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**PERIODIC VERIFICATION REPORT**  
**(FIRST MONITORING PERIOD)**

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**3 MW Shinan Wind Power**  
**Project in Korea**  
**(UNFCCC Ref: 3110)**

**Report No. CDM00325**  
**Version No. 3.0**

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| Date of first issue:<br>03/12/ 2012                                     | Project No.:<br>CDM00325  |
| Approved by:<br>Hiroschi Inanaga  | Organizational unit:<br>Deloitte Tohmatsu Evaluation and Certification Organization |
| Client:<br>Shinan Wind Power Co., Ltd.                                  | Client ref.:  |
| Project Title:<br>3MW Shinan Wind power project                         |   |
| Host Country:<br>Republic of Korea                                      | Annex 1 Country<br>-  |
| Sectoral Scope<br>1: Energy Industries (renewable/nonrenewable sources) | Technical Area<br>TA 1.2: Energy generation from renewable energy sources           |
| Methodology<br>AMS-I.D (Version 13)                                     | Emission Reduction for the period:<br>8,184 tCO <sub>2</sub> e                      |

|   |                |                  |
|---|----------------|------------------|
| Report No.:<br>CDM00325   | Subject Group: |                  |
| Work performed by:<br>PARK, Yong Tae - Team Leader<br>PARK, Yoon Jung – Team Member<br>SHI, Xueting – Team Member |                |                  |
| Work verified by:<br>ISHIGAI, Chikara   |                |                  |
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## Indexing terms

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**Abbreviations**

|                 |   |
|-----------------|---|
| ACM             | Approved Consolidated Methodology                           |
| CAR             | Corrective Action Request                                   |
| CDM             | Clean Development Mechanism                                 |
| CER             | Certified Emission Reduction                                |
| CL              | Clarification   |
| CO <sub>2</sub> | Carbon Dioxide  |
| Deloitte-TECO   | Deloitte Tohmatsu Evaluation and Certification Organization |
| DOE             | Designated Operational Entity                               |
| EB              | CDM Executive Board   |
| EG              | Electricity Generation                                      |
| KEPCO           | Korea Electric Power Corporation                            |
| IRR             | Internal Rate of Return                                     |
| KPX             | Korea Power Exchange  |
| FAR             | Forward Action Request                                      |
| FSR             | Feasibility Study Report                                    |
| GHG             | Greenhouse Gas(es)  |
| GSC             | Global Stakeholder Consultation                             |
| MR              | Monitoring Report   |
| PDD             | Project Design Document                                     |
| PO              | Project Owner   |
| PP              | Project Participant(s)                                      |
| PPA             | Power Purchase Agreement                                    |
| PS              | CDM Project Standard  |
| QA/QC           | Quality Assurance/Quality Control                           |
| UNFCCC          | United Nations Framework Convention on Climate Change       |
| ECOYEY          | Energy and Environment Consultancy Company                  |
| VVS             | Validation and Verification Standard                        |

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## Appendix A: Verification Checklist

## 1 EXECUTIVE SUMMARY

Deloitte Tohmatsu Evaluation and Certification Organization (Deloitte-TECO) has performed the first periodic verification inspection of electricity production and greenhouse gas (GHG) emission reductions based on the Clean Development Mechanism (CDM) project monitoring report submitted for the “3MW Shinan Wind power project” (ref. 3110) for the period from 18 April 2010 to 17 April 2012. The verification team conducted on-site inspection to confirm that the monitoring method and quality assurance/quality control (QA/QC) checks have been properly implemented in accordance with the methodology and the registered Project Design Document (PDD) (version 02.4, completed on 20 October 2009) and that all the equipment in the power station has been installed as planned. However, Deloitte-TECO found out some differences between the registered PDD and actual implementation. Therefore, PDD was revised under the Post registration change.

The project is located in Shinan-gun district in Jeollanam-do Province. The powerhouse is located at longitude 125°56'03” and latitude 34° 46'29,” which is seashore of the Bigeum Island. The verification team took a risk-based approach to confirm problems and issues of noncompliance after first completing a desk review of the monitoring report, PDD (version 02.4) and applied methodology (AMS-I.D ver.13), and other applicable references. The performance of the monitoring plan has been assessed via on-site inspections, interviews, and other related sources of information.

The criteria used to determine reductions in GHG emissions included an ex-ante of the power grid emissions factor, as well as the amount of electricity generated. While the devices used to measure electricity production meet national standards for inspection and screening and were calibrated and authenticated to confirm that all measurements were accurate, there is still room for human error. Mistakes can occur during the process of transposing data from handwritten records to the Excel spreadsheets, which could result in a miscalculation of emissions.

The GHG emissions reduction reported by the project participants (PPs) was calculated by multiplying the emissions factor and the amount of electricity generated, which was determined by the measuring devices managed by the electric power company that owns the power grid. The verification team confirmed that the calculation was conducted by utilizing the Excel spreadsheet. The verification team also confirmed that there were no significant problems since the monitoring was implemented in accordance with the monitoring manual.

After cross-checking invoices from the electricity company (sales and purchases) and the monitoring report, as well as the emissions factor, we confirm that the project has achieved an emissions reduction of 8,184 tCO<sub>2</sub>e for the period from 18 April 2010 to 17 April 2012.

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## 2 INTRODUCTION

The “3MW Shinan Wind power project” was registered by the United Nations Framework Convention on Climate Change (UNFCCC) on 18 April 2010. Construction of the facility and installation of equipment were then completed at the power station. The power generation facility was equipped with three blades, three turbines, and three generators; all three units have been in operation since 27 November 2008.

As the first periodic verification, Deloitte-TECO has verified how much electricity was produced and how much GHG emissions were reduced for the approximate 24-month period spanning 18 April 2010 to 17 April 2012.

The capacity of Shinan Wind power was confirmed to be the same as described in the PDD, e.g., it has a maximum installed turbine-generator unit capacity output of 3MW (1,000kW × 3), estimated annual electricity production of approximately 6,400 MWh, a power grid emission factor of 0.6096 tCO<sub>2</sub>/MWh, and an annual GHG emission reduction totaling 3,901 tCO<sub>2</sub>. The on-site verification work was performed from 26 to 27 June 2012

### 2.1 OBJECTIVE OF CDM VERIFICATION

As part of the independent verification work requested by the client, Deloitte-TECO conducted the on-site assessment of GHG emission reductions of the “3 MW Shinan Wind power project.” Deloitte-TECO reviewed the GHG data for the period from 18 April 2010 to 17 April 2012, during which the station supplied electricity to the Korea Electric Power Corporation (KEPCO), to verify emission reductions achieved at Shinan Wind power for this period.

### 2.2 SCOPE OF VERIFICATION

The scope of the on-site assessment included:

- Assessing site activities, including wind power construction and operations;
- Confirming the methodology used and results of the power station’s monitoring plan and activities vis-à-vis the PDD;
- Verifying the information used to determine the supply and consumption of electricity; and
- Monitoring the QA/QC system

### 2.3 CONTRACT REVIEW

To assure that:

- The project falls within the scope for which accreditation is held (the sectoral scope of the proposed project is 1: energy industries (renewable sources), which Deloitte-TECO was accredited for verification and certification)
- The necessary competencies to carry out the verification can be provided
- Impartiality issues are clear and in line with the CDM accreditation requirements

A contract review was carried out on 14 May 2012 before the contract was signed on 21 May 2012.

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**2.4 PROJECT ACTIVITY DESCRIPTION**

|  |  |
|--|--|
| Project title:   | <b>3MW Shinan Wind power project</b>   |
| UNFCCC registration No.                                  | 3110   |
| Project location:  | San 1-1, Gurim-ri, Biguem-myeon, Shinan-gun, Jeollanam-do, Republic of Korea   |
| Project parties:   | Republic of Korea  |
| Project participant (PP):                                | Shinan Wind Power Co., Ltd.  |
| Organization:  | Shinan Wind Power Co., Ltd.  |
| Address:   | 175, Gulim-ri, Bigeum-myeon, Shinan-gun, Jeollanam-do<br>Republic of Korea   |
| Telephone:   | +82-54-271-0752  |
| Name of person in charge:                                | Mr. Kim, Kyung-Jin, Assistant Manager  |
| Email:   | kjkim@dongkuksnc.co.kr   |
| Basic system specifications:                             | 1) The number of turbines: 3<br>2) Total installed turbine-generator unit capacity: 3 MW<br>(1,000kW x 3)<br>3) Estimated net electricity supply: 6,400 MWh/year |
| Applied methodology                                      | AMS. I.D. version 13   |
| Project factors contributing to GHG emission reductions: | GHG emission reductions are calculated by multiplying the emission factor for the Republic of Korea and the net amount of electricity delivered.                 |

**2.5 VALIDATION ENTITY**

The basic information concerning entities responsible for validation is as follows:

Table 1. Validation Report information

|                                 | Validation                                  |
|---------------------------------|---|
| Name of Entity                  | Korea Energy Management Corporation (KEMCO) |
| Title of Report                 | 3MW Shinan Wind Power Project               |
| Date of Report Issued           | 15 March 2010                               |
| Reference/Version No. of Report | GHGCC(A)08-022 (Ver. 05)                    |

**3 VERIFICATION APPROACH**

(Ref. /1/, /3/, /4/, /35/, /36/)



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After receiving the monitoring report, a desk review employing a risk-based approach was completed. The on-site assessment process was performed according to the verification checklist to confirm transparency, document how emission reductions had been verified, and demonstrate how the verification findings had been reached. The checklist and assessment process were in accordance with the CDM Validation and Verification Standard (VVS) ver.02 in EB 65.

### 3.1 VERIFICATION TEAM

Team Leader : Park Yong Tae (Performing On-site)

Team member : Park Yoon Jung (Performing On-site)

Team member : Shi Xueting

Duration of on-site assessment: 26 – 27 June 2012

### 3.2 PUBLICATION OF THE MONITORING REPORT

(Ref. /1/)

In accordance with the CDM M&P (§ 62), the draft monitoring report, as received from the PP, has been made publicly available on the dedicated UNFCCC CDM website on 8 June 2012, prior to the commencement of verification activity.

### 3.3 DESK REVIEW AND RISK ASSESSMENT

(Ref. /1/, /3/, /4/, /33/, /34/, /35/, /36/)

The desk review of the monitoring report prepared by the PP took place on 12 June 2012 and analyzed risks in light of AMS-I. D: Grid connected renewable electricity generation (Version13), PDD (ver. 02.4, completed on 20 October 2009), and the validation report.

The results of the desk review, with a clear focus on risk assessment, are listed in the following table.

Risks are categorized as being low (L), medium (M), or high (H).

Table 2 Desk review and risk assessment

Project: 3MW Shinan Wind power project

Date: 12 June 2012

| Desk review items                          |                              | Identified risks                                 | Degree of risk<br>(H, M, L) | Results<br>after on-site visit |
|--|------------------------------|--|-----------------------------|--------------------------------|
| Physical project implementation            | Plant capacity and equipment | Plant with larger capacity than planned          | M                           | OK<br>Installed as planned     |
| Monitoring plan and monitoring methodology | Frequency of measurement     | Adequacy for recording and calculating emissions | M                           | OK<br>Done as planned          |
|  | Metering equipment           | Corresponding to the planned accuracy            | L                           | OK<br>Done as planned          |
|  | Calibration                  | Main and backup meter calibration                | M                           | OK<br>Done as planned          |

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|   |                                   |   |                      |  |
|---|-----------------------------------|---|----------------------|--|
|   | Quality assurance                 | Forward Action Requests (FARs) during the validation            | L                    | N/A  |
| Monitoring  | Electricity import/export records | Electricity import/export records                               | M: original receipts | OK<br>Done as planned                                    |
| GHG emissions                                       |                                   | Baseline emission: Emission factor                              | L                    | OK<br>Consistent with PDD                                |
|   |                                   | Project emission: Zero  | M                    | N/A  |
|   |                                   | Leakage: Zero   | L                    | OK<br>Consistent with applied methodology                |
| Calculation   |                                   | Input mistakes in the Excel spreadsheet                         | M                    | OK<br>Minor mistakes were found and corrected            |
|   |                                   | Conservativeness of calculation                                 | M                    | OK<br>Calculated using a conservative method             |
| Identify key reporting risks                        |                                   | Errors in net electricity data recorded on Excel sheet          | M                    | OK<br>Minor mistakes were found and corrected            |
| Understand control systems in place to manage risks |                                   | Operating manual: Unstable operation, meter indicator failure   | M                    | OK<br>Mentioned in the manual                            |
| Identify areas of residual risk                     |                                   | Large import of electricity from the power grid during start-up | L                    | OK<br>No major accidents on the start-up were identified |

### 3.4 ON-SITE VISIT

On-site visit consisted of interviews with executive managers and inspection of the operational plant site. On-site visit was implemented by Park Yong Tae (team leader with technical area competency) and Park Yoon Jung (team member).

#### 3.4.1 Interviews with executive managers and operational plant site

Place: Office of Shinan Wind power plant

Date: 27 June 2012

Table 3 List of managers interviewed

| Name           | Title        | Organization               |
|----------------|--------------|----------------------------|
| Park, Wu Jae   | Staff member | Shinan Wind Power Co.,Ltd. |
| Yu, Dong Jun   | Staff member | Shinan Wind Power Co.,Ltd. |
| Jung, Da Jung  | Consultant   | Ecoeye Co.,Ltd.            |
| Park, Yong Suk | Consultant   | Ecoeye Co.,Ltd.            |

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## 4 VERIFICATION FINDINGS

The verification team of Deloitte-TECO verified GHG emission reductions based on the net amount of electricity produced by the Shinan Wind power project from 18 April 2010 to 17 April 2012. The verification team conducted an on-site inspection to determine whether the monitoring method and QA/QC were properly implemented in accordance with the applied methodology and the monitoring plan in the registered PDD. The following findings were identified during the desk review and the on-site inspection.

### 4.1 REMAINING ISSUES, FARs FROM VALIDATION

(Ref. /36/)

Deloitte-TECO confirmed that no FAR was issued at validation.

### 4.2 COMPLIANCE OF THE PROJECT IMPLEMENTATION WITH THE REGISTERED PDD

#### 4.2.1 Interviews with Executive Managers

(Ref. /1/, /4/, /22/)

Deloitte-TECO conducted interviews with the project's managers to confirm that monitoring was performed as planned. Deloitte-TECO confirmed that the project's managers have implemented the project according to the monitoring plan in the registered PDD.

#### 4.2.2 Project Implementation Time Line

(Ref./1/, /5/, /6/, /8/, /9/, /10/, /11/, /12/, /13/, /14/, /16/, /18/ )

Deloitte-TECO confirmed that all facilities were constructed in accordance with the registered PDD as follows:

Table 4. Key events of the projecct

| Date                             | Key events   |
|----------------------------------|--|
| 20 August 2008                   | Construction starting date (Starting date of project activity)       |
| 01 October 2008                  | Contract with KEPCO for use of power distribution equipment          |
| 07 October 2008                  | Start of construction work on the office of wind power plant         |
| 26 November 2008                 | Export meters installation date                                      |
| 27 November 2008                 | Operation starting date  |
| 28 November 2008                 | Import meters installation date                                      |
| 24 December 2008                 | Commissioning date   |
| 29 December 2008                 | Certificate of 72 hours testing operation                            |
| 20 October 2009                  | The registered PDD completed date                                    |
| 1 November 2009                  | Request for registration submitted                                   |
| 18 April 2010                    | Registration as a CDM project (start of the first monitoring period) |
| 18 April 2010 –<br>17 April 2012 | First monitoring period  |

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**4.2.3 Technology**

(Ref. /1/, /11/, /18/, /24/, /25/, /39/, /41/)

## ➤ Technical specification of the installed equipment

Deloitte-TECO confirmed that the installed technologies (equipment and facilities) were not consistent with the PDD by checking evidence and the nameplates of turbines and generators at the on-site visit as indicated below. However, during the verification period, DOE confirmed by performing interview with the PO and reviewing relevant documentary evidences that the difference was due to the misunderstanding of model number of the equipment.

