



**Monitoring report form
(Version 05.1)**

MONITORING REPORT

| | | |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Title of the project activity | Baragran Hydro Electric Project, 3.0 MW (being expanded to 4.9 MW) | |
| UNFCCC reference number of the project activity | 1253 | |
| Version number of the monitoring report | 01 | |
| Completion date of the monitoring report | 16/11/2016 | |
| Monitoring period number and duration of this monitoring period | Crediting period number: 02 Period: 29/10/2015 – 28/10/2022 Monitoring period number: 01 Period: 29/10/2015 – 31/10/2016 (both dates are included) | |
| Project participant(s) | — KKK Hydro Power Limited — Bunge Emissions Fund Limited | |
| Host Party | India | |
| Sectoral scope(s) | 01, Energy Industries (renewable/non-renewable sources) | |
| Selected methodology(ies) | AMS-I.D. - Grid connected renewable electricity generation, version 18; | |
| Selected standardized baseline(s) | Not Applicable. | |
| Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD | 26,199 ¹ tCO ₂ e | |
| Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period | GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012 | GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards |
| | 0 | 24,144 tCO ₂ e |

¹ The current monitoring period is from 29/10/2015 to 31/10/2016 (i.e. 369 days) hence estimated amount of GHG emission reduction for the current monitoring period in the registered PDD has been extrapolated for 369 days i.e. = (25967 tCO₂e/365 days) x 369 days = 26,199 tCO₂e. Detailed calculation has been provided in work sheet "Annual Avg ERReg,PDD" of ER sheet.

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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Purpose of the project activity and the measures taken to reduce greenhouse gas emissions:

The purpose of the registered project activity is to generate electricity by using the renewable hydraulic resources to meet the ever-increasing demand for energy in the northern region. The development of registered project activity has resulted into reduction of Green House Gas (GHG) emissions produced by the northern regional grid of India, which is mainly dominated by fossil fuel based power plants.

Brief description of the installed technology and equipment:

The Technology used for generation of Power in the Baragran Hydro-Power Project is Horizontal Francis Turbine (1500 KW) x 2 Nos and (1900 KW) x 1 No = Total 3 Nos turbines with 4.9 MW. These turbines have been selected based on available head at site and are ideally suited for such project. In the view of better efficiency of the Francis turbine at higher load conditions as compared to pelton turbine and discharge availability, Francis turbine is selected. The Baragran HEP has installed capacity of 4.9 MW.

The technical specifications of equipments are :

Turbine Type : Horizontal Francis Turbine with a directly coupled generator.

No. and Capacity: 2 x 1500 KW & 1 x 1900 KW

Rated Speed : 1000 rpm

Design Head : 170m

Type of Generator: A.C. Synchronous

Relevant dates for the project activity:

KKK Hydro Power Limited was incorporated on 22/07/1999 as Special Purpose vehicle after the allotment and techno economic clearance from Himachal Pradesh Government. Financial closure was achieved on 15/12/2001 and the construction was started in 2001. The registered project activity was commissioned in two phases 3.0 MW commissioned on 05/08/2004 whereas 1.9 MW commissioned on 14/07/2008². The project activity has been registered with UNFCCC on 29/10/2008 with renewable crediting period. The duration of the second crediting period is from 29/10/2015 to 28/10/2022, which is the current period. The duration of the monitoring period considered under this monitoring report is 29/10/2015 to 31/10/2016., which is the first monitoring period of second crediting period for the project.

Total emission reductions achieved in this monitoring period:

During the current monitoring period, the project has achieved emissions reduction of 24,144 tCO₂e

² Commissioning certificate is being submitted to DOE. Also, the project activity is in continuous operation since the commissioning.

