, an issue was raised and resolved as described below.

<Findings>

(Issue raised as CL01)

Through reviewing the calibration certificates and the interview with PP, it was confirmed that the monitoring equipment have been calibrated as per DL VN 07:2012, "Alternating current induction watt-hour meters Verification procedures", the national regulations on measurement of Vietnam.

However, it is not clearly described in the measurement method and procedure in the MRS. Therefore, it is requested to clarify it accordingly.

(Summary of the response on CL01)

MRS has been revised to indicate the name of the national regulations on measurement of Vietnam which is applied to the monitoring equipment of the project.

(Assessment result of the responses on CL01)

It was confirmed that the description on calibration in the measurement method and procedure in the MRS was revised appropriately. Therefore, this issue was closed.

<Conclusion based on reporting requirements>

The verification team concluded that the calibration frequency was in compliance with related requirements. Therefore, no correction of the measured value was required.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

The verification team assessed the data and calculation of GHG emission reductions achieved by the project as below;

(a) The corresponding Monitoring Report Sheet of the applied methodology has been used;

Through reviewing the draft Monitoring Report provided before the on-site assessment, it was confirmed that the corresponding Monitoring Report Sheet (MRS) of the applied methodology has been used.

(b) A complete set of data for the specified monitoring period is available. If partial data are unavailable, the TPE either gives negative verification opinion for that time period during which the data are unavailable in the monitoring period or seeks guidance from the Joint Committee;

PP defined the monitoring period as from 24/03/2017 to 28/12/2017 in the draft MPS. PP provided the following three files together with the draft MRS.

1) Report for Meter reading data_MP1_start_24032017

By this report, PP recorded the meter reading of each fishing boat with pictures, as the source of monitoring data at the beginning of this monitoring period. It includes vessel number (license number), serial number of meter, date of picture and the value of meter reading. Since this is the first monitoring period, the starting date of the monitoring period is the date of the installation of the project LED lightings confirmed by the installation checklist. Given that there are 40 fishing boats under the project installed with LED lightings on different date, PP defined the start date of the first monitoring period as the earliest date of installation within those 40 fishing boats. Through reviewing this report and the installation checklist, it was confirmed that the earliest date of installation is 24/03/2017 which is the same with the starting date of operation in the registered PDD.

2) Report for Meter reading data_MP1_end_28122017

By this report, PP recorded the meter reading of each fishing boat with pictures, as the source of monitoring data at the end of this monitoring period. It includes vessel number (license number), serial number of meter, date of picture and the value of meter reading. Through reviewing the report, it was confirmed that the meter reading

record for 31 fishing boats was done on 26/12/2017, for 5 fishing boats was done on 27/12/2017. On the other hand, for 4 fishing boats, no monitoring record was included in the report at the time of the on-site assessment (17/01/2018). Considering that there are 40 fishing boats under the project operated by each ship owner individually and the monitoring is conducted when each ship call at port, it is inevitable that the date of meter reading varies ship by ship. However, it is not clear how to apply the monitoring plan described in the Monitoring Plan Sheet attached to the registered PDD to this situation. Especially, it should be clarified how to define the cut-off date of meter reading for the end of a monitoring period. Thus the verification team raised an issue in this regards, and it was resolved as described in <findings> section below. As a result, PP revised the end date of this monitoring period from 28/12/2017 to 31/12/2017.

3) Calculation table for electricity consumption of each project fishing boat

This file contains a table to calculate the total electricity consumption of LED lighting for each fishing boat by using the value of meter reading derived from above mentioned two reports. Values of $EC_{PJi,p}$ (Total electricity consumption by LED light of fishing boat i during the period p) of MRS (input_separate_boat) sheet are derived from this file. As for those four fishing boats which had not been monitored before the 31/12/2017, PP deemed that the electricity consumption for four fishing boats is zero respectively. The verification team confirmed that it results in a conservative calculation of GHG emission reductions.

(c) Information provided in the monitoring report has been checked with sources such as plant logbooks, inventories, purchase records, laboratory analysis;

The verification team reviewed all the above mentioned complete data set of the monitoring data. The values of $EC_{PJi,p}$ (Total electricity consumption by LED light of fishing boat i during the period p) are aggregated as $\sum EC_{PJ,l,p}$ (Total electricity consumption by LED lights during the period p) in the MPS(input) sheet.

Parameters	Monitored values	Method to check values in the monitoring report with sources
$\sum EC_{PJ,l,p}$	67.36 MWh/p	The verification team checked the meter reading values in the calculation table against report for meter reading data mentioned above. The formulae and result of calculation of the total electricity consumption in the calculation table is also checked. The formulae of

		aggregation of values of MRS (input_separate_boat) sheet is fixed in MRS (input) sheet.

(d) Any assumptions used in emission calculations have been justified;

Through reviewing the Monitoring Report Sheet and interview with the PPs, it was confirmed that no assumption had been used in emission calculations and hence no justification was required.

(e) Appropriate emission factors, default values, and other reference values have been correctly applied.

Through reviewing the Monitoring Report Sheet and interview with the PPs, it was confirmed that appropriate emission factors, default values, and other reference values had been correctly applied.

<Findings>

(Issue raised as CL02)

Considering that there are 40 fishing boats under the project operated by each ship owner individually and the record of monitoring is conducted when each ship call at the port, it is reasonable to say that meter reading activities are carried out ship by ship and it is difficult to unify them.

However, it is not clear how to apply the monitoring plan, described in the Monitoring Plan Sheet attached to the registered PDD, to this situation. Especially, it should be clarified how to define the cut-off date of meter reading for the end of a monitoring period.