As mentioned in Section 4.2.2, the commissioning start date of this 3MW Shinan Wind power project was on 24 December 2008, and the validation for the CDM registration was completed and submitted validation report by the DOE (for validation) on 1 November 2009. During the validation stage, the project had already been operated.

According to Table 2, it can be seen that some specifications of Turbine and Generator were incorrectly stated in the registered PDD. Especially, the generator is seems to be changed after registration because the manufacturer (Hyundai heavy industry), model number (HRQ1 455-48E) and output capacity (1,100kW) in the nameplate are different from those (Mitsubishi, MWT-1000A and 1,000kW) of the registered PDD. However, Deloitte-TECO confirmed by reviewing the manufacturer's confidential equipment order and drawing file of "Shinan wind farm Specification & Outline drawing of generator", which was issued by Mitsubishi Heavy Industries, Ltd. issued on 30 June 2006 that the generator, which model number, HRQ1 455-48E, and output power, 1,100kW, was originally ordered and included in the confidential equipment order and drawing file of "Specification & Outline drawing of generator". In fact, the PDD author misunderstood of model number and output power. Therefore, Deloitte-TECO concluded that the specifications and values for the equipment in the PDD were incorrectly stated. Therefore, there was no equipment change was occurred after request for registration.

Additionally, Deloitte-TECO confirmed by reviewing "Statement of Compliance," issued by the third party on 25 January 2006, and electricity equipment test report, issued by Korea Electrical Safety Corporation, issued on 29 December 2008, that there was no equipment changes after installation 27 November 2008, when is the starting date of operation. The Model No. MWT-1000A and technical specification of turbine were also confirmed by the above documentary evidences. From these official documents, Deloitte-TECO confirmed the details of technical specification of the installed equipment were given in Table 5 as below.

Table 5. Technical specification of the proposed project of Blade

| Blade          | Registered PDD                  | Nameplate           |
|----------------|---------------------------------|---------------------|
| Material       | Glass fiber reinforced plastics |                     |
| Rotor diameter | 61.4m                           | 61.4m               |
| Swept area     | 2,960m <sup>2</sup>             | 2,960m <sup>2</sup> |
| Turbine        | Registered PDD                  | Nameplate           |

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|                  |                |              |
|------------------|----------------|--------------|
| Model            | No stated      | MWT-1000A    |
| Wind velocity    | No stated      | 12.5m/s      |
| Output voltage   | No stated      | 600V         |
| Output power     | No stated      | 1,000kW      |
| Rotational speed | No stated      | 19.8rpm      |
| Cooling system   | No stated      |              |
| Generator        | Registered PDD | Nameplate    |
| Model            | MWT-1000A      | HRQ1 455-48E |
| Wind velocity    | 12.5m/s        | N/A          |
| Output voltage   | 600V           | 600V         |
| Output power     | 1,000kW        | 1,100kW      |
| Rotational speed | 19.8rpm        | 1,824rpm     |
| Steel Tower      | Registered PDD | Nameplate    |
| Type             | Tubular        |              |
| Height           | 66.9m          | 66.9m        |

As it can be seen, some of the specifications of turbine were incorrectly stated as the specification of Generator in the registered PDD. However, the difference between the registered PDD and actual implementation is not because of the equipment change in the monitoring period, but because of misunderstanding of technical parameters classification. Therefore, Deloitte-TECO concluded that post-registration for correction is to be implemented and Deloitte-TECO confirmed that the correction was properly demonstrated in the revised PDD and concluded that these corrections do not affect the the scale of the project activity.

In addition to that, in terms of the installed capacity description, it was stated that “The installed/rated capacity of renewable electricity generating units that involve turbine-generator systems shall be based on the installed/rated capacity of the generator” based on Project Standard, paragraph 82. (a). However, DOE confirmed that, during the validation stage, the project was referred the EB clarification from paragraph 32 of the meeting report of the SSC WG 21 “the SSC WG agreed to clarify that the maximum or rated/installed capacity for small scale CDM hydro-electric project can be determined using one of the following options (in the order of preference): a) Nameplate/rated capacity of the turbine i.e., based on turbine manufacturer’s specification and b) Generator capacity in MW (which is an equivalent of name plate/rated capacity in MVA times the name plate/rated power factor, specified by the manufacturer).” Therefore, even though output power of generator was confirmed 1,100kW, because the output power of turbine was 1,000kW same as the registered PDD. Therefore, Deloitte-TECO decided that the installed turbine-generator unit capacity of this project was not changed from the registered PDD.

➤ Installed meter accuracy

Units: 2 (one exported electricity meter and one imported electricity meter, all meters are located at Shinan Wind power plant)

Accuracy: 0.5% for exported electricity meter and 1% for imported electricity meter.

In the registered PDD, it was stated that the accuracy of the meters must be within  $\pm 0.5\%$ .

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However, accuracy of imported electricity meter was confirmed by on-site inspection as 1%. Based on Table 4 in Section 4.2.2, Deloitte-TECO confirmed by performing interview with the PP and reviewing the relevant documents that the imported electricity meter had already been installed and used prior to validation stage. Deloitte-TECO decided that the difference between the registered PDD and actual implementation is not due to meter change during the monitoring period. Deloitte-TECO decided that post-registration changes for Permanent changes from the registered monitoring plan or applied methodology is to be implemented. It can be seen as table 4, the imported electricity meter was installed on 28 November 2008 and carried out internal calibration on 17 December 2008 by the KEPCO. However, the Request for registration was submitted on 1 November 2009. Therefore, the imported electricity meter had already installed and used during the validation period, which means that there was no change of import meter in the monitoring period after registration. Moreover, Deloitte-TECO reviewed the relevant local regulation regarding the meter accuracy and in accordance with 'Power market operation regulations,' allowable error of import meter can be within  $\pm 2.0\%$ , if equipment capacity is from 500kW to 10,000kW. Meter accuracy 1.0% is acceptable for the range of regulation. The power grid of KEPCO has issued imported electricity invoice based on the meter value. Deloitte-TECO concluded that the meter accuracy is acceptable and in line with the domestic regulation in Korea. In addition to that, Deloitte-TECO confirmed that the imported electricity meter is owned and controlled by the power grid, KEPCO. Meter and accuracy selection is also not within the control of the PP.

**4.2.4 Project implementation status**

(Ref. /1/)

This project consists of only one site that is located in seashore of the Bigeum Island in Shinan-gun, Jeollanam-do. The wind power has been in operation since 27 November 2008, without any incident reported based on the normal start-up procedures.

**4.2.5 Actual operations of the proposed CDM project activity**

(Ref. /1/)

The net electricity generated for the first monitoring period (18 Apr 2010 - 17 Apr 2012) (24 months) was 13,427.955 MWh, which was 4.9% higher than 12,800 MWh of electricity supplied for the same period that was estimated in the PDD. The annual electricity generation for this project was 6,400 MWh in the PDD (estimated 12,800 MWh for 24 months).

Deloitte-TECO confirmed the 4.9% over generation was still in the range of -10% to ;10% sensisivity analysis from the validation stage, threrfore, it can be concluded that this over generation cannot lead IRR above the benchmark.

**4.3 COMPLIANCE OF THE MONITORING PLAN WITH THE MONITORING METHODOLOGY INCLUDING APPLICABLE TOOL(S)**

(Ref. /1/, /3/, /4/, /16/, /17/, /33/, /35/)

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The monitoring methodology AMS-I.D (version 13) was applied in this project to measure the amount of electricity generated. The amount of emission reductions was calculated by multiplying the amount of net supplied electricity by the emission factor determined by the methodology. The parameters to be monitored and their monitoring frequency in the monitoring manual corresponded to the PDD and the methodology.

Although the wind power imported only a small amount of electricity from the power grid for start-up and maintenance, this amount was deducted from the exported electricity. Deloitte-TECO concluded that the monitoring plan was in accordance with the applied approved methodology; however, accuracy of the imported electricity meter is not in accordance with that of the PDD. Detail was stated in Section 4.2.3 and post-registration change for Permanent changes from the registered monitoring plan or applied methodology, without prior approval needs to be implemented.

#### **4.4 COMPLIANCE OF MONITORING ACTIVITIES WITH THE REGISTERED MONITORING PLAN**

(Ref. /1/, /3/, /4/, /16/, /17/, /26/, /27/, /28/ /33/, /35/, )

##### **4.4.1 Monitoring plan implementation**

Deloitte-TECO compared actual records and documents with the Monitoring and Operation Manual and the applied methodology, and confirmed that the monitoring was performed in accordance with the monitoring plan in the PDD, which was consistent with the applied methodology.

##### **4.4.2 Parameters for monitoring**

###### **(1) Project emission parameters**

Since this is a wind power project, the project emission is considered to be zero (PEy = 0).

###### **(2) Baseline emission parameters**

It is confirmed that the actual performance of monitoring was conducted by recording the data hourly and recording in Excel spread sheet. The data was double checked by O&M manager and signed monthly for confirmation. Dongkuk S&C., Ltd. staff member confirmed the accuracy and format of the records. In addition to that, Deloitte-TECO confirmed the generated electricity transmitted to the power grid, KEPCO, and measured automatically by the installed meters (export and import). All the data was collected daily, weekly, and monthly throughout the electronic way. Deloitte-TECO confirmed the website of KEPCO, where hourly/daily electricity supplied to/imported from the power grid were recorded. Moreover, the data can be confirmed by reviewing Korea Power Exchange (KPX) website.

###### **(3) Leakage parameters**

Leakage is not applicable to this project in accordance with AMS-I.D (version 13)

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The electric power transfers (imported /exported) are the parameters monitored for emission reduction calculation as shown below in Table 6.

Table 6 Parameters

| Parameters              | Definition  |
|-------------------------|---|
| EG <sub>y, export</sub> | Electricity exported by the project site to the KEPCO (MWh)   |
| EG <sub>y, import</sub> | Electricity imported to the project site from the KEPCO (MWh) |

#### 4.4.3 Management and operational system

During the on-site assessment, it was confirmed that basically the electricity supplied to the power grid was automatically, continuously monitored. Shinan wind power Co., Ltd which is the PP is a subsidiary of Dongkuk S&C Co., Ltd. Therefore, Shinan Wind power Co., Ltd. is in charge of monitoring the data and reports it to Dongkuk S&C., LTD energy construction team. Ecoeye co., Ltd is responsible for preparation of Monitoring Report, emission factor and submits it to Dongkuk S&C., Ltd. energy construction team. Shinan wind power Co., Ltd. is responsible for recording and reporting the data to the head office.

The meter readings recorded by KEPCO and PP were matched each month. Deloitte-TECO confirmed the collected data, which was in the Excel spreadsheets monitored daily (hourly recorded) that cover the whole of this monitoring period. Deloitte-TECO decided that there was no discrepancy between the monitored values in the Excel spreadsheets and those of the monitoring report for the emission reduction calculation.

#### 4.4.4 Quality assurance and quality control for the information flow procedures

QA/QC procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters were performed as specified in the monitoring plan of the registered PDD and the Monitoring Manual.

The power plant's QA/QC system is incorporated into documentation related to information channels as well as document classification, and conforms to its monitoring plan and the monitoring manual.

##### (1) Education and training

(Ref. /1/, /29/, /30/, /31/, /32/)

By reviewing training records and performing interviews with the PP, Deloitte-TECO confirmed that a training course was held for all the staff members of Shinan Wind power Co., Ltd. before the wind power started operation. The course, provided by CDM consultation of ECOEYE Co., Ltd., covered monitoring the organization, file system, connection point, monitoring parameters, monitoring method, guidelines against dispute resolution, data management, calibration and maintenance, monitoring report, and internal audits. Deloitte-TECO also confirmed that the person in charge of monitoring and electricity safety attended several CDM-related courses, such as 'Law regarding measurement,' 'Act on operation of electricity market,' and 'Course on Electricity



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safety,’ which were stated in the registered PDD. Deloitte-TECO confirmed that the education and training was implemented in accordance with the monitoring plan in the registered PDD.

According to the QA/QC procedure in the registered PDD, it was stated that “Person in charge of monitoring and electricity safety shall attend the following courses, “Course on Law regarding measurement” “Course on Act on operation of electricity market” and “Course on Electricity safety” three times per year. However, Deloitte-TECO found out that there are some incorrect information regarding “Person in charge of monitoring and electricity safety” by performing interview with the staffs and reviewing the relevant local law and regulation, “Law of electricity business” and “Act on operation of electricity business”. It was confirmed that appointed electricity safety manager has to complete the course on electricity safety implemented by Korea Electric Engineers Association, which stated on appendix 15, referred on clause 73 of the “Law on electricity business” and clause 46 of the “Act on operation of electricity business”. The requirements was as follows:

Table 7. Appendix 15 the course of electricity safety

| Process                                      | Target   | Period                 |
|--|--|------------------------|
| A technical training of electric safety (I)  | For electric safety managers with less than five years | Once every three years |
| A technical training of electric safety (II) | For electric safety managers with more than five years |                        |
| Special Training                             | For electric safety managers for the first time        | Within six months      |

Deloitte-TECO confirmed that the required frequency of taking the electric safety course was not three times per year but once every three years. It was confirmed by performing interview that it was typing miss of PDD by the PP. Therefore, the frequency of taking the electric safety course needs to be corrected as post-registration change. In addition to that, Deloitte-TECO also confirmed that only the “Course on Electricity safety” was mandatorily required to be taken for electric safety managers. There is no regulation that appointed electricity safety manager has to complete the courses of “Course on Law regarding measurement” and “Course on Act on operation of electricity market”. It was confirmed that “Law regarding measurement” and “Act on operation of electricity market” are the Law and Act for meter business entity, such as manufacturer, repairing, etc, not related to monitoring and electricity safety. DOE confirmed by performing the interview with the PP that the person in charge of monitoring and electricity safety of this project attended “Course on Law regarding measurement” and “Course on Act on operation of electricity market” because it was stated in the registered PDD. The PP would like to correct the courses of electricity safety in the registered PDD because it was due to PP’s misunderstanding of the requirements of training for electricity safety manager under the Korean local law and regulation at validation period. Deloitte-TECO confirmed by performing the interview with the PP and reviewing the above relevant law and regulations that the frequency of taking the course and the course of electricity safety need to be applied to post-registration change for correction. Deloitte-TECO confirmed that the correction was properly demonstrated in the revised PDD and concluded that these

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corrections do not affect the monitoring level of the project activity, which do not require the prior approval by the Board.

## (2) Data protection

All the operation, maintenance, and nonconformance handling records were protected and archived in the Shinan Wind Power Co., Ltd.. Deloitte-TECO concluded that these procedures were properly implemented.

Deloitte-TECO concluded that the monitoring was carried out in accordance with the monitoring plan in the registered PDD, and all the parameters were also monitored in accordance with the monitoring plan in the registered PDD.

## 4.5 COMPLIANCE WITH THE CALIBRATION FREQUENCY REQUIREMENTS FOR MEASURING INSTRUMENTS

### 1) Accuracy of electricity meters

(Ref. /1/, /4/, /16/, /17/, /35/, /36/)

Deloitte-TECO confirmed the certifications of four electricity meters; one exported electricity meter (Serial.#51001390) with accuracy class of 0.5, which is consistent with the registered PDD and one imported electricity meter (Serial.#0083693) with accuracy class of 1.0. The accuracy of imported electricity was not consistent with the registered PDD. As mentioned above in Section 4.2.3, Permanent changes from the registered monitoring plan or applied methodology needs to be implemented as post-registration without prior approval based on PS, appendix 1, because the imported electricity meter is not within the control of the PO. However, the meter accuracy of 1% is still the range of allowable error range based on the local regulation in Korea,  $\pm 2\%$ , if equipment capacity is from 500kW to 10,000kW. Deloitte-TECO cross-checked that the contracted imported power between the PO and the power grid, KEPCO, is 205kW, even less than 500kW. Therefore, the accuracy of electricity meters is acceptable for this project.