A.2. Location of project activity

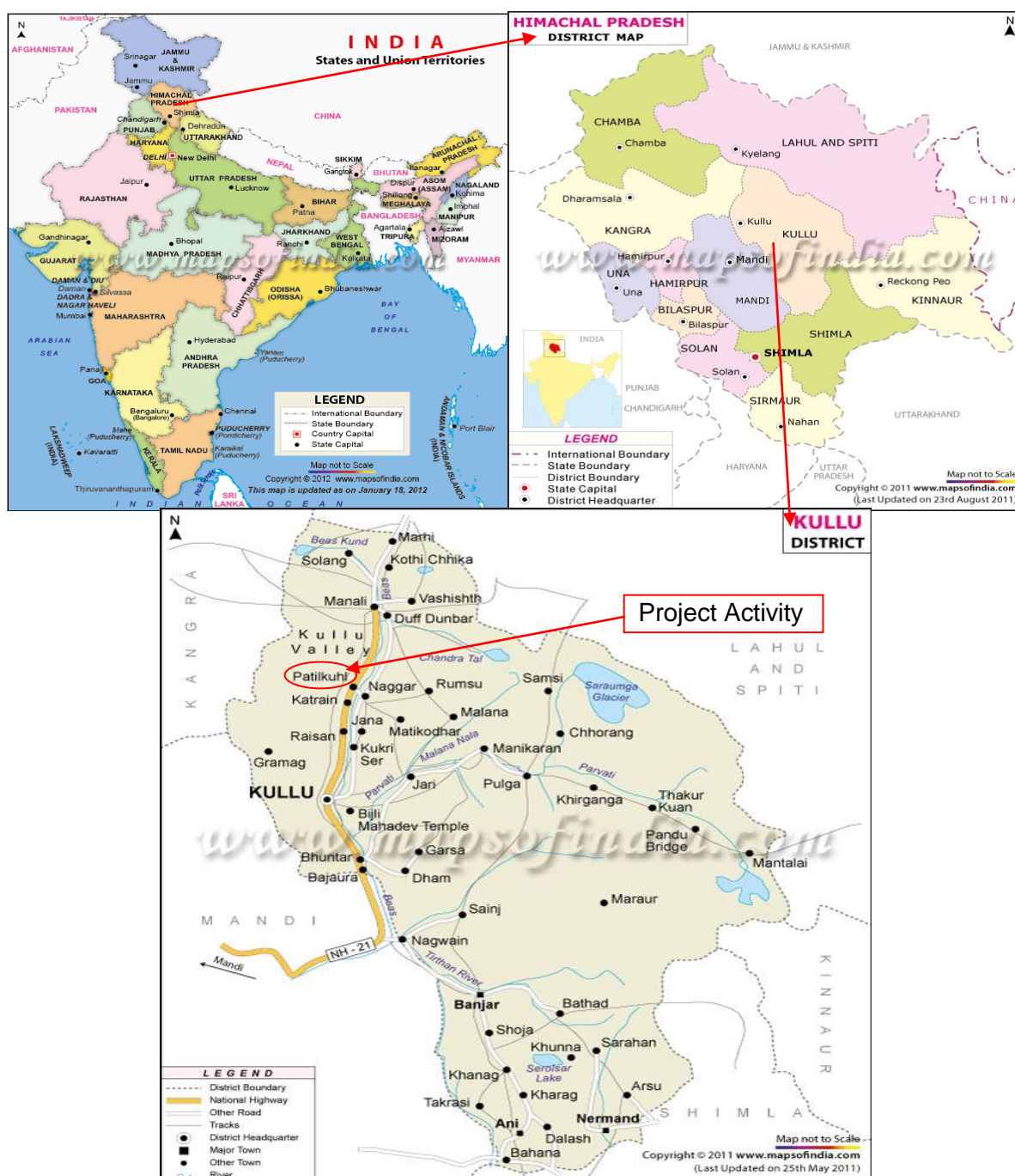
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The project activity is located as follows:

Host Part(ies) : India
 State : Himachal Pradesh
 District : Kullu
 Village : Patlikuhal

The project is located on Sanjoin nala, a tributary of Beas River near village Patlikuhal in Kullu District, Himachal Pradesh, India. The project lies between Latitudes $31^{\circ}07'01''$ N to $31^{\circ}13'02''$ N and Longitudes $77^{\circ}04'01''$ E to $77^{\circ}10'02''$ E.

The location of project activity is shown in following figures:



A.3. Parties and project participant(s)

| Party involved ((host) indicates a host Party) | Private and/or public entity(ies) project participants (as applicable) | Indicate whether the Party involved wishes to be considered as project participant (yes/no) |
|------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| India (host) | KKK Hydro Power Limited (Private Entity) | No |
| Switzerland | Bunge Emissions Fund Limited (Private Entity) | No |

A.4. Reference of applied methodology and standardized baseline

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Title of approved baseline and monitoring methodology:

Renewable electricity generation for a grid in accordance with approved small scale methodology AMS I.D.

Type I : Renewable energy project

Sectoral Scope: 01, Energy Industries

Category I.D : Grid connected renewable electricity generation, version 18³.

Reference : Reference has been taken from the list of the small-scale CDM project activity categories contained in Appendix B of the simplified M&P for small-scale CDM project activities.

Tool reference: "Tool to calculate the emission factor for an electricity system".

Standardized baseline:

Not applicable.