(Summary of the response on CL02)

The monitoring procedures have been revised. To clarify the cut-off date of meter reading for the end of the monitoring period, the last day within the month when photo for the 40th boat or the last boat subject to the monitoring period is taken, will be designated as the end date of a monitoring period for the project.

(Assessment result of the responses on CL02)

Through reviewing "Monitoring Instruction (ver2)" in which the detailed monitoring procedure is provided, it was confirmed that the definition of the monitoring period and cut-off date is clearly described. The verification team confirms that the definition and procedures are acceptable in the light of the monitoring plan in the MPS/MRS, and it

is expected that no double counting of monitoring data will not be able to occur when this definition and procedures are carried out. Therefore, this issue was closed.

<Conclusion based on reporting requirements>

The verification team concluded through assessment of data and calculation of GHG emission reductions that the reported values in the monitoring report were verified in an accepted manner.

C.5. Assessment of avoidance of double registration

<Means of verification>

It was confirmed that a written confirmation from project participants regarding the registration under other international climate mitigation mechanisms were provided in the JCM Modalities of Communication Statement. In addition, through the interview with project participants, it was confirmed that the project has not been registered under any other mechanisms.

According to a form of declaration for avoidance of double registration in the JCM Modalities of Communication Statement, the declaration letter signed by the project developer's representative was submitted to the Joint Committee at the validation stage, and it was also cross-checked at the verification stage. In addition, through search on the website of the CDM and JI, it was confirmed that no project with similar technology and location had been registered in The Social Republic of Viet Nam.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The verification team concluded that the project had not been registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification>

It was confirmed through the review of documents and the on-site assessment that the project had not been changed from the registered PDD and/or methodology.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The verification team concluded that the project had not been changed from the registered PDD and/or methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No remaining issues including FARs from the validation, and this is the first verification period, therefore this item is not applicable.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2017	196.9	53.9	143
2018	N/A	N/A	N/A
2019	N/A	N/A	N/A
2020	N/A	N/A	N/A
Total (tCO_2e)			143

F. List of interviewees and documents received

F.1. List of interviewees

- Phan Tuan Anh, Deputy Head of Technology Transfer Division, Department of Science and Technology of Quang Tri Province (DOST)
- Le Van Quyet Thang, Engineer, Department of Science and Technology of Quang Tri Province (DOST)
- Huynh Quoc Huy, Project manager,Eternal Technology - Energy Joint Stock Company (ETES)
- Ho Van Ha, Ship owner of QT93412TS
- Nguyen Cong Chien, Ship owner of QT94456TS
- Nguyen Van Sau, Ship owner of QT91225TS
- Nguyen Van Nang, Ship owner of QT91918TS
- Nguyen Trung Doan, Ship owner of QT93569TS
- Nguyen Khai, Ship owner of QT90235TS
- Nguyen Quang Hau, Ship owner of QT91739TS
- Yoshifumi Kawaguchi, Manager, Stanley Electric Co.,Ltd.
- Chisato Nakade, Senior consultant, Clean Energy Finance Division, Mitsubishi UFJ Morgan Stanley Securities Co.,Ltd.

F.2. List of documents received

1. Monitoring Report Sheet (draft) (JCM_VN_AM008_ver01.0_MPS_Stanley LED_ver01_w photo_asof20171228.xlsx)
2. Monitoring Report Sheet (final) (JCM_VN006_MP_MRS_20180817.xlsx)
3. JCM Approved Methodology VN_AM008 “Installation of LED lighting equipment to fishing boats” (JCM_VN_AM008_ver01.0.pdf)
4. Form of Monitoring Plan Sheet and Monitoring Structure Sheet (VN_AM008)

(JCM_VN_AM008_ver01.0.xlsx)

5. JCM Glossary of Terms (JCM_VN_Glossary_ver01.0)
6. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_VN_GL_PDD_MR_ver02.0)
7. JCM Project Cycle Procedure (JCM_VN_PCP_ver03.0)
8. JCM Guidelines for Validation and Verification (JCM_VN_GL_VV_ver01.0)
9. Standard for Sampling and surveys for CDM project activities and programmes of activities Version 05.0
10. Project Design Document, dated on 21/12/2017, ver.2.0 (JCM_VN_F_PDD_VN006.pdf)
11. Monitoring Plan Sheet (JCM_VN_AM008_ver01.0_MPS_Stanley LED_ver02.xlsx)
12. JCM Modalities and Communication Statement Form, dated on 16/11/2017 (JCM_VN_F_MoC_VN006.pdf)
13. JCM Validation Report, dated on 11/01/2018 (JCM_VN_F_Val_Rep_VN006.pdf)
14. Ship list
15. Specification and registration certificate of project fishing boats
16. Check list for the installation of LED
17. Specification and manufacturer's inspection results of project LED lighting
18. A plan for proper treatment and disposal of replaced existing lamps
19. Vietnam List of Hazardous Waste attached to Decision No.23/2006/QD-BTNMT
20. The Installation and Commission Completion Certificate (Schedule 1)
22. Report for Meter reading data_MP1_start_24032017, and Report for Meter reading data_MP1_end_28122017
23. Calculation table for electricity consumption of each project fishing boat
24. Specification of electricity meter
25. Monitoring procedures/manuals
26. Calibration certificate issued by an entity accredited under national/international standards
27. Record of malfunction
28. DLVN07:2012 Alternating current induction watt-hour meters Verification procedures

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

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	-

Statement of competence

JQA

Name: Ms. Sachiko Hashizume

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	2015/11/20
Verifier	2015/11/20
Team leader	-

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2015/11/20
TA 1.2. Renewables	2015/11/20
TA 3.1. Energy demand	2015/11/20
TA 4.1. Cement and lime production	-
TA 4.6. Other manufacturing industries	-
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2015/11/20
TA 14.1. Afforestation and reforestation	-

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	-