### 2) Calibration frequency

(Ref. /1/, /4/, /16/, /17/, /35/, /36/)

Calibrations have been made and planned to be periodically made based on the monitoring plan and the national regulation. It was confirmed by performing the on-site visit interviews and reviewing documentary evidence. The calibrations for those two meters have been made before installation and during the monitoring period, and the details are as follows:

Table 8 Calibration Results

| Meter          | Exported electricity meter | Imported electricity meter |
|----------------|----------------------------|----------------------------|
| Model type     | AC3P4W                     |                            |
| Model number   | SCE8711                    | LGRW34-10                  |
| Accuracy class | 0.5%                       | 1.0%                       |
| Serial number  | 51001390                   | 0083693                    |

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| Calibration frequency                   | Once in three years                |                                     |
|---|------------------------------------|-------------------------------------|
| Date of calibration before installation | 26 November 2008<br>4 October 2011 | 17 December 2008<br>1 December 2011 |
| Result                                  | OK                                 | OK                                  |
| Trustee of calibration                  | Seo Chang Electric Co., Ltd.       | KEPCO (The power grid)              |
| Next calibration (plan)                 | October 2014                       | November 2014                       |

As in Table 7, Deloitte-TECO confirmed that the calibrations covered the whole of the monitoring period of 24 months from 18 April 2010 to 17 April 2012, and all calibration records of each meter were also confirmed. Deloitte-TECO confirmed that the valid period for the authorized certification is seven years in the national regulation based on “Measures Act.” In the law, the regular calibration requires to be implemented every two years. However, since electricity meters does not fall into the category of coverage, the installed meters in Shinan Wind power do not need to be calibrated every other year. According to the subregulation of the law, “Act on operation of electricity market,” the frequency of calibration and correction is required to be implemented every “three years  $\pm$  six months”. Both exported and imported electricity meter are planed to be calibrated every three years regularly after the initial installation in compliance with the monitoring plan in PDD. The calibration frequency of this project is implemented in accordance with the monitoring plan in the registered PDD and the regulation.

Deloitte-TECO confirmed that the exported electricity meter was calibrated in this monitoring period on 04 October 2011, by a third-party calibration entity, called Seo Change Electric Co., Ltd, and the imported electricity meter was calibrated on 17 December 2008 and 1 December 2011. Since the meter for EG<sub>import</sub> is owned and managed by the national power grid, the duty to check the calibration for EG<sub>import</sub> meter is to be performed by KEPCO. The calibration records were confirmed to satisfy the accuracy and cover the whole of this monitoring period.

## 4.6 ASSESSMENT OF DATA AND CALCULATION OF EMISSION REDUCTIONS

### 4.6.1 A complete set of data for the specified monitoring period or partial data with certain reasons and the most conservative assumption

(Ref. /1/, /3/, /4/, /6/, /7/ )

Deloitte-TECO confirmed that all the required data was monitored without any loss through interviews and checking the data.

- 1) Deloitte-TECO performed a thorough inspection of the monitoring equipment, (including calibration performance) and observed monitoring practices based on the PDD and the selected methodology. Receipt of sales and purchase were acknowledged and approved by the power grid.
- 2) There were no discrepancies between the readings taken at the end of the month and those taken at the beginning of the following month.
- 3) Meters: The exported electricity meter and imported electricity meter were installed at the Shinan Wind power to monitor the electricity imported and exported for the project.

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All data for settlement with the power grid was obtained from these meters during the monitoring period as no failure of any type occurred. Deloitte-TECO visited the Shinan Wind power and confirmed that the imported electricity meter and exported electricity meter were installed as planned and were consistent with the monitoring plan. The data collecting and recording systems were well established and were implemented in accordance with the monitoring plan in the registered PDD. Issue of accuracy of the imported electricity meter was demonstrated in Section 4.2.3

**4.6.2 Cross-checked reported data**

(Ref. /1/, /3/, /4/, /6/, /7/ )

Deloitte-TECO confirmed that the data monitored by one exported electricity meter and one imported electricity meter were monitored daily (hourly recorded) and aggregated monthly by PP. The net electricity supplied into the power grid was decided based on the agreement between the KEPCO and the PP. It was confirmed that exported electricity meter and imported electricity meter were located in the Shinan wind power.

During this monitoring period, there was no incident that caused errors in the systems. Deloitte-TECO checked the monitoring data of Shinan Wind Power with the monthly invoice of KEPCO for every 24 months, which proved that there is no discrepancy in the record.

In conclusion, by performing cross-checks, Deloitte-TECO concluded that the monitoring result is acceptable, and there were no unusual results noted in this monitoring period with the exception of those noted above, which were found to be reasonable.

**(1) Procedures in case of improper function**

The procedures in case of any improper function of the meters were decided by the CDM monitoring manual. There is no improper function of meters in this monitoring period.

According to the CDM monitoring manual, the PP compares the monitored electricity value supplied to the power grid and values of KPX. If the values are different, the PP confirms the status of meters and related equipment with the KPX and takes action based on electricity sales regulation.

By reviewing the documentary evidence of maintenance reports, overhaul, downtimes, exchange of equipment, and performing interviews with the staffs in the power station, Deloitte-TECO confirmed the emergency status was properly reported to the managements, and treated properly. Therefore, Deloitte-TECO concluded that the PP implemented emergency procedure was working properly in this monitoring period.

**4.6.3 Confirmation of appropriate methods and formulae for calculation.**

Deloitte-TECO reviewed all calculations and assumptions used to determine GHG data and emission reductions.

After reviewing the data for the amounts of electricity imported and exported, the figures used to calculate emission reductions were considered to be adequate. Deloitte-TECO

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confirmed all electricity data by checking the receipt of sales and purchase issued by the power grid.

Deloitte-TECO also concluded the calculations to be conservative as they were calculated rounding down to the nearest decimal point.

### (1) Assumptions

There were no assumptions used in the emission calculations.

### (2) Emission factors

The project adopted an emission factor of 0.6096 tCO<sub>2</sub>e/MWh as specified in the PDD.

### (3) Baseline emissions

Deloitte-TECO confirmed that the baseline emission in the monitoring report was calculated by the following equation, which was consistent with the PDD, monitoring manual, and the adopted methodology (AMS - I.D ver. 13).

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

|                   |  |
|-------------------|--|
| $BE_y$            | Baseline emissions in the monitoring period (tCO <sub>2</sub> e)   |
| $EG_{PJ,y}$       | Quantity of net electricity generation (MWh) that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y, calculated as follows:<br>$EG_{PJ,y} = EG_{facility,y}$   |
| $EF_{grid,CM,y}$  | Combined margin CO <sub>2</sub> emission factor for grid (tCO <sub>2</sub> /MWh) (0.6096 tCO <sub>2</sub> /MWh, as calculated ex-ante in the registered PDD and will be fixed during the first crediting period) connected power generation in year y calculated using the latest “Tool to calculate the emission factor for an electricity system.” |
| $EG_{facility,y}$ | Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).  |

The baseline emissions of the project during the monitoring period in the monitoring report are shown in Table 9 that were consistent with the monitoring data and cross-checked evidence (power settlement receipts). Deloitte-TECO concluded that it was within the normal operation.

Table 9 Baseline emission

| Period     | Electricity supplied to the grid by the project (EG <sub>yout</sub> ) | Electricity imported from the grid (EG <sub>yin</sub> ) | Net electricity supplied to the KEPCO (EG <sub>youtput</sub> - EG <sub>yimport</sub> ) (MWh) |
|------------|---|---|--|
| Month-Year | a   | b   | c=a-b  |
| 2010 Apr   | 229.077   | 17.616  | 211.461  |
| 2010 May   | 427.523   | 35.544  | 391.979  |

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|          |            |         |            |
|----------|------------|---------|------------|
| 2010 Jun | 85.481     | 30.648  | 54.833     |
| 2010 Jul | 457.638    | 26.832  | 430.806    |
| 2010 Aug | 323.619    | 27.864  | 295.755    |
| 2010 Sep | 389.068    | 25.944  | 363.124    |
| 2010 Oct | 567.068    | 18.072  | 548.996    |
| 2010 Nov | 539.226    | 21.456  | 517.77     |
| 2010 Dec | 1092.316   | 9.120   | 1083.196   |
| 2011 Jan | 1145.724   | 16.992  | 1128.732   |
| 2011 Feb | 542.765    | 11.904  | 530.861    |
| 2011 Mar | 812.987    | 21.888  | 791.099    |
| 2011 Apr | 489.586    | 18.456  | 471.13     |
| 2011 May | 526.639    | 29.208  | 497.431    |
| 2011 Jun | 425.681    | 26.856  | 398.825    |
| 2011 Jul | 428.028    | 25.320  | 402.708    |
| 2011 Aug | 240.969    | 29.208  | 211.761    |
| 2011 Sep | 411.963    | 26.616  | 385.347    |
| 2011 Oct | 541.348    | 21.744  | 519.604    |
| 2011 Nov | 510.300    | 17.376  | 492.924    |
| 2011 Dec | 860.304    | 19.896  | 840.408    |
| 2012 Jan | 884.615    | 14.976  | 869.639    |
| 2012 Feb | 871.124    | 18.816  | 852.308    |
| 2012 Mar | 831.391    | 14.856  | 816.535    |
| 2012 Apr | 341.771    | 21.048  | 320.723    |
| Total    | 13,976.211 | 548.256 | 13,427.955 |

However, accuracy of the imported meter, 1%, was not in accordance with that of in the PDD, planned as 0.5%. Even though DOE confirmed that the imported electricity meter is not within the control of the PO, the PP decided to adjust the imported electricity value to apply conservative assumption based on VVS Paragraph 266 and Project Standard Appendix 1. Paragraph 5. It was stated that the “adjusted value = measured value – measured value \* (difference of meter accuracies), therefore, 0.005 (difference of meter accuracies) needs to be applied for the adjusted values in this project.

Therefore, the adjusted imported electricity values are as follows;

| Period     | Electricity supplied to the grid by the project (EG <sub>yout</sub> ) | The adjusted electricity imported from the grid with difference of meter accuracies (EG <sub>yin</sub> ) | The adjusted net electricity supplied to the KEPCO (EG <sub>youtput</sub> - EG <sub>yimport</sub> ) (MWh) |
|------------|---|--|---|
| Month-Year | a   | b = a*(1+0.005)  | c=a-b   |
| 2010 Apr   | 229.077   | 17.704   | 211.373   |
| 2010 May   | 427.523   | 35.722   | 391.802   |
| 2010 Jun   | 85.481  | 30.801   | 54.680  |
| 2010 Jul   | 457.638   | 26.966   | 430.671   |
| 2010 Aug   | 323.619   | 28.003   | 295.615   |

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|          |            |         |            |
|----------|------------|---------|------------|
| 2010 Sep | 389.068    | 26.074  | 362.994    |
| 2010 Oct | 567.068    | 18.162  | 548.906    |
| 2010 Nov | 539.226    | 21.563  | 517.662    |
| 2010 Dec | 1092.316   | 9.166   | 1,083.150  |
| 2011 Jan | 1145.724   | 17.077  | 1,128.647  |
| 2011 Feb | 542.765    | 11.964  | 530.802    |
| 2011 Mar | 812.987    | 21.997  | 790.990    |
| 2011 Apr | 489.586    | 18.548  | 471.038    |
| 2011 May | 526.639    | 29.354  | 497.285    |
| 2011 Jun | 425.681    | 26.990  | 398.691    |
| 2011 Jul | 428.028    | 25.447  | 402.582    |
| 2011 Aug | 240.969    | 29.354  | 211.615    |
| 2011 Sep | 411.963    | 26.749  | 385.214    |
| 2011 Oct | 541.348    | 21.853  | 519.495    |
| 2011 Nov | 510.300    | 17.463  | 492.837    |
| 2011 Dec | 860.304    | 19.995  | 840.309    |
| 2012 Jan | 884.615    | 15.051  | 869.564    |
| 2012 Feb | 871.124    | 18.910  | 852.214    |
| 2012 Mar | 831.391    | 14.930  | 816.461    |
| 2012 Apr | 341.771    | 21.153  | 320.617    |
| Total    | 13,976.211 | 550.997 | 13,425.214 |

\* The adjusted imported electricity values were calculated based on the Project standard appendix 1. Para. 4  
Adjusted value = Measured value + Measured value\*0.005.

Therefore, the baseline emission is as follow;

| Period     | The adjusted net electricity supplied to the KEPCO<br>( $EG_{\text{output}} - EG_{\text{import}}$ )<br>(MWh) | Emission factor<br>( $EF_y$ )<br>(tCO <sub>2</sub> e/MWh) | Baseline emissions<br>( $BE_y$ )<br>(tCO <sub>2</sub> e) |
|------------|--|---|--|
| Month-Year | c  | d   | e=c*d  |
| 2010 Apr   | 211.373  | 0.6096  | 128.85   |
| 2010 May   | 391.802  | 0.6096  | 238.84   |
| 2010 Jun   | 54.680   | 0.6096  | 33.33  |
| 2010 Jul   | 430.671  | 0.6096  | 262.54   |
| 2010 Aug   | 295.615  | 0.6096  | 180.21   |
| 2010 Sep   | 362.994  | 0.6096  | 221.28   |
| 2010 Oct   | 548.906  | 0.6096  | 334.61   |
| 2010 Nov   | 517.662  | 0.6096  | 315.57   |
| 2010 Dec   | 1,083.150  | 0.6096  | 660.29   |
| 2011 Jan   | 1,128.647  | 0.6096  | 688.02   |
| 2011 Feb   | 530.802  | 0.6096  | 323.58   |
| 2011 Mar   | 790.990  | 0.6096  | 482.19   |
| 2011 Apr   | 471.038  | 0.6096  | 287.14   |
| 2011 May   | 497.285  | 0.6096  | 303.15   |

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|          |            |        |         |
|----------|------------|--------|---------|
| 2011 Jun | 398.691    | 0.6096 | 243.04  |
| 2011 Jul | 402.582    | 0.6096 | 245.41  |
| 2011 Aug | 211.615    | 0.6096 | 129.00  |
| 2011 Sep | 385.214    | 0.6096 | 234.83  |
| 2011 Oct | 519.495    | 0.6096 | 316.68  |
| 2011 Nov | 492.837    | 0.6096 | 300.43  |
| 2011 Dec | 840.309    | 0.6096 | 512.25  |
| 2012 Jan | 869.564    | 0.6096 | 530.09  |
| 2012 Feb | 852.214    | 0.6096 | 519.51  |
| 2012 Mar | 816.461    | 0.6096 | 497.71  |
| 2012 Apr | 320.617    | 0.6096 | 195.45  |
| Total    | 13,425.214 | 0.6096 | 8184.01 |

**(4) Project emissions**

According to the adopted methodology (AMS - I.D ver. 13), there was no need to consider project emissions.

**(5) Leakage**

According to the adopted methodology (AMS - I.D ver. 13), there was no need to consider leakage.