A.5. Crediting period of project activity

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Crediting Period : Renewable crediting period (3*7 years).

Start date of the 2nd Crediting Period : 29/10/2015

End date of the 2nd Crediting Period : 28/10/2022

Duration of the Current Monitoring Period : 29/10/2015 –31/10/2016

A.6. Contact information of responsible persons/entities

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M/s KKK Hydro Power Limited

(Contact details are provided in Appendix 1)

³ <http://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X/view.html>

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The registered project activity became operational in two phases 3.0 MW became operational from 05/08/2004. The additional 1.9 MW became operational on 14/07/2008. Before the start date of crediting period, the registered project activity became completely operational.

During current monitoring period, actual operations were normal i.e. no breakdown of operational activity. However, there were events when plant was shut down due to non-availability of water and also there are some planned/forced shut down due to maintenance (civil or mechanical or electrical work or Grid failed / HPSEB). The details were provided in Annex 1 & 2 of monitoring report.

No such events or situations occurred during the monitoring period which might have impacted the applicability of methodology. There are no issues needs to be addressed.

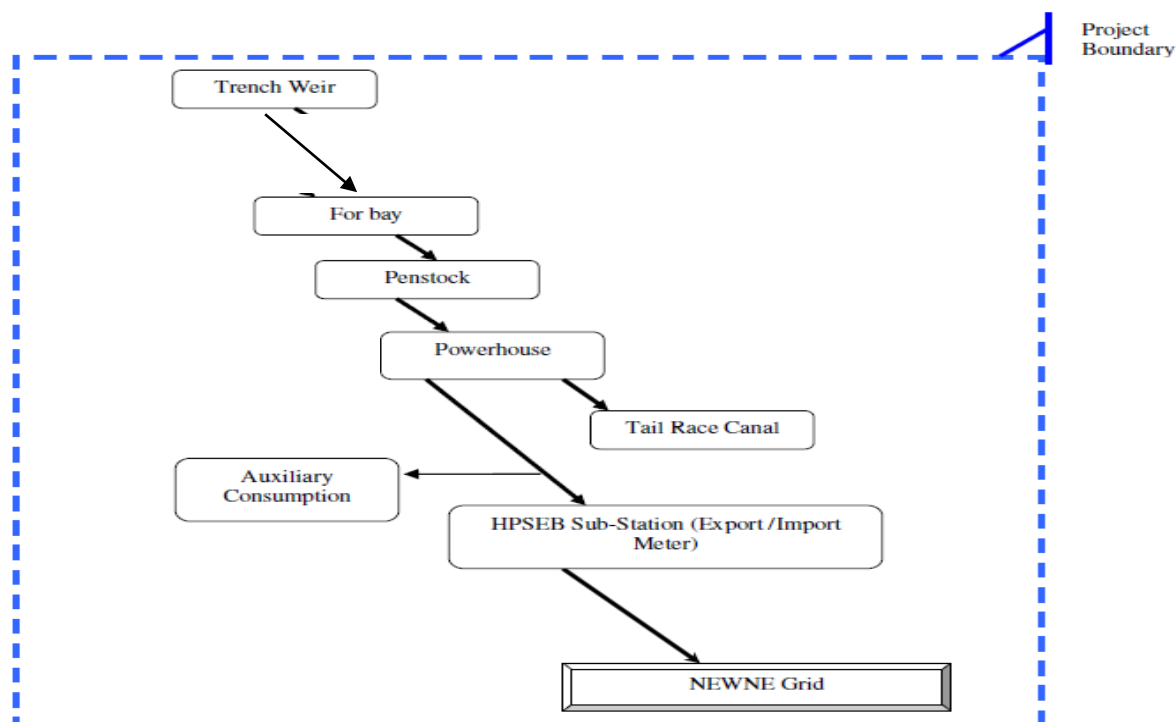
The project was registered with UNFCCC on 29/10/2008 with renewal crediting period .

For the project activity, the project boundary is from the point of water tapping to the point of electricity supply to the grid interconnection point. Thus the project boundary is as follows:

- ✓ Trench weir
- ✓ Fore bay
- ✓ Penstock
- ✓ Powerhouse
- ✓ Tail race canal
- ✓ Transmission line to grid connection
- ✓ Grid interface

The North Eastern (NEWNE) regional grid is included in the project boundary.

Schematic Diagram of the Project Activity:



B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

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Not Applicable.

B.2.2. Corrections

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Not Applicable.

B.2.3. Changes to start date of crediting period

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Not Applicable.

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

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Not Applicable.