**(6) Emission reduction**

Deloitte-TECO confirmed that emission reductions were calculated by the following equation that was consistent with the PDD, CDM monitoring manual, and the adopted methodology (AMS - I.D ver. 13).

$$ER_y \text{ (Emissions Reduction)} = BE_y - PE_y$$

Table 10 Emission reductions (Unit: tCO<sub>2</sub>e)

| Period   | Baseline emissions<br>(BE <sub>y</sub> )<br>(tCO <sub>2</sub> e) | Project<br>emissions<br>(PE <sub>y</sub> )<br>(tCO <sub>2</sub> e) | Leakage(L <sub>y</sub> )<br>(tCO <sub>2</sub> e) | Emission reductions<br>(ER <sub>y</sub> )<br>(tCO <sub>2</sub> e) |
|----------|--|--|--|---|
| Apr 2010 | 128.85   | 0.00   | 0.00   | 128.91  |
| May 2010 | 238.84   | 0.00   | 0.00   | 238.95  |
| Jun 2010 | 33.33  | 0.00   | 0.00   | 33.43   |
| Jul 2010 | 262.54   | 0.00   | 0.00   | 262.62  |
| Aug 2010 | 180.21   | 0.00   | 0.00   | 180.29  |
| Sep 2010 | 221.28   | 0.00   | 0.00   | 221.36  |
| Oct 2010 | 334.61   | 0.00   | 0.00   | 334.67  |
| Nov 2010 | 315.57   | 0.00   | 0.00   | 315.63  |
| Dec 2010 | 660.29   | 0.00   | 0.00   | 660.32  |
| Jan 2011 | 688.02   | 0.00   | 0.00   | 688.07  |
| Feb 2011 | 323.58   | 0.00   | 0.00   | 323.61  |
| Mar 2011 | 482.19   | 0.00   | 0.00   | 482.25  |



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|          |          |      |      |          |
|----------|----------|------|------|----------|
| Apr 2011 | 287.14   | 0.00 | 0.00 | 287.20   |
| May 2011 | 303.15   | 0.00 | 0.00 | 303.23   |
| Jun 2011 | 243.04   | 0.00 | 0.00 | 243.12   |
| Jul 2011 | 245.41   | 0.00 | 0.00 | 245.49   |
| Aug 2011 | 129.00   | 0.00 | 0.00 | 129.09   |
| Sep 2011 | 234.83   | 0.00 | 0.00 | 234.91   |
| Oct 2011 | 316.68   | 0.00 | 0.00 | 316.75   |
| Nov 2011 | 300.43   | 0.00 | 0.00 | 300.49   |
| Dec 2011 | 512.25   | 0.00 | 0.00 | 512.31   |
| Jan 2012 | 530.09   | 0.00 | 0.00 | 530.13   |
| Feb 2012 | 519.51   | 0.00 | 0.00 | 519.57   |
| Mar 2012 | 497.71   | 0.00 | 0.00 | 497.76   |
| Apr 2012 | 195.45   | 0.00 | 0.00 | 195.51   |
| Total    | 8,184.01 | 0    | 0    | 8,184.01 |

The annual emission reduction in the PDD is 3,901 tCO<sub>2</sub>e/year and in applying the average calculation method, the estimated emission reduction in this period, 3,901 tCO<sub>2</sub>e/ 12 months \* 24 months, is calculated to 7,802 tCO<sub>2</sub>e. The actual emission reduction in this monitoring period is 8,184 tCO<sub>2</sub>e with 0.5% adjusted imported electricity values (plus 0.5%), which is about 4.89% higher than the estimation. The difference of 4.92% is in the range of sensitivity analysis -10% to +10%. Therefore, Deloitte-TECO concluded that the calculation of emission reduction is acceptable based on the above analysis.

## 4.7 POST-REGISTRATION CHANGES

### 4.7.1 Temporary deviations from the registered monitoring plan and/or monitoring methodology

It is not applicable to this monitoring period.

### 4.7.2 Corrections

1. Some of specifications of turbine were incorrectly stated as the specification of generator in the registered PDD (details were explained in Section 4.2.3). However, the difference between the registered PDD and actual implementation is not because of the equipment change in the monitoring period, but because of misunderstanding of technical parameters classification. Deloitte-TECO confirmed that the correction was properly demonstrated in the revised PDD and concluded that the corrected specification does not affect the design of the project activity do not require the prior approval by the Board.
2. According to the QA/QC procedure in the registered PDD, it was stated that "Person in charge of monitoring and electricity safety shall attend the following courses three times per year." The courses are "Law regarding measurement," "Act on operation of electricity market," and "Electricity safety." Deloitte-TECO confirmed that the required frequency of taking the electric safety course was not three times per year but once every three years. It was confirmed by performing interview that it was typing miss of PDD by

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the PP. Therefore, the frequency of taking the electric safety course needs to be corrected as post-registration change. In addition to that, Deloitte-TECO also confirmed that only the “Course on Electricity safety” was mandatorily required to be taken for electric safety managers. There is no requirement that appointed electricity safety manager has to complete the courses of “Course on Law regarding measurement” and “Course on Act on operation of electricity market”. It was confirmed that “Law regarding measurement” and “Act on operation of electricity market” are the Law and Act for meter business entity, such as manufacturer, repairing, etc, not related to monitoring and electricity safety. DOE confirmed by performing the interview with the PP that the person in charge of monitoring and electricity safety of this project attended “Course on Law regarding measurement” and “Course on Act on operation of electricity market” because it was stated in the registered PDD. The PP would like to correct the courses of electricity safety in the registered PDD because it was due to PP’s misunderstanding of the requirements of training for electricity safety manager under the Korean local law and regulation at validation period. Deloitte-TECO confirmed by performing the interview with the PP and reviewing the above relevant law and regulations that the frequency of taking the course and the course of electricity safety need to be applied to post-registration change for correction. Deloitte-TECO confirmed that the correction was properly demonstrated in the revised PDD and concluded that these corrections do not affect the monitoring level of the project activity, which do not require the prior approval by the Board.

**4.7.3 Changes to the start date of the crediting period**

It is not applicable to this monitoring period.

**4.7.4 Permanent changes from the registered monitoring plan or monitoring methodology**

The imported electricity meter accuracy was stated as 0.5% in the registered PDD. However, DOE confirmed that the imported electricity meter has accuracy of 1.0% and was installed prior to validation stage. Therefore, Deloitte-TECO decided to implement post registration change for correct the imported electricity meter accuracy from 0.5% to 1.0%. The import meters were installed on 26 November 2008 and carried out internal calibration on 17 December 2008 by the KEPCO. However, the Request for registration was submitted on 1 November 2009. Therefore, the imported electricity meter had already installed and used during the validation period, which means that there was no change of import meter in the monitoring period. Moreover, Deloitte-TECO reviewed the relevant local regulation regarding the meter accuracy and in accordance with ‘Power market operation regulations,’ allowable error of imported electricity meter can be within  $\pm 2.0\%$ , if equipment capacity is from 500kW to 10,000kW. Meter accuracy 1.0% is acceptable for the range of regulation. The power grid of KEPCO has issued imported electricity invoice based on the meter value and the imported electricity meter is owned and controlled by the power grid, KEPCO. Deloitte-TECO confirmed that the correction was properly made in the revised PDD and concluded that the accuracy of the imported electricity meter change does not require the prior approval by the Board because this change is referred by Project Standard Appendix 1, Paragraph 5 (a), “Changes of calibration frequency or practice for monitoring equipment not within the control of project participants”.

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**4.7.5 Changes to the project design of a registered project activity**

It is not applicable to this monitoring period.

**5 CARs, CLs, AND FARs**

The on-site assessment was included in the verification process and conclusions regarding the main corrective action requests (CARs), clarifications (CLs), and FARs are summarized in this section.

During the on-site assessment, Deloitte-TECO found the following CARs and CLs as shown in Table 11 below. Deloitte-TECO pointed out these findings to the PP who also provided acceptable countermeasures in Table 10. Deloitte-TECO also confirmed that all CARs and CLs were resolved.

Table 11 Resolution of CARs, CLs, and FARs

| Draft report clarifications and corrective action requests by the verification team  | Summary of project owner response   | Verification team conclusion  |
|--|---|---|
| <p>CAR 1 (Checklist ID. # 2, # 8, #34, #35, #41)</p> <p>PP is requested to revise the description of the installed technology of MR as below;</p> <ul style="list-style-type: none"> <li>- Output power of the generator is falsely recorded in the PDD (1100kW -&gt; 1000kW), which will be notified to EB. (Permanant Change)</li> <li>- further notification of PDD change is needed</li> <li>- Specification of the generator needs to be confirmed with Hyundai Heavy Industries</li> <li>- PP needs to submit the generation capacity part of FSR, and also needs to re-calculate the IRR</li> </ul> | <ul style="list-style-type: none"> <li>· Specification of the generator was confirmed with Hyundai Heavy Industries Co., Ltd. and it was same as on the nameplate of the generator.</li> <li>· FSR was already submitted to the DOE during the on-site assessment.</li> <li>· Output power (1,000kW) stated in the PDD is equipment capacity in the design book. In other words, the wind turbine can generate only 1,000kW. Therefore, it is not recorded falsely. The value, 1,100kW is rated output power of a generator. However, in the process of registering the PDD, information of a generator was omitted. Therefore, specification of the generator was added in the PDD Section B and it was modified by post-registration change. Also, it might not need to recalculate the IRR in case of post-registration change correction.</li> </ul> <p>In addition, generator is just one of the parts in the wind turbine generator. Usually, most of them use a generator with much more power than general rated power to generate actual electricity as stated in the design book (1,000kW). The document, which is a permission of business of electricity generation, stated 3,000kW and FSR stated 3,000kW as well. In conclusion, there were no changes about the project intentionally.</p> | <p>By reviewing additional documentary evidence, DOE confirmed that there was no changed the generator, capacity of 1,100kW, during this monitoring period. The revised PDD and MR were confired.</p> <p>Post-registration change for correction needs to be implemented.</p> <p>This item has been closed.</p> |
| <p>CAR 2 (Checklist ID. #10)</p> <p>PP is requested to revise the operational and management structure of MR.</p>  | <p>The structure has been changed reflecting the actual situation. It is reflected in the Section C.</p>  | <p>DOE confirmed that the MR was properly revised.</p> <p>This item has been closed.</p>  |

## PERIODIC VERIFICATION REPORT

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|--|---|---|
| Supervision team in the operational and management structure needs to be removed at Page 9 of MR, since supervision team does not exist.   |   |   |
| <p>CAR 3 (Checklist ID. #11, #16)</p> <p>PP is requested to update MR regarding monitoring structure and information on the project activity.</p> <ul style="list-style-type: none"> <li>- The number of overhaul will be modified to 2010 (one time), 2011 (two times). Downtimes and exchange of equipment need to be confirmed as well.</li> <li>- Detailed information on downtimes and exchange of equipment needs to be added in the MR.</li> </ul>              | <p>The number of overhaul was revised in the report with the actual implementation, one time in 2010, two times in 2011.</p> <p>Details on downtimes and exchange was added in the Section B of the MR.</p>   | <p>DOE confirmed that the MR was properly revised in accordance with the provided documentary evidence.</p> <p>This item has been closed.</p>   |
| <p>CAR 4 (Checklist ID. #18, 34, 37)</p> <p>PP is requested to revise MR as below;</p> <ul style="list-style-type: none"> <li>- PP is requested to revise the accuracy of the meter for <math>EG_{import}</math>, 0.5% (PDD) to 1.0% (actual implementation) in the PDD. Post-registration change has to be implemented.</li> </ul> <p>PP is requested to provide any documentary evidence of the regular test for meter, which is identified in the Measures Act.</p> | <p>The accuracy of the meter for <math>EG_{import}</math> was 0.5% in the PDD. It is changed to 1.0% by post-registration change of Permanent changes from the registered monitoring plan or monitoring methodology. 'Power market operation regulations' was provided.</p> <p>Regarding calibration frequency, local regulation, which is 'Power market operation regulations,' states that calibration frequency is within three and half <math>\pm 6</math> months. Also, KEPCO is the only company dealing with power distribution in KOREA that conducts calibration for import meter to guarantee their electricity charge in accordance with 'Power market operation regulations' and their own regulations. Therefore, related documents were submitted to the DOE. Also, revised calibration frequency was reflected in the PDD and monitoring report.</p> <p>In case of calibration frequency, which is Measures Act, para. 32, is not for watt-hour meter, but scale or tank. So, this regulation does not need to be considered in this case.</p> <p>Imported value was adjusted based on VVS and Project Standard.</p> | <p>Calibration frequency once in three years are in accordance with the monitoring plan in the registered PDD. The calibration of imported meter were confirmed by the KEPCO website.</p> <p>Deloitte-TECO confirmed the import electricity meter was already installed and operated during the validation period. The imported electricity meter was installed on 26 November 2008 and carried out internal calibration on 17 December 2008 by the KEPCO. The Request for registration was submitted on 1 November 2009. Therefore, the imported electricity meter had already installed and used during the validation period, which means that there was no change of import meter in the monitoring period after registration. Moreover, Deloitte-TECO reviewed the relevant local regulation regarding the meter accuracy and in accordance with 'Power market operation regulations', which is stated that "allowable error of import meter can be within <math>\pm 2.0\%</math>", if equipment capacity is from 500kW to 10,000kW. Therefore, the import meter accuracy of 1.0% is acceptable for the regulation. Deloitte-TECO concluded that the meter accuracy is acceptable and in line with</p> |

## PERIODIC VERIFICATION REPORT

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|--|---|---|
|  |   | <p>the domestic regulation in Korea. As the result, Deloitte-TECO concluded that this monitoring plan change does not affect to level accuracy of monitoring system in this project. Imported value was adjusted based on VVS and Project Standard.</p> <p>This item has been closed.</p>   |
| <p>CAR 5 (Checklist ID. # 26, 27)</p> <p>Please check difference value between ER spreadsheet and sales invoice. Also, please provide KPX web site screen capture for Apr 2010.</p> <p>EG out (2011.10)</p> <p>ER spreadsheet    Sales invoice</p> <p>541,071              541,348</p> <p>Imported electricity values need to be adjusted by applying 0.5% difference of meter accuracy between PDD and actual implementation.</p> | <p>EG<sub>import</sub> value was re-calculated and reflected to the monitoring report and ER spreadsheet.</p> <p>It was found that the data recorded in KPX changed from 541,071 to 541,348 later because of telecommunication error. In KPX website, added value was marked in red color. Screen capture of change are attached. In conclusion, the value in sales invoice is correct.</p>   | <p>DOE checked the revised ER spreadsheet and recorded data in KPX..</p> <p>DOE confirmed the adjusted imported electricity values.</p> <p>This item has been closed.</p>   |
| <p>CL 1 (Checklist ID. #1)</p> <p>PP is requested to check the technical parameter value of swept area.</p>  | <p>Relevant document was submitted. It is MWT-1000A specification.</p>  | <p>Technical parameter values in the PDD were confirmed by documentary evidence of MWT-1000A specification document.</p> <p>This item has been closed.</p>  |
| <p>CL 2 (Checklist ID. #4)</p> <p>PP is requested to submit relevant document for construction complete date.</p>  | <p>Relevant document for construction complete date is provided. It is construction contract and changed it to 31/12/2008 in Section A.</p>   | <p>This item has been closed.</p>   |
| <p>CL 3 (Checklist ID. #7)</p> <p>PP is requested to provide information on representative person (email address needs to be added).</p>   | <p>Information on representative person is as follow and provided.</p> <p>- Name : Kyung-Jin Kim, Assistant Manager</p> <p>- Email Address : kjkim@dongkuksnc.co.kr</p> <p>- Tel : +82-54-271-0752</p>  | <p>This item has been closed.</p>   |
| <p>CL 4 (Checklist ID.#6, #14a, #34)</p> <p>PP needs to provide the access to confirm the Measure &amp; Archive section, which will be checked through KPX website after the on-site assessment by DOE.</p> <p>The frequency of CDM training needs to be modified in PDD</p> <p>The requirement of electricity safety staff needs to be confirmed based on local law and regulation.</p>   | <p>Screen capture of KPX website for power exchange is provided.</p> <p>The frequency of CDM training was miswritten to three times per year. Therefore, it was changed to once every three years'.</p> <p>According to the law on electricity business, the requirement of electricity safety staff shall attend the course on electricity safety once every three years. In addition, there is no official course on law regarding measurement in Republic of Korea and there is no</p> | <p>DOE confirmed by reviewing the provided screen capture of KPX website for EGexport (hourly and daily) and EGimport (monthly). Also, DOE confirmed monthly plant log books for the monitoring period.</p> <p>DOE confirmed by reviewing documentary evidences and performing interview that the monitoring results were recorded and managed by</p> |

## PERIODIC VERIFICATION REPORT

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|--|---|---|
|  | regulation on training frequency about the course about act on operation of electricity market. Therefore, registered PDD was changed that electricity safety staff shall attend only the course on electricity safety once every three years. Furthermore, the course on act on operation of electricity market shall be attended once in case of replacing the person in charge of monitoring and electricity safety.                             | both the grid and the PP and frequency (monthly) was in accordance with the registered PDD.<br><br>DOE confirmed the requirement of electricity safety staff training and frequency for the training. The revised PDD and MR were confirmed. The post-registration change for correction needs to be implemented.<br><br>This item has been closed. |
| CL 5 (Checklist ID. #15)<br>PP is requested to submit PPA (power purchase agreement) during verification period.   | PPA is concluded with KEPCO, if the total capacity is below 1MW. In case of generating over 1MW, there is no PPA with KEPCO and KPX. Instead of making a PPA, they become a member of the electricity market for trading their own electricity. Shinan power plant is over 1MW, so there was no PPA.<br><br>Instead, a document of the agreement of using electric equipment stated its contract power for distribution of electricity is provided. | DOE confirmed that the document of the agreement of using electric equipment stated its contract power for distribution of electricity, issued on 10 October 2008.<br><br>This item has been closed.  |
| CL 6 (Checklist ID.#13, #17)<br>PP is requested to provide calibration regulation.<br><br>PP is requested to revise the dates below;<br>- Date of latest calibration : 04/11/2011 needs to be modified to 04/10/2011<br>-Validity period : 04/11/2011~03/11/2014 needs to be modified to 04/10/2011~03/10/2014 Page 10 in the PDD. | Date of latest calibration was changed to 04 / 10 / 2011 and validity period was also changed to 04 / 10 / 2011 ~ 03 / 10 / 2014 and reflected in Section D.  | DOE confirmed that the MR was revised properly.<br><br>This item has been closed.   |

## 6 TECHNICAL REVIEW

The technical review was performed on 20 December 2012 for the draft verification report prepared by the verification team shown. The verification report was approved by the technical reviewer after enquiring about the project implementation, accuracy, and emission reduction calculation.

## 7 CONCLUSION

After completing its on-site assessment of the Shinan Wind power, Deloitte-TECO concludes that the proposed CDM project activity had been implemented in accordance with the PDD

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and complies with the monitoring plan, as well as the monitoring methodology with regards to assessing data and calculating GHG emission reductions.

Deloitte-TECO concludes the verified amount of emission reductions achieved for the period from 18 April 2010 to 17 April 2012 to be 8,184 tCO<sub>2</sub>e.

## 8 VERIFICATION STATEMENT

Deloitte-TECO was contracted by Shinan Wind Power Co., Ltd. to verify GHG emission reductions reported by the “Shinan Wind Power Co., Ltd.” (3110) for the period from 18 April 2010 to 17 April 2012. After completing a desk review and an on-site assessment, the verification team has come to the following conclusions.

The opinion of the verification team relates only to the project’s GHG emissions and resulting GHG emission reductions stated in the monitoring report as they are related to the valid and registered project baseline, monitoring plan, and its associated reference documents.

The project managers are ultimately responsible for preparing the GHG emissions data and reporting GHG emission reductions on the basis set forth in the monitoring plan. The development and maintenance of records and reporting procedures in accordance with the plan, including the calculation and determination of GHG emission reductions, are also the responsibility of the project managers.

The verification team fulfills the vital role of performing an independent assessment and expressing an unbiased opinion regarding GHG emission reductions during the monitoring period. The verification team carried out its assessment duties in light of the requirements defined under the Kyoto Protocol and Marrakech Accord, as well as those defined by the CDM Executive Board.

Our approach was risk based, drawing on an understanding of the risks associated with reporting GHG emissions data. The inspection performed by the verification team includes an assessment of evidence related to GHG amounts and disclosures related to the project’s GHG emission reductions for the period under review.

Deloitte-TECO planned and performed this verification audit with an aim to obtain the information as we consider it necessary in order to provide sufficient evidence that would provide reasonable assurance that the amount of GHG emission reductions for the period, prepared on the basis of the CDM Monitoring Manual (completed in July 2010), was accurate. The verification team conducted its on-site assessment with a keen focus on the registered PDD (completed on 20 October 2009 version 02.4), the monitoring manual (completed in July 2010), and the emission reductions for this CDM-registered project.

In our opinion, the GHG emission reductions for this project for the period from 18 April 2010 to 17 April 2012 as reported in the monitoring report (completed on 21 March 2013, version. 01.2), prepared on the basis of the monitoring plan, are fairly and accurately stated.

The GHG emission reductions were calculated correctly in the revised monitoring report (completed on 21 March 2013, version. 01.2) and in compliance with the PDD (completed on 21 March 2013, version 02.6) and the project’s Monitoring Manual (issued on 7 November 2012, version 1.0). The emission factor was consistent with that stated in the PDD (completed on 21 March 2013, version 02.6).

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After cross-checking the receipt of sales and purchase from the power grid, invoices and the monitoring report from PP as well as the emissions factor, Deloitte-TECO confirmed that the project has achieved an emission reduction of 8,184tCO<sub>2</sub>e for the period from 18 April 2010 to 17 April 2012.



Hiroshi Inanaga

CEO

Deloitte Tohmatsu Evaluation and Certification Organization

Tokyo, Japan

03/04/2013



## PERIODIC VERIFICATION REPORT

## 9 VERIFICATION TEAM AND REVIEWERS

### 9.1 LIST

#### Member

| Name            | Organization  | Role        | Auditor Status | CDM Audit Type (Validation/Verification) | Competences             |                       |                           |                      |                  |                | Task/Role       |                      |                |             |
|-----------------|---------------|-------------|----------------|--|-------------------------|-----------------------|---------------------------|----------------------|------------------|----------------|-----------------|----------------------|----------------|-------------|
|                 |               |             |                |  | Host Country Experience | Host Country Language | Country Regulatory Aspect | Environmental Aspect | Financial Aspect | Technical Area | Document Review | Site Visit/Interview | Report Writing | Supervision |
| PARK, Yong Tae  | Deloitte-TECO | Team Leader | Lead Auditor   | Val/Ver                                  | Y                       | -                     | Y                         | Y                    | -                | Y              | Y               | Y                    | Y              | Y           |
| PARK, Yoon Jung | Deloitte-TECO | Team Member | Auditor        | Ver                                      | Y                       | Y                     | Y                         | Y                    | -                | -              | Y               | Y                    | Y              |             |
| SHI, Xueting    | Deloitte-TECO | Team Member | Lead Auditor   | Val/Ver                                  | -                       | -                     | -                         | Y                    | Y                | Y              | -               | -                    | Y              | -           |

#### Reviewer

| Name               | Organization          | Role  | Host Country Experience | Host Country Language | Country Regulatory Aspect | Environmental Aspect | Financial Aspect | Technical Area |
|--------------------|-----------------------|---|-------------------------|-----------------------|---------------------------|----------------------|------------------|----------------|
| ISHIGAI, Chikara   | Deloitte-TECO         | Technical reviewer                                      | Y                       | -                     | Y                         | Y                    | -                | Y              |
| INANAGA, Hiroshi   | Deloitte-TECO         | Engagement Quality Assurance, Reviewer, GHG Team Leader | -                       | -                     | -                         | Y                    | -                | Y              |
| ICHIKAWA, Masahiko | CDM Judging Committee | Assessment Committee Chair                              | -                       | -                     | -                         | -                    | -                | -              |
| INANAGA, Hiroshi   | Deloitte-TECO         | Chief Executive Officer                                 | -                       | -                     | -                         | Y                    | -                | Y              |

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## 9.2 INTERNAL QUALITY CONTROL

The draft and final verification reports were subject to Deloitte-TECO's internal quality control reviews. A technical review was performed by a technical reviewer meeting. Deloitte-TECO's qualification standards for CDM verification as follows:

### Engagement Quality Assurance Review System (EQAR)

|       |   | Objective   | 【IN】  | 【OUT】  | Detail   |
|-------|---|---|---|--|--|
| Level | Reviewer  | Responsibility  | Information   | Reports  | Comments   |
| 1     | Quality Control Group*4                                 | 1) Validation<br>Review the validation implemented effectively and efficiency from an independent standpoint, in conformity with the step. Validation check list (Internal review). Review technically the additionality, baseline methodology, and monitoring methodology.<br>2) Verification<br>Review the reduction of CDM Verification check list (Internal Review). Review the reduction of GHG. | 1) Validation<br>PDD (Monitoring plan)<br>Audit plan document<br>Validation/Verification report DR<br>DR report<br>VVS<br>2) Verification<br>Monitoring report, verification report and related documents | 1) Validation<br>Completion of correction requested<br>Confirmation of evidence for VVS<br>Abstract of Audit outcome<br>Witness<br>Review Sheet<br>Validation internal review checklist.<br>Appropriateness of applied methodologies<br>*3 Confirmation of accuracy and reliability of data and equations, Review Sheet<br>2) Verification<br>Review Sheet<br>Verification internal review checklist | 1) Validation /Verification<br>Check mark<br>Add comments to the abstract<br>Comments to the materiality and uncertainty, consistency of reports etc.<br>In terms of Request for Review and other requests, it will be implemented by using validation/verification review sheet during technical reviews. |
|       | English proof reader                                    | Review and check English grammar, spelling and imprecision of expressions.  | Draft report of Validation/Verification/certification   | Corrections to the grammatical, spelling mistakes and expressions.   | File the result of English proofreading  |
| 2     | GHG Team Leader (Engagement Quality Assurance Reviewer) | Review the appropriateness of the process from ordering the CDM project to requesting registration and issuance to EB, based on "Operational Management Procedure CDM (Validation/Verification)"  | Statement on procedure<br>Abstract of Audit outcome<br>Witness  | Engagement Quality Assurance statement for Operational procedure<br>OMP sheet  | Fill concerns in the comment field   |
| 3     | Judgment Committee                                      | Perform the Engagement Quality Assurance Review for the determination of submission to register CDM project and/or the response to the request for review from CDM EB, in order to judge under objective and fair rules, based on the steps (1) and (2), in case of request from the GHG Team Leader/CDM Manager  | PDD (Monitoring plan)<br>Draft report of Validation/Verification/Certification  | Minute of Judgment Committee   | Add comments to the minute   |

## PERIODIC VERIFICATION REPORT

| 4 | Chief Executive Officer | Express the final opinion, based on (1)(2) and (3),for Validation/Verification/Certification | Engagement Quality Assurance statement for Operational procedure | Expression of opinion (Validation/Verification/certification report) | Need to comment if it is an adverse opinion |
|---|-------------------------|--|--|--|---|
|---|-------------------------|--|--|--|---|

- \* 1 Competency of reviewers shall be equal or higher than an audit team leader.
- \* 2 An audit team leader, an Audit Director and EQAR shall not be served concurrently by the same personnel.
- \* 3 Title(s) of evidential document for important expressions specifically representing numeric values and conclusions shall be clearly indicated in reports and VVM checklists.
- \* 4. Technical reviewer shall be designated by agreement of CDM Manager and Quality Control Group Manager.

## PERIODIC VERIFICATION REPORT

## 9.3 QUALIFICATIONS

|                             |  |                                     |  |
|-----------------------------|--|-------------------------------------|--|
| <b>Name:</b>                | PARK, Yong Tae   |                                     |  |
| <b>Position:</b>            | <input checked="" type="checkbox"/> 1. Lead Auditor<br><input type="checkbox"/> 2. Auditor<br><input type="checkbox"/> 3. Technical Expert |                                     |  |
| <b>Fields of Expertise:</b> | <b>Sectoral Scopes (SS)</b>  | <b>Technical Areas (TA)</b>         |  |
|                             | SS 1: Energy industries (renewable/non-renewable sources)  | <input type="checkbox"/>            | TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar (COMPLEX) |
|                             |  | <input checked="" type="checkbox"/> | TA 1.2: Energy generation from renewable energy sources  |
|                             | SS 2: Energy distribution  | <input type="checkbox"/>            | TA 2.1: Electricity distribution   |
|                             |  | <input type="checkbox"/>            | TA 2.2: Heat distribution  |
|                             | SS 3: Energy demand  | <input type="checkbox"/>            | TA 3.1: Energy demand  |
|                             | SS 4: Manufacturing industries   | <input type="checkbox"/>            | TA 4.1: Cement sector (COMPLEX)  |
|                             |  | <input type="checkbox"/>            | TA 4.2: Aluminum (COMPLEX)   |
|                             |  | <input type="checkbox"/>            | TA 4.3: Iron and steel (COMPLEX)   |
|                             |  | <input type="checkbox"/>            | TA 4.4: Refinery (COMPLEX)   |
|                             | SS 5: Chemical industry  | <input type="checkbox"/>            | TA 5.1: Chemical process industries (COMPLEX)  |
|                             | SS 6: Construction   | <input type="checkbox"/>            | TA 6.1: Construction   |
|                             | SS 7: Transport  | <input type="checkbox"/>            | TA 7.1: Transport  |
|                             | SS 8: Mining/mineral production  | <input type="checkbox"/>            | TA 8.1: Mining and mineral processes, excluding those included in TA 8.2 below                                     |
|                             |  | <input type="checkbox"/>            | TA 8.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)  |
|                             | SS 9: Metal production   | <input type="checkbox"/>            | TA 9.1: Metal production   |
|                             | SS 10: Fugitive emissions from fuels (solid, oil and gas)  | <input type="checkbox"/>            | TA 10.1: Mining and mineral processes, excluding those included in TA 10.2 below                                   |
|                             |  | <input type="checkbox"/>            | TA 10.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)                                       |
|                             | SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride  | <input type="checkbox"/>            | TA 11.1: Chemical process industries (COMPLEX)   |
|                             |  | <input type="checkbox"/>            | TA 11.2: GHG capture and destruction   |
|                             | SS 12: Solvents use  | <input type="checkbox"/>            | TA 12.1: Chemical process industries (COMPLEX)   |
|                             | SS 13: Waste handling and disposal   | <input type="checkbox"/>            | TA 13.1: Waste handling and disposal   |
|                             |  | <input type="checkbox"/>            | TA 13.2: Animal waste management   |
|                             | SS 14: Afforestation and reforestation   | <input type="checkbox"/>            | TA 14.1: Forestry  |
|                             | SS 15: Agriculture   | <input type="checkbox"/>            | TA 15.1: Agriculture   |
|                             |  | <input type="checkbox"/>            | TA 15.2: Animal waste management   |
| <b>Approved by:</b>         | INANAGA, Hiroshi, Chief Executive Officer of Deloitte-TECO   |                                     |  |

NOTE: In accordance with Deloitte-TECO's "Auditor's List with Technical Areas of Sectoral Scopes"