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

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Not applicable.

B.2.6. Changes to project design of registered project activity

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Not applicable.

B.2.7. Types of changes specific to afforestation or reforestation project activity

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Not Applicable.

SECTION C. Description of monitoring system

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Monitoring activities according to the registered monitoring plan for the monitoring period:

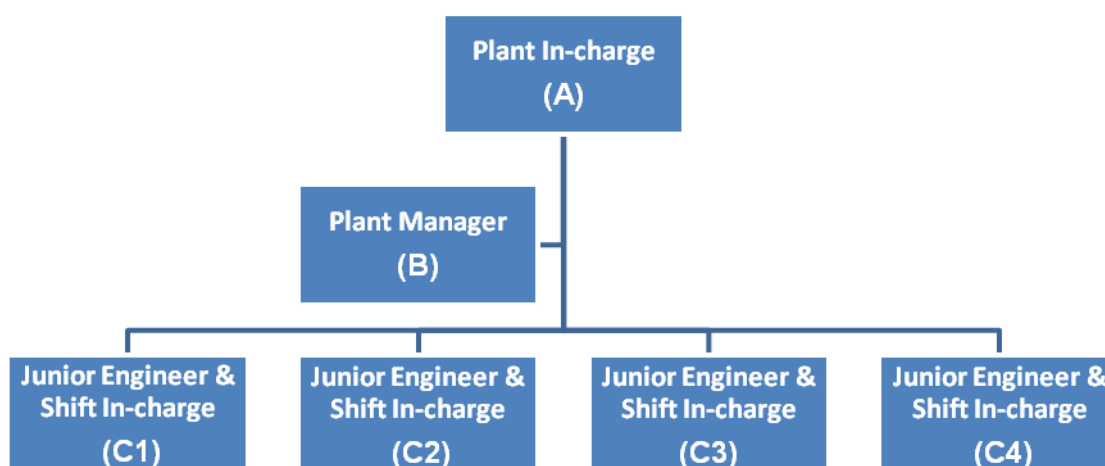
The parameters to be monitored as per the monitoring plan:

Total electrical energy exported by the project activity EG_{export} : The power exported by the registered project activity has been measured to the best accuracy at the Naggur Substation of Himachal Pradesh State Electricity Board.

Total electrical energy imported by the project activity E_{import} : The power imported by the registered project activity has been recorded at interconnection point and has been adjusted against the net saleable energy in corresponding month's bill.

Net electrical energy exported by the project activity EG_y : Net electrical energy has been calculated to the best accuracy at the Naggur Substation of Himachal Pradesh State Electricity Board.

Organizational structure, roles and responsibilities of personnel:



A = Plant In-charge - Responsible for the overall project activities

B = Plant Manager - Responsible for the administration and for the management of the Plant

C1, C2, C3, C4 = Four Junior Engineers were working as the Shift in-charge and were responsible to take corrective action for technical faults occurring in the Plant, if any.

1. The generated electricity from the project has been sold to the state electricity utility (HPSEB) during the monitoring period under Power purchase agreement (PPA) with the state power utility. Thus throughout the current monitoring period the electricity generated from the project activity has been monitored by both the project participant and a third party i.e. HPSEB.
2. The generated electricity, before entering into the grid, at the grid interconnection point has been measured by digital, sealed kilowatt hour (kwh) energy meter on continuously monitoring, hourly measurement and monthly recording basis. The hourly, daily and monthly log sheets of generated electricity are maintained in hard copies as well as in soft also at plant site. The generation records have been signed by the officials of project

participant and third party (HPSEB). These generation records have been documented and would be made available on demand throughout the crediting period of the project.

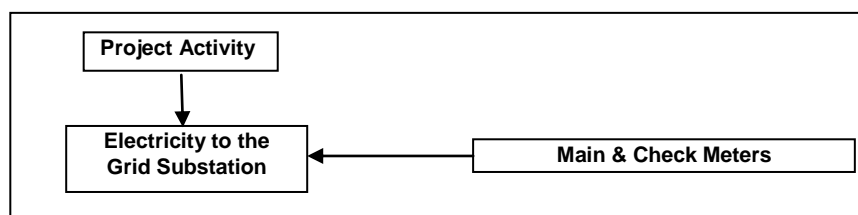
3. The project participant has appointed a full time project in-charge to manage the overall project activities during current monitoring period. The project in-charge is stationed at the project site and was responsible for monitoring the generation of electricity and maintaining statutory minimum discharge between the diversion weir and tailrace of the stream. To ensure that the micro ecosystem of the stream is not disturbed due to the candidate CDM project, the discharge in the stream was measured on fortnightly basis during the lean season of the stream i.e. the months of January, February and March. This data has also been preserved and would be available throughout the crediting period of the project.
4. For duration other than lean season, random measurement of the discharge between diversion weir and tailrace were carried out.
5. The Plant manager was qualified diploma / degree engineer with 5 - 7 year experience in power industry. All the shift in-charges were diploma / degree holders and have undergone related training including data monitoring and report generation, etc at the time of their joining.