## PERIODIC VERIFICATION REPORT

|                             |  |                             |  |
|-----------------------------|--|-----------------------------|--|
| <b>Name:</b>                | PARK, Yoon Jung  |                             |  |
| <b>Position:</b>            | <input type="checkbox"/> 1. Lead Auditor<br><input checked="" type="checkbox"/> 2. Auditor<br><input type="checkbox"/> 3. Technical Expert |                             |  |
| <b>Fields of Expertise:</b> | <b>Sectoral Scopes (SS)</b>  | <b>Technical Areas (TA)</b> |  |
|                             | SS 1: Energy industries (renewable/non-renewable sources)  | <input type="checkbox"/>    | TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar (COMPLEX) |
|                             |  | <input type="checkbox"/>    | TA 1.2: Energy generation from renewable energy sources  |
|                             | SS 2: Energy distribution  | <input type="checkbox"/>    | TA 2.1: Electricity distribution   |
|                             |  | <input type="checkbox"/>    | TA 2.2: Heat distribution  |
|                             | SS 3: Energy demand  | <input type="checkbox"/>    | TA 3.1: Energy demand  |
|                             | SS 4: Manufacturing industries   | <input type="checkbox"/>    | TA 4.1: Cement sector (COMPLEX)  |
|                             |  | <input type="checkbox"/>    | TA 4.2: Aluminum (COMPLEX)   |
|                             |  | <input type="checkbox"/>    | TA 4.3: Iron and steel (COMPLEX)   |
|                             |  | <input type="checkbox"/>    | TA 4.4: Refinery (COMPLEX)   |
|                             | SS 5: Chemical industry  | <input type="checkbox"/>    | TA 5.1: Chemical process industries (COMPLEX)  |
|                             | SS 6: Construction   | <input type="checkbox"/>    | TA 6.1: Construction   |
|                             | SS 7: Transport  | <input type="checkbox"/>    | TA 7.1: Transport  |
|                             | SS 8: Mining/mineral production  | <input type="checkbox"/>    | TA 8.1: Mining and mineral processes, excluding those included in TA 8.2 below                                     |
|                             |  | <input type="checkbox"/>    | TA 8.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)  |
|                             | SS 9: Metal production   | <input type="checkbox"/>    | TA 9.1: Metal production   |
|                             | SS 10: Fugitive emissions from fuels (solid, oil and gas)  | <input type="checkbox"/>    | TA 10.1: Mining and mineral processes, excluding those included in TA 10.2 below                                   |
|                             |  | <input type="checkbox"/>    | TA 10.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)                                       |
|                             | SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride  | <input type="checkbox"/>    | TA 11.1: Chemical process industries (COMPLEX)   |
|                             |  | <input type="checkbox"/>    | TA 11.2: GHG capture and destruction   |
|                             | SS 12: Solvents use  | <input type="checkbox"/>    | TA 12.1: Chemical process industries (COMPLEX)   |
|                             | SS 13: Waste handling and disposal   | <input type="checkbox"/>    | TA 13.1: Waste handling and disposal   |
|                             |  | <input type="checkbox"/>    | TA 13.2: Animal waste management   |
|                             | SS 14: Afforestation and reforestation   | <input type="checkbox"/>    | TA 14.1: Forestry  |
|                             | SS 15: Agriculture   | <input type="checkbox"/>    | TA 15.1: Agriculture   |
|                             |  | <input type="checkbox"/>    | TA 15.2: Animal waste management   |
| <b>Approved by:</b>         | INANAGA, Hiroshi, Chief Executive Officer of Deloitte-TECO   |                             |  |

NOTE: In accordance with Deloitte-TECO's "Auditor's List with Technical Areas of Sectoral Scopes"

## PERIODIC VERIFICATION REPORT

|  |  |   |   |
|--|--|---|---|
| <b>Name:</b>                           | SHI, Xueting   |   |   |
| <b>Position:</b>                       | <input checked="" type="checkbox"/> 1. Lead Auditor<br><input type="checkbox"/> 2. Auditor<br><input type="checkbox"/> 3. Technical Expert |   |   |
| <b>Fields of Expertise:</b>            | <b>Sectoral Scopes (SS)</b>  |   | <b>Technical Areas (TA)</b>   |
|  | SS 1: Energy industries (renewable/non-renewable sources)  | <input type="checkbox"/><br><input checked="" type="checkbox"/> | TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar (COMPLEX)<br>TA 1.2: Energy generation from renewable energy sources |
|  | SS 2: Energy distribution  | <input type="checkbox"/><br><input type="checkbox"/>            | TA 2.1: Electricity distribution<br>TA 2.2: Heat distribution   |
|  | SS 3: Energy demand  | <input type="checkbox"/>  | TA 3.1: Energy demand   |
|  | SS 4: Manufacturing industries   | <input type="checkbox"/>  | TA 4.1: Cement sector (COMPLEX)   |
|  |  | <input type="checkbox"/>  | TA 4.2: Aluminum (COMPLEX)  |
|  |  | <input type="checkbox"/>  | TA 4.3: Iron and steel (COMPLEX)  |
|  |  | <input type="checkbox"/>  | TA 4.4: Refinery (COMPLEX)  |
|  | SS 5: Chemical industry  | <input type="checkbox"/>  | TA 5.1: Chemical process industries (COMPLEX)   |
|  | SS 6: Construction   | <input type="checkbox"/>  | TA 6.1: Construction  |
|  | SS 7: Transport  | <input type="checkbox"/>  | TA 7.1: Transport   |
|  | SS 8: Mining/mineral production  | <input type="checkbox"/>  | TA 8.1: Mining and mineral processes, excluding those included in TA 8.2 below  |
|  |  | <input type="checkbox"/>  | TA 8.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)   |
|  | SS 9: Metal production   | <input type="checkbox"/>  | TA 9.1: Metal production  |
|  | SS 10: Fugitive emissions from fuels (solid, oil and gas)  | <input type="checkbox"/>  | TA 10.1: Mining and mineral processes, excluding those included in TA 10.2 below  |
|  |  | <input type="checkbox"/>  | TA 10.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)  |
|  | SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride  | <input type="checkbox"/>  | TA 11.1: Chemical process industries (COMPLEX)  |
|  |  | <input type="checkbox"/>  | TA 11.2: GHG capture and destruction  |
|  | SS 12: Solvents use  | <input type="checkbox"/>  | TA 12.1: Chemical process industries (COMPLEX)  |
|  | SS 13: Waste handling and disposal   | <input type="checkbox"/>  | TA 13.1: Waste handling and disposal  |
| <input type="checkbox"/>               |  | TA 13.2: Animal waste management                                |   |
| SS 14: Afforestation and reforestation | <input type="checkbox"/>   | TA 14.1: Forestry   |   |
| SS 15: Agriculture                     | <input type="checkbox"/>   | TA 15.1: Agriculture  |   |
|  | <input type="checkbox"/>   | TA 15.2: Animal waste management                                |   |
| <b>Approved by:</b>                    | INANAGA, Hiroshi, Chief Executive Officer of Deloitte-TECO   |   |   |

NOTE: In accordance with Deloitte-TECO's "Auditor's List with Technical Areas of Sectoral Scopes"

## PERIODIC VERIFICATION REPORT

|                             |  |                                     |  |
|-----------------------------|--|-------------------------------------|--|
| <b>Name:</b>                | ISHIGAI, Chikara   |                                     |  |
| <b>Position:</b>            | <input checked="" type="checkbox"/> 1. Lead Auditor<br><input type="checkbox"/> 2. Auditor<br><input type="checkbox"/> 3. Technical Expert |                                     |  |
| <b>Fields of Expertise:</b> | <b>Sectoral Scopes (SS)</b>  | <input type="checkbox"/>            | <b>Technical Areas (TA)</b>  |
|                             | SS 1: Energy industries (renewable/non-renewable sources)  | <input checked="" type="checkbox"/> | TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar (COMPLEX) |
|                             |  | <input checked="" type="checkbox"/> | TA 1.2: Energy generation from renewable energy sources  |
|                             | SS 2: Energy distribution  | <input checked="" type="checkbox"/> | TA 2.1: Electricity distribution   |
|                             |  | <input checked="" type="checkbox"/> | TA 2.2: Heat distribution  |
|                             | SS 3: Energy demand  | <input checked="" type="checkbox"/> | TA 3.1: Energy demand  |
|                             | SS 4: Manufacturing industries   | <input type="checkbox"/>            | TA 4.1: Cement sector (COMPLEX)  |
|                             |  | <input type="checkbox"/>            | TA 4.2: Aluminum (COMPLEX)   |
|                             |  | <input type="checkbox"/>            | TA 4.3: Iron and steel (COMPLEX)   |
|                             |  | <input type="checkbox"/>            | TA 4.4: Refinery (COMPLEX)   |
|                             | SS 5: Chemical industry  | <input checked="" type="checkbox"/> | TA 5.1: Chemical process industries (COMPLEX)  |
|                             | SS 6: Construction   | <input type="checkbox"/>            | TA 6.1: Construction   |
|                             | SS 7: Transport  | <input type="checkbox"/>            | TA 7.1: Transport  |
|                             | SS 8: Mining/mineral production  | <input type="checkbox"/>            | TA 8.1: Mining and mineral processes, excluding those included in TA 8.2 below                                     |
|                             |  | <input checked="" type="checkbox"/> | TA 8.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)  |
|                             | SS 9: Metal production   | <input type="checkbox"/>            | TA 9.1: Metal production   |
|                             | SS 10: Fugitive emissions from fuels (solid, oil and gas)  | <input type="checkbox"/>            | TA 10.1: Mining and mineral processes, excluding those included in TA 10.2 below                                   |
|                             |  | <input checked="" type="checkbox"/> | TA 10.2: Oil and gas industry, coal mine methane recovery, and use (COMPLEX)                                       |
|                             | SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride  | <input type="checkbox"/>            | TA 11.1: Chemical process industries (COMPLEX)   |
|                             |  | <input type="checkbox"/>            | TA 11.2: GHG capture and destruction   |
|                             | SS 12: Solvents use  | <input checked="" type="checkbox"/> | TA 12.1: Chemical process industries (COMPLEX)   |
|                             | SS 13: Waste handling and disposal   | <input type="checkbox"/>            | TA 13.1: Waste handling and disposal   |
|                             |  | <input type="checkbox"/>            | TA 13.2: Animal waste management   |
|                             | SS 14: Afforestation and reforestation   | <input type="checkbox"/>            | TA 14.1: Forestry  |
|                             | SS 15: Agriculture   | <input type="checkbox"/>            | TA 15.1: Agriculture   |
|                             |  | <input type="checkbox"/>            | TA 15.2: Animal waste management   |
| <b>Approved by:</b>         | INANAGA, Hiroshi, Chief Executive Officer of Deloitte-TECO   |                                     |  |

NOTE: In accordance with Deloitte-TECO's "Auditor's List with Technical Areas of Sectoral Scopes"

## PERIODIC VERIFICATION REPORT

## REFERENCES

| No.  | Title  |
|------|--|
| /1/  | Monitoring Report (Initial)  |
| /2/  | Monitoring Report (Final)  |
| /3/  | ER Calculation Spreadsheet   |
| /4/  | Monitoring Manual  |
| /5/  | Power Purchase Agreement   |
| /6/  | Power Station log books  |
| /7/  | Supplied / imported electricity data in the KPX webstie  |
| /8/  | The electricity business application form and approval letter  |
| /9/  | Documentary evidence for construction completion (26 December 2008)  |
| /10/ | Documentary evidence for Equipments installation date  |
| /11/ | Electricity genration Test opreation Report  |
| /12/ | Documentary evidence for operation starting date of operation (27 November 2008)   |
| /13/ | Documentary evidence for operation starting date of commissioning (24 December 2009)                                     |
| /14/ | Equipments purchase agreement (turbines, generator and steel tower) to ideatify specification<br>Statement of Compliance |
| /15/ | FSR (wind resource measured result),   |
| /16/ | Imported electricity meter registered data in KEPCO website (included internal test details)                             |
| /17/ | Calibration reports of meters when installation. (main meters and backup meters)   |
| /18/ | Design book of turbines and generators   |
| /19/ | Operators' license   |
| /20/ | Record of Overhaul, Downtimes and Exchange of equipment  |
| /21/ | Organization chart of monitoring management (if not on the monitoring manual)  |
| /22/ | (Internal audit) correction procedure  |
| /23/ | Calibration entity certificate   |
| /24/ | Three Phase Induction Generator” issued by Hyundai Heavy Industries Co., Ltd   |
| /25/ | Specification & Outline drawing of generator” issued by Mitsubishi heavy Industries, LTD.                                |
| /26/ | Law regaring measurement   |



## PERIODIC VERIFICATION REPORT

|      |  |
|------|--|
| /27/ | Act on operation of electricity market   |
| /28/ | Power market operation regulations   |
| /29/ | Law of electricity business  |
| /30/ | Act on operation of electricity business   |
| /31/ | Appendix 15 of Act on operation of electricity business  |
| /32/ | Records for attending Courses of "Law regarding measurement", "Act on operation of electricity market", and "Electricity safety" |
| /33/ | AMS.I.D. Version. 13   |
| /34/ | Tool to calculate the emission factor for an electricity system (ver.01.1)   |
| /35/ | Registered PDD (version.2.4)   |
| /36/ | Registered Validation Report   |
| /37/ | Record of Wind power measurement result during the monitoring period   |
| /38/ | Documentary evidence for initial power transmission from Shinan Wind power   |
| /39/ | Turbine and Generator nameplates (Mitsubishi and Hyundai Heavy Industry)   |
| /40/ | Revised PDD (version.2.6)  |
| /41/ | Report of the Twenty-First meeting of the small-scale working group (para. 32)   |

## Appendix A: Verification Checklist (based on the CDM VVS (Version 02.0) in Annex 4 / EB65)

Project: 3 MW Shinan Wind power project

### D. Verification of specific requirements

| ID No. | Verification Requirements (VVS)   | Means of Verification (VVS)  | Ref. No | DOE comment after on-site assessment (and/or summary of additional requests)  | Draft Concl. | Final Concl. |
|--------|---|--|---------|---|--------------|--------------|
|        | D. Verification of specific requirements  |  |         |   |              |              |
|        | 1. Project implementation in accordance with the registered project design document   |  |         |   |              |              |
| 1      | <p>226. The DOE shall identify any concerns related to the conformity of the actual project activity and its operation with the registered project design document and determine whether:34</p> <p>(a) The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PDD; or</p> | <p>227. The DOE shall, by means of an on-site visit, assess that all physical features of the project activity in the registered PDD are in place and that the project participants have operated the project activity as per the registered PDD or any approved revised PDD. If an on-site visit is not conducted, the DOE shall justify the rationale of the decision.</p> |         | <p>· Actual installed capacity of the turbine is confirmed with the Statement of Compliance, issued by Germanischer Lloyd, on 25 January 2006.</p> <p>· The technical parameter value of Blade Swept area, sated 2,960m2 in MR, needs to be confirmed with a documentary evidence.</p> <hr/> <p>DOE confirmed the MWT-1000A specification</p> <ul style="list-style-type: none"> <li>- Blade<br/>Material : Glass fiber reinforced plastics<br/>Roter diameter : 61.4 m, Swept area: 2,960 m2<br/>Number of blades: 3</li> <li>- Turbine (MWT-1000A)<br/>Type : Induction generator      Wind velocity : 12.5 m/s<br/>Output Voltage: 600V      Output power: 1,000kW<br/>Rated speed: 19.8rpm      Cooling system: Air cooling</li> <li>- Generator (HRQ1 455-48E)<br/>Output Power: 1,100kW      Output Voltage: 600V</li> <li>- Steel Tower<br/>Type : Tubular      Height: 66.9m</li> </ul> <p>It was confirmed that the model number and specification of turbine in the registered PDD was incorrect. DOE decided the post-registration change of correction needs to be implemented. PDD and MR need to be corrected. DOE confirmed the revised PDD and MR in accordance with the actual implementation.</p> | CL           | OK           |
| 2      | <p>(b) Any deviation or the proposed or actual changes in the implementation or operation of the project activity comply with the requirements of the Project Standard.</p> <p>*34 See decision 3/CMP.1, annex, paragraph 62(g).</p>  |  |         | <p>· Output power of the generator is falsely recorded in the PDD (actual output power is 1100MW, but recorded as 1000MW), which will be notified to EB. (Permanent Change)</p> <p>Prior approval by EB may need to be implemented.</p> <ul style="list-style-type: none"> <li>- further notification of PDD change is needed</li> <li>- Specification of the generator needs to be confirmed with Hyundai Heavy Industries</li> <li>· PP needs to submit the generation capacity part of FSR.</li> </ul> <hr/> <p>DOE confirmed the documentary evidence of specification of the generator, which has specification for three-phase induction generator, Drawing No. 65400-5008.</p>   | CAR<br>/CL   | OK           |

## Appendix A: Verification Checklist (based on the CDM VVS (Version 02.0) in Annex 4 / EB65)

### Project: 3 MW Shinan Wind power project

|   |  |  |  |  |    |    |
|---|--|--|--|--|----|----|
|   |  |  |  | DOE confirmed that the generator capacity of this project was installed as 1100kW not 1000kW of the PDD. DOE concluded by reviewing relevant documents that the PDD needs to be corrected for the generator model number and capacity. Correction of post-registration change needs to be implemented.   |    |    |
| 3 |  | Actual installed capacity of the transformer   |  | · Technical parameter of the steel tower was confirmed with the State of Compliance (Equipment purchase agreement).  | OK | OK |
| 4 |  | Starting date of operation   |  | <ul style="list-style-type: none"> <li>· Starting date of operation, 27 November 2008, was confirmed with approval of initial electricity generation synchronizing, issued by Korea Power Exchange.</li> <li>· Crediting period is confirmed by EB website.</li> <li>· Commissioning date, 24 December 2008, was confirmed with electricity generation test operation report issued by Korea electrical safety corporation. The report stated that the test was carried out from 22 December 2008 to 24 December 2008 and passed.</li> <li>- PP is requested to submit relevant document for construction complete date.</li> </ul> <hr/> DOE confirmed the relevant documentary evidence.   | CL | OK |
| 5 |  | Construction start date; and   |  | - Starting date of operation and crediting period is confirmed; related reference is submitted. Refer ID. # 4  | OK | OK |
| 6 |  | Construction completion date"  |  | <ul style="list-style-type: none"> <li>- Will be checked through KPX.</li> <li>- Efficiency(24,4%) was checked by FSR during on-site verification</li> <li>- In electricity transmission system in Korea, all transmission lines are owned by KEPCO and all electricity supplied to the KEPCO are recorded and available to public throughout the KEPCO website. DOE confirmed all relevant data in it.</li> </ul> <hr/> Please provide screen capture of KEPCO website for Shinan Wind Power Co., Ltd. <hr/> DOE confirmed the sample of KEPCO website, which has daily electricity supplied to the grid by Shinan Wind power station. All data is collected and managed by the grid automatically. Moreover, Monthly $EG_{import}$ value was also confirmed through the website. | CL | OK |
| 7 |  | Other basic information<br>- Organization name<br>- Represented by                       |  | <ul style="list-style-type: none"> <li>- Information on representative person needs to be submitted. It needs to be stated in the Verification Report, name, title, email address, tel no. etc.). Refer Annex I of the PDD.</li> </ul> <hr/> DOE confirmed the personal information changed.   | CL | OK |
| 8 |  | Permanant changes which may impact the additionality, scale of project activity, and the |  | - Output power of the generator is falsely recorded in the PDD (actual output power is 1100MW, but recorded as 1000MW)   | CL | OK |

## Appendix A: Verification Checklist (based on the CDM VVS (Version 02.0) in Annex 4 / EB65)

### Project: 3 MW Shinan Wind power project

|   |  |   |   |     |    |
|---|--|---|---|-----|----|
|   |  | <p>applicability/application of an approved methodology</p> <p>(a) Changes in the effective output capacity due to increased installed capacity or increased number of units, or installation of units with lower capacity or units with a technology which is less advanced than that described in the PDD;</p> <p>(b) Addition of component or extension of technology;</p> <p>(c) Removal or addition of one (or more) site of a project activity registered with multiple-sites;</p> <p>(d) Different values of those actual operational parameters relevant to determination of emission reduction which are within the control of project participant and which resulting the IRR passing the benchmark as described in the registered PDD.</p> | <p>- Specification of the generator of Hyundai Heavy Industries was confirmed. "Specification for Three Phase Induction Generator", doc. no. N31-654-5008, which stated that Rated capacity is 1100Kw.</p> <p>- Request for approval is needed for change in project design.</p> <p>- PP needs to submit the generation capacity part of FSR, when and why this change happened, and need to recalculate the IRR to show that this change is not impact to additionality.</p> <p>- Refer ID. # 2 &amp; details will be demonstrated in the Post-registration 1. Correction or 4. Changes to the project design of a registered project activity. Deloitte-TECO confirmed total capacity of 3MW in the FSR and a number of relevant documents, such as, electricity facility inspection report, power generation permit by local government; however, also confirmed total capacity of 3.3MW by Design book and product inspection certificate.</p> <p>Therefore, PP is requested to clarify when the capacity has been changed.</p> <p>DOE confirmed the documentary evidence of specification of the generator, in which has specification for three-phase induction generator, Drawing No. 65400-5008. DOE confirmed that the generator capacity of this project was installed as 1100kW, not 1000kW of the PDD. DOE concluded by reviewing relevant documents that the PDD revised properly and corrected for the generator model number and capacity. Correction of post-registration change needs to be implemented.</p> |     |    |
| 2. Compliance of the monitoring plan with the monitoring methodology including applicable tool(s) |  |   |   |     |    |
| 9   | 229. The DOE shall determine whether the monitoring plan of the project activity is in accordance with the applied methodology including applicable tool(s). | 230. The DOE shall determine whether the project implementation is in accordance with the provisions of the registered PDD and/or an approved revised PDD.  | Deloitte-TECO confirmed that applied methodology, AMS. ID. Version 13, in the MR and monitoring is consistent with the PDD.   | OK  | OK |
| 10  |  | 231. For monitoring aspects that are not specified in the methodology, particularly in the case of small-scale methodologies (e.g. additional monitoring parameters, monitoring frequency and calibration frequency), the DOE should bring to the attention of the Board issues which may enhance the level of accuracy and completeness of the monitoring plan.  | <p>Operational and management structure needs to be modified at Page 9 of MR (supervision team did not exist). Please revise operational and management structure in accordance with the actual implementation.</p> <p>DOE confirmed the revised operational and management structure as actual implementation. DOE also confirmed that the operational and management structure is implemented in accordance with the registered PDD.</p>  | CAR | OK |

## Appendix A: Verification Checklist (based on the CDM VVS (Version 02.0) in Annex 4 / EB65)

### Project: 3 MW Shinan Wind power project

| 3. Compliance of monitoring activities with the registered monitoring plan |  |  |  |  |     |    |
|--|--|--|--|--|-----|----|
| 11   | 233. The DOE shall determine whether the monitoring of parameters related to the GHG emissions reductions in the project activity has been implemented in accordance with the monitoring plan contained in the registered PDD36 or any accepted revised monitoring plan. | 234. The DOE shall determine whether:<br><br>(a) The monitoring plan has been properly implemented and followed by the project participants;   |  | <div>- CDM monitoring manual is received, which was issued in July 2010.</div> <div>- Monitoring structure needs to be modified and submitted again in accordance with the actual implementation.</div> <div>DOE team confirmed documentary evidence for operation stop, such as "equipment change report," "half year, one year, and two year anniversary maintenance report."</div> <div>- The number of overhaul will be modified to 2010 (one time), 2011 (two times), downtimes, and exchange of equipment needs to be confirmed as well.</div> <div>- Details on downtimes and exchange of equipment needs to be added in the MR.</div> <div>DOE confirmed the revised MR and all accidents in this monitoring period were demonstrated in the MR in accordance with the documentary evidences, Record of Overhaul, Downtimes, and Exchange of equipment.</div>  | CAR | OK |
| 12   |  | (b) All parameters stated in the monitoring plan and relevant Board decisions <sup>37</sup> have been monitored and updated as applicable, including:<br>(i) Project emission parameters;<br>(ii) Baseline emission parameters;<br>(iii) Leakage parameters;<br>(iv) Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan. |  | <div>· Emission factor : 0.0696 tCO<sub>2</sub>e/MWh</div> <div>It was confirmed by the registered PDD.</div>  | OK  | OK |
| 13   |  | (c) The equipment used for monitoring is in accordance with section 4. below and is controlled and calibrated in accordance with the monitoring plan, the applied methodology, the Board guidance, local/national standards, or as per the manufacturer's specification;   |  | <div>·The local regulation states at least once in seven years.</div> <div>·The method of calibration is consistent with the local regulation for measuring device, meters. However, provided document is for calibration not test. (validity of meter calibration)</div> <div>PP is requested to provide calibration regulation.</div> <div>Refer Section 4</div> <div>DOE confirmed calibration regulation in Korea, power market operation regulations. It was regulated that the calibration frequency is three and half years ±6 months. DOE confirmed that the import meter was owned and controlled by the grid, KEPCO. It was confirmed by performing interview that the PP cannot control the import meter's accuracy and calibration.</div> <div>However, DOE confirmed the grid, KEPCO, implemented meter test internally on 17 December 2008 and 1 December 2011; calibration frequency is less than three years, which is in accordance with the monitoring plan in the registered PDD.</div> | CL  | OK |

## Appendix A: Verification Checklist (based on the CDM VVS (Version 02.0) in Annex 4 / EB65)

### Project: 3 MW Shinan Wind power project

|     |  |   |   |    |    |
|-----|--|---|---|----|----|
| 14  |  | (d) Monitoring results are consistently recorded as per approved frequency;   | <p>Measure &amp; Archive will be checked through KPX website after the on-site assessment by DOE</p> <hr/> <p>DOE confirmed by reviewing the provided screen capture of KPX website for EGexport (hourly and daily) and EGimport (monthly).<br/>Also, DOE confirmed monthly plant log books for the monitoring period.</p> <p>DOE confirmed by reviewing documentary evidences and performing interview that the monitoring results were recorded and managed by both the grid and the PP and frequency (monthly) was in accordance with the registered PDD.</p>  | CL | OK |
| 14a |  | (e) Quality assurance and quality control procedures have been applied in accordance with the monitoring plan or the revised monitoring plan. | <p>· Both Mr. Park (manager) and Mr. Yoo (engineer) are responsible for the operation and management of the wind power, and Mr. Yoo is also responsible for the maintenance of the wind power. Amount of electricity is recorded and reported to the head office by Mr. Park</p> <p>· Issues like huge decrease of the electricity generation are reported to Dongkuk S&amp;C</p> <p>· CDM project training courses below are confirmed during interview,<br/> · Course on 'Law regarding measurement'<br/> · Course on 'Act on operation of electricity market'<br/> · Course on Electricity safety<br/> The frequency of CDM training needs to be modified in PDD<br/> The requirement of electricity safety staff needs to be confirmed based on local law and regulation.</p> <p>· Qualification is confirmed with the operation license (Mr. Park)<br/> - Organization chart needs to be modified ( Dongkuk S&amp;C., Ltd., the energy construction team &gt; staff)<br/> - Certification report on calibration is submitted<br/> · PPA (power purchase agreement) is missing and PP needs to submit it during verification period.</p> <p>· Monitoring procedure is submitted<br/> Wind power monitoring daily report<br/> Wind power EG power purchase invoice<br/> Monitoring meter control<br/> · Amount of power generation is different between summer and winter seasons</p> <hr/> <p>Deloitte-TECO confirmed that the required frequency of taking the electric safety course was not three times per year but once every three years. It was confirmed by performing interview that it was typing miss of PDD by the PP. Therefore, the frequency of taking the electric safety course needs to be corrected as post-registration change. In addition to that, Deloitte-TECO also confirmed that only the "Course on Electricity safety" was mandatorily required to be taken for electric safety managers. There is no regulation that appointed electricity safety manager has to complete the courses of "Course on Law regarding measurement" and "Course on Act on operation of electricity market". It was confirmed that "Law regarding measurement"</p> | CL | OK |

## Appendix A: Verification Checklist (based on the CDM VVS (Version 02.0) in Annex 4 / EB65)

### Project: 3 MW Shinan Wind power project

|    |  |  |  |     |    |
|----|--|--|--|-----|----|
|    |  |  | and “Act on operation of electricity market” are the Law and Act for meter business entity, such as manufacturer, repairing, etc, not related to monitoring and electricity safety. DOE confirmed by performing the interview with the PP that the person in charge of monitoring and electricity safety of this project attended “Course on Law regarding measurement” and “Course on Act on operation of electricity market” because it was stated in the registered PDD. The PP would like to correct the courses of electricity safety in the registered PDD because it was due to PP’s misunderstanding of the requirements of training for electricity safety manager under the Korean local law and regulation at validation period. Deloitte-TECO confirmed by performing the interview with the PP and reviewing the above relevant law and regulations that the frequency of taking the course and the course of electricity safety need to be applied to post-registration change for correction. Deloitte-TECO confirmed that the correction was properly demonstrated in the revised PDD and concluded that these corrections do not affect the monitoring level of the project activity. |     |    |
| 15 |  |  | <p>Monitoring plan data management elements below are consistent with the PDD</p> <ul style="list-style-type: none"> <li>· Data management/Data protection</li> <li>· Risks for data collection procedures, checking system for breakdown of meters (e.g., daily checking of three-phase alternating current)</li> <li>· PPA between PP and the grid company (import and export)</li> <li>· Measurement, recording, aggregation</li> <li>· Review</li> <li>· Approval</li> </ul> <hr/> <p>DOE confirmed that the document of the agreement of using electric equipment stated its contract power for distribution of electricity, issued on 1 October 2008.</p>  | CL  | OK |
| 16 | 233. The DOE shall determine whether the monitoring of parameters related to the GHG emissions reductions in the project activity has been implemented in accordance with the monitoring plan contained in the registered PDD36 or any accepted revised monitoring plan. | 234. The DOE shall determine whether:<br><br>(a) The monitoring plan has been properly implemented and followed by the project participants; | <ul style="list-style-type: none"> <li>- CDM monitoring manual is received, which was issued in July, 2010.</li> <li>- Monitoring structure needs to be modified and submitted again in accordance with the actual implementation.</li> </ul> <p>DOE team confirmed documentary evidence for operation stop, such as "equipment change report," "half year, one year, and two year anniversary maintenance report."</p> <ul style="list-style-type: none"> <li>- The number of overhaul will be modified to 2010 (one time), 2011 (two times), downtimes and exchange of equipment needs to be confirmed as well.</li> <li>- Details on downtimes and exchange of equipment needs to be added in the MR.</li> </ul> <hr/> <p>DOE confirmed that the MR was revised properly based on the provided documentary evidences.</p>   | CAR | OK |

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Project: 3 MW Shinan Wind power project

| 4. Compliance with the calibration frequency requirements for measuring instruments |   |  |  |     |    |
|---|---|--|--|-----|----|
| 17  | 237. The DOE shall determine whether the calibration of those measuring equipments that have an impact on the claimed emission reductions is conducted by the project participants at a frequency specified in the applied monitoring methodology and/or the monitoring plan. | 238. If, during verification of a certain monitoring period, the DOE identifies that the calibration has been delayed and the calibration has been implemented after the monitoring period in consideration (i.e. the results of delayed calibration are available), the DOE may conclude its verification, provided the following conservative approach is adopted in the calculation of emission reductions: | <div><div><div>· Installation date of monitoring equipment is confirmed with the meter registration</div><div>· Date of latest calibration: 04/11/2011 needs to be modified to 04/10/2011<br/>Validity period : 04/11/2011~03/11/2014 needs to be modified to 04/10/2011~03/10/2014, Page 10 in the PDD.</div><div>· Calibration entity's (Seo Change Electric Co., Ltd.) business license No. 503-81-23194 issued on 21 December 2007, is submitted and its content is confirmed.</div></div><div><div>Exported electricity meter</div><div>Type: SCE 8771                      Accuracy class: 0.5%</div><div>Serial No.: 51001390</div><div>Calibration entity: Seo chanag Electricity Communication Co., Ltd.</div><div>Calibration frequency: once in three years</div></div><div>DOE confirmed that the calibration was implemented on 26 November 2008 and 4 October 2011. Calibration frequency once in three years is in accordance with the monitoring plan in the registered PDD.</div></div> | CAR | OK |



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|    |  |  |  |     |    |
|----|--|--|--|-----|----|
| 18 |  |  | <p>· Installation date of monitoring equipment is confirmed with the meter registration document</p> <p>· Electricity meters are confirmed during on-site assessment</p> <p>- PP is requested to revise the accuracy of the meter for <math>EG_{import}</math> 0.5% (PDD) to 1.0% (actual implementation) in the PDD. Post-registration change has to be implemented.</p> <p>- In addition to that, the meter for <math>EG_{import}</math> which is owned and managed by the power grid, has not been calibrated since the initial calibration on 04 December 2008.</p> <p>- Regarding calibration frequency, local regulation states that calibration frequency is within seven years, which needs to be confirmed with EB whether this can be approved.</p> <p>Moreover, monitoring plan was stated "Meters shall be calibrated when they are installed, and recalibrated every three years after installation regularly" in the QA/QC procedures of PDD. In local regulation, Measures Act, para. 32, it is stated that regular test for the meter has to be implemented every second year.</p> <p>PP is requested to provide any documentary evidence of the regular test for meter, which is identified in the Measures Act.</p> <hr/> <p>Imported electricity meter<br/> Model No. L3RW34-10      Accuracy class: 1.0<br/> Serial No.: 0083693<br/> Calibration entity: Test by the grid.<br/> Calibration frequency: once in three years +6 months</p> <p>DOE confirmed that the calibration was implemented on 17 December 2008 and 1 December 2011. Calibration frequency once in three years is in accordance with the monitoring plan in the registered PDD. The tests were confirmed by the KEPCO website. However, the permanent changes from the registered monitoring plan need to be implemented for the import electricity meter accuracy, 0.5 in the PDD and 1.0 in the actual implementation. DOE confirmed import electricity is owned by the grid and it is not within the control of the PP.</p> | CAR | OK |
| 19 |  | (a) Applying the maximum permissible error <sup>38</sup> of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error, or | <p>DOE under review<br/> Refer ID. #18</p> <hr/> <p>It is not applicable to this monitoring period.</p>  | CL  | OK |

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### Project: 3 MW Shinan Wind power project

|    |  |   |  |    |     |
|----|--|---|--|----|-----|
| 20 |  | (b) Applying the error identified in the delayed calibration test, if the error is beyond the maximum permissible error of the measuring equipment.   | Refer ID.# 17 and 18<br>It is not applicable to this monitoring period.  | CL | OK  |
| 21 |  | 239. The DOE shall confirm that the error has been applied:<br><br>(a) In a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed emission reductions;   | Refer ID.# 18<br>Measured value of $EG_{import}$ will be added 0.05% of its original value because accuracy was changed from PDD, 0.5 to 1.0, and calibration has not been implemented.<br>DOE confirmed that the imported electricity meter was tested by the grid within every three years. Therefore, it is not applicable to this monitoring period. | CL | N/A |
| 22 |  | (b) For all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.   | Refer ID.# 22<br>DOE confirmed that the imported electricity meter was tested by the grid within every three years. Therefore, it is not applicable to this monitoring period.   | CL | N/A |
| 23 |  | 240. In cases where the results of the delayed calibration are not available, or the calibration has not been conducted at the time of verification, the DOE, prior to finalizing verification, shall request the project participants to conduct the required calibration and shall determine whether the project participants have calculated the emission reductions conservatively using the approach mentioned in paragraph 238 above. | Refer ID.# 18<br>DOE will decide if calibration for meter of $EG_{import}$ needs to be implemented.<br>DOE confirmed that the imported electricity meter was tested by the grid within every three years. Therefore, it is not applicable to this monitoring period.   | CL | N/A |
| 24 |  | 241. In cases where the DOE determines that it is not possible for the project participants to conduct the calibration at a frequency specified by either the applied methodology, guidance provided by the Board, and/or the registered monitoring plan due to reasons beyond the control of project participants, the DOE, shall follow the requirements for post registration changes in section of E of this Standard.                  | Refer ID # 18<br>PP is requested to provide a relevant documentary evidence, which demonstrated that calibration of $EG_{import}$ meter is not possible for PP in this project.<br>DOE confirmed that the imported electricity meter was tested by the grid within every three years. Therefore, it is not applicable to this monitoring period.         | CL | N/A |

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### Project: 3 MW Shinan Wind power project

|  |   |   |  |  |        |                |               |         |         |         |     |    |
|--|---|---|--|--|--------|----------------|---------------|---------|---------|---------|-----|----|
| 25   |   | 242. In cases where neither the monitoring methodology nor the monitoring plan specify any requirements for calibration frequency for measuring equipments, the DOE shall determine whether the equipments are calibrated either in accordance with the specifications of the local/national standards, or as per the manufacturer's specification. If neither local/national standards nor the manufacturer's specification are available, international standards may be used. Refer to appendix 1 for an illustrative example to apply the above requirements. |  | <p>It is not applicable to this monitoring period.</p> <hr/> <p>DOE confirmed that the imported electricity meter was tested by the grid within every three years. Therefore, it is not applicable to this monitoring period.</p>  | N/A    | N/A            |               |         |         |         |     |    |
| 5. Assessment of data and calculation of emission reductions |   |   |  |  |        |                |               |         |         |         |     |    |
| 26   | 244. The DOE shall assess the data and calculations of GHG emission reductions achieved by/resulting from the project activity by the application of the selected approved methodology. | 245. The DOE shall determine whether:<br><br>(a) A complete set of data for the specified monitoring period is available. If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the DOE shall either raise a CAR for the project participants to comply with the requirements of appendix 1 of the Project standard or submit a request for deviation prior to submitting the request for issuance, if appropriate;                                    |  | <p>Element factors below are confirmed<br/>EG invoices<br/>EG monitored values<br/>ER calculation spreadsheet<br/>KPEX website for electricity generation amount</p> <p>However, accuracy of EG<sub>import</sub> meter is not consistent with PDD; therefore, EG<sub>import</sub> needs to be recalculated.</p> <hr/> <p>DOE confirmed all electricity sales invoice (export and import) issued by KPX, monthly plant log book, and daily operation report. All electricity data in the monitoring period from the grid's website as well as daily, monthly data.</p> <table><tr><td>EG out</td><td>ER spreadsheet</td><td>Sales invoice</td></tr><tr><td>2011.10</td><td>541,071</td><td>541,348</td></tr></table> <p>Please check difference value between ER spreadsheet and sales invoice. Also, please provide KPX website screen capture for April 2010. (confirmed that of July 2012)</p> <p>DOE confirmed the metering accuracy and calibration frequency regulation in Korea and decided the EG<sub>import</sub> value in this monitoring period does not need to be revised. (2012.11.20)</p> <p>Imported electricity values need to be adjusted by applying 0.5% difference of meter accuracy between PDD and actual implementation.</p> <hr/> <p>DOE confirmed the value of October 2011 was corrected to 541,348.<br/>DOE confirmed the adjusted imported electricity values.</p> | EG out | ER spreadsheet | Sales invoice | 2011.10 | 541,071 | 541,348 | CAR | OK |
| EG out   | ER spreadsheet  | Sales invoice   |  |  |        |                |               |         |         |         |     |    |
| 2011.10  | 541,071   | 541,348   |  |  |        |                |               |         |         |         |     |    |

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### Project: 3 MW Shinan Wind power project

|        |   |  |  |     |                |               |        |        |         |     |    |
|--------|---|--|--|-----|----------------|---------------|--------|--------|---------|-----|----|
| 27     |   | (b) Information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records, laboratory analysis;  | <p>All necessary data for ER calculation are available.<br/>EG invoices<br/>EG monitored values<br/>ER calculation spreadsheet<br/>KPEX website for Electricity generation amount</p> <p>As comparing between ER spreadsheet and electricity sales invoice, there are some incorrect values.<br/>EG out</p> <table><tr><td></td><td>ER spreadsheet</td><td>Sales invoice</td></tr><tr><td>2010.4</td><td>229.08</td><td>588.763</td></tr></table> <p>Please revise those values or further explain about the difference.<br/>For EG import, please refer ID. #26</p> <hr/> <p>DOE confirmed the KPX website and the revised ER spreadsheet .</p> |     | ER spreadsheet | Sales invoice | 2010.4 | 229.08 | 588.763 | CAR | OK |
|        | ER spreadsheet  | Sales invoice  |  |     |                |               |        |        |         |     |    |
| 2010.4 | 229.08  | 588.763  |  |     |                |               |        |        |         |     |    |
| 28     |   | (c) Calculations of baseline emissions, and project activity emissions and leakage, as appropriate, have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document;   | Emission Reduction calculation is in accordance with applied methodology in the registered PDD.  | OK  | OK             |               |        |        |         |     |    |
| 29     |   | (d) Any assumptions used in emission calculations have been justified;   | It is not applicable to this monitoring period.  | N/A | N/A            |               |        |        |         |     |    |
| 30     |   | (e) Appropriate emission factors,40 IPCC default values and other reference values have been correctly applied.  | It is not applicable to this monitoring period.  | N/A | N/A            |               |        |        |         |     |    |
|        | <b>E. Post registration changes</b><br><b>1. Temporary deviations from the registered monitoring plan and/or monitoring methodology</b> |  |  |     |                |               |        |        |         |     |    |
| 31     | 251. The DOE shall determine whether there are deviations from the registered monitoring plan and/or methodology.                       | 252. If the DOE identifies that the project participants have deviated from the registered monitoring plan and/or methodology, and where the provisions of appendix 1 of the Project standard do not apply, the DOE shall seek prior approval from the Board with respect to the acceptability of the deviations in accordance with the Project cycle procedure. | It is not applicable to this monitoring period.  | N/A | N/A            |               |        |        |         |     |    |

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### Project: 3 MW Shinan Wind power project

|  |  |  |  |   |     |     |
|--|--|--|--|---|-----|-----|
| 32   |  | 253. The DOE shall determine whether the deviation is likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the deviation will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the deviation. |  | It is not applicable to this monitoring period.   | N/A | N/A |
| 33   |  | 254. For cases where a deviation from the monitoring plan may be applicable to the monitoring period under verification, and part of the subsequent monitoring period, the DOE shall verify the exact period to which the deviation applies.   |  | It is not applicable to this monitoring period.   | N/A | N/A |
| 2. Corrections   |  |  |  |   |     |     |
| 34   | 257. The DOE shall verify that any corrections to project information or parameters fixed at validation, as described in the registered PDD, made by project participants in a revised PDD comply with the requirements of the Project standard. | 258. If the DOE identifies that the project participants have made corrections to project information or parameters determined at validation, the DOE shall determine whether:<br><br>(a) The corrected information is an accurate reflection of actual project information; and/or  |  | - Output power of the generator is falsely recorded in the PDD (1100MW -> 1000MW)<br>- Specification of the generator needs to be confirmed with Hyundai Heavy Industries Refer ID. # 2<br>- Refer ID. #14a, regarding CDM training course.<br><br>DOE confirmed the revised PDD and MR | CL  | OK  |
| 35   |  | (b) The corrected parameters are in accordance with the applied methodology and/or selected monitoring plan.   |  | Refer ID #2, 14a and 18,  | CL  | OK  |
| 3. Changes to the start date of the crediting period                               |  |  |  |   |     |     |
| 36   | 260. If the project participants wish to change the start date of the crediting period in accordance with section H of the Project standard, the DOE shall determine whether the proposed changes result in a less conservative baseline.        |  |  | It is not applicable to this monitoring period.   | N/A | N/A |
| 4. Permanent changes from the registered monitoring plan or monitoring methodology |  |  |  |   |     |     |

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### Project: 3 MW Shinan Wind power project

|    |   |  |  |     |     |
|----|---|--|--|-----|-----|
| 37 | 262. The DOE shall verify whether there are permanent changes from the registered monitoring plan and/or methodology. | 263. The DOE shall determine whether the changes to the monitoring plan contained in the registered PDD proposed by the project participants are in compliance with the applied methodology and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.  | DOE confirmed that the accuracy of imported meter is 1.0, which is not in accordance with the monitoring plan in the registered PDD. In the PDD, all meters would be installed with accuracy of 0.5. Because the meter was installed and operated during the validation stage, post-registration of Permanent changes from the registered monitoring plan or monitoring methodology needs to be implemented. | CL  | OK  |
| 38 |   | 264. In cases where the proposed changes refer to a later version of the applied methodology in the registered PDD, the DOE shall determine whether the application of any later version of the applied methodology and tools does not impact the conservativeness of the monitoring and verification process, including the related emission reduction calculations.  | It is not applicable to this monitoring period.  | N/A | N/A |
| 39 |   | 265. If the DOE identifies that the project participants are unable to implement the monitoring plan contained in the registered PDD and it will not be possible to monitor the registered CDM project activity in accordance with a monitoring plan that would comply with the applied methodology and any applicable tools or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the permanent changes in accordance with the section on post registration changes in the Project cycle procedure. | It is not applicable to this monitoring period.  | N/A | N/A |

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|   |   |  |  |  |     |     |
|---|---|--|--|--|-----|-----|
| 40  |   | 266. The DOE shall determine whether the permanent changes are likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the permanent changes will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the permanent change. |  | It is not applicable to this monitoring period.                          | N/A | N/A |
| 5. Changes to the project design of a registered project activity |   |  |  |  |     |     |
| 41  | 269. The DOE shall determine whether there are proposed or actual changes to the project design of a registered CDM project activity. | 270. If the DOE identifies that the project design in the implementation or operation of the project activity does not conform with the description contained in the registered PDD or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the proposed or actual changes in accordance with the section on post registration changes in the Project cycle procedure.   |  | Refer ID. #2<br>-----<br>It is not applicable to this monitoring period. | CL  | N/A |
| 42  |   | 271. In case of actual changes, the DOE shall, by means of an on-site visit and review of the submitted revised PDD by the project participants, which describes the nature and extent of the actual changes, determine whether this description accurately reflects the implementation, operation and monitoring of the modified project activity.  |  | It is not applicable to this monitoring period.                          | N/A | N/A |
| 43  |   | 272. The DOE shall conduct an on-site inspection to assess the impacts of the actual changes on the compliance of the monitoring plan, the applied monitoring methodology and tools and/or the level of accuracy of the monitoring activity.   |  | It is not applicable to this monitoring period.                          | N/A | N/A |

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|    |  |   |  |   |     |     |
|----|--|---|--|---|-----|-----|
| 44 |  | 273. The DOE shall, by means of reviewing the revised PDD against applicable additionality and methodological requirements, determine whether the proposed or actual changes would adversely affect the conclusions of the validation report of the registered PDD with regard to:<br>(a) Additionality of the project activity;<br>(b) Scale of the project activity;<br>(c) Applicability and application of approved baseline methodology under which the project activity has been registered; or<br>(d) The compliance of the monitoring plan with the applied monitoring methodology. |  | It is not applicable to this monitoring period. | N/A | N/A |
| 45 |  | 274. If the proposed or actual changes affect the additionality of the project activity then the DOE shall confirm that:<br>(a) In the case of investment analysis, project participants have only modified the key parameters in the original spreadsheet calculations affected by the proposed or actual changes to the project activity;<br>(b) In the case where only barriers have been claimed to demonstrate additionality, project participants have demonstrated that the barriers are still valid under the new circumstances.  |  | It is not applicable to this monitoring period. | N/A | N/A |
| 46 |  | 275. In cases where the proposed or actual changes impact the implementation of the project activity and where the original methodology would no longer be applicable, and where the project participant applies a later version of the methodology or another methodology that is applicable to the project activity, the DOE shall confirm that the applied methodology and tools do not impact the conservativeness of the monitoring and verification process and the related emission reduction calculations.  |  | It is not applicable to this monitoring period. | N/A | N/A |



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|    |  |   |  |   |     |     |
|----|--|---|--|---|-----|-----|
| 47 |  | 276. The DOE shall assess whether the revised PDD complies with the applied monitoring methodology and tools or any later version of the methodology or the requirements of another methodology that is applicable to the project activity. |  | It is not applicable to this monitoring period. | N/A | N/A |
|----|--|---|--|---|-----|-----|