Emergency procedures for the monitoring system:

If the data recorded by main or check meter or both is found to be outside permissible limits at the time of taking meter reading, both the energy meters (main and check) would be replaced with calibrated energy meters and fault meters would be sent for testing and re-calibration. If both main and check meters are found to be beyond the permissible limits of error, the energy recorded by main meter for previous billing month and up to date of removal of such meter in current month shall be corrected by applying appropriate correction factor. If on testing, error in main meter is within accuracy limit and check meter is beyond accuracy limit, the main meter reading shall be used for billing as well as emission reduction calculation and check meter would be recalibrated. However, if check meter is found to be within accuracy limit and error in main meter is beyond accuracy limit, then check meter reading would be used for billing as well as emission reduction calculation purposes for previous billing month and till the time main meter is calibrated.

No such emergency procedures were required during current monitoring period. No elaboration needed as this refers to emergency procedures only.

Line diagram showing monitoring points:



The below mentioned table of Monitoring Equipment List reflect the usage periodicity of the meters as Main and Check Meter.

Table: Monitoring Equipment List

| S. No | Energy Meter Details | Date of Calibration | Date of Installation | Usage Period under Current Monitoring Period | Main/Check Meter |
|-------|------------------------------------------------------------------------------------|---------------------|----------------------|-------------------------------------------------------|------------------|
| 1. | Sr. No: 11070283 Type: ER300P Accuracy Class: 0.2s Calibration Frequency: | 21/05/2015 | 20/07/2015 | 20/07/2015 [#] to continue beyond 28/10/2015 | Main |
| | | 29/06/2016 | 22/07/2016 | 22/07/2016 [#] to continue beyond | Check |

| | | | | | |
|----|------------------------------------------------------------------------------------------------|------------|------------|-------------------------------------------------------------|-------|
| | Annually | | | 31/10/2016 | |
| 3. | Sr. No: 04252746 Type: ER300P Accuracy Class: 0.2s Calibration Frequency: Annually | 23/12/2015 | 12/01/2016 | 12/01/2016 [#] to 22/07/2015 [#] | Main |
| 4. | Sr. No: 04252750 Type: ER300P Accuracy Class: 0.2s Calibration Frequency: Annually | 23/12/2015 | 12/01/2016 | 12/01/2016 [#] to 22/07/2015 [#] | Check |
| 5 | Sr. No: 12092928 Type: ER300P Accuracy Class: 0.2s Calibration Frequency: Annually | 21/05/2015 | 20/07/2015 | 20/07/2015 [#] to continue beyond 28/10/2015 | Check |
| | | 29/06/2016 | 22/07/2016 | 22/07/2016 [#] to continue beyond 31/10/2016 | Main |

Note for #: New set of meters (main & check) were replaced with old set of meters during the day, therefore for part of the day old set of meters were used in monitoring whereas for the remaining period of the day, new set of meters were used. Hence, the day of change of meters has been mentioned with both set of meters.

All the energy meters are identical in quality parameters and of same make.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

| | |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter: | EF _y |
| Unit | tCO ₂ /MWh |
| Description | Combined Margin CO ₂ emission factor of the NEWNE regional grid |
| Source of data | CO ₂ Baseline Database for the Indian Power Sector Version 10.0, Dated 16 December 2014 (Combined Margin Emission Factor for Northern Regional Grid) published by Central Electric Authority (CEA), India |
| Value(s) applied) | 0.9586 |
| Choice of data or measurement methods and procedures | CEA has estimated the simple operating margin and build margin emission factor for the NEWNE regional grid. For calculating the CO ₂ emission factor as per combined margin method for the renewable power generation project activities in the first and subsequent crediting periods, the weights of 0.25 for operating margin and 0.75 for build margin have been considered as 'Tool to calculate the emission factor for an electricity system' (Version 04) |
| Purpose of data | Calculation of baseline emission. |
| Additional comments | The emission factor has been fixed for the second crediting period. |

D.2. Data and parameters monitored

| | |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter: | E_{export} |
| Unit | KWh |
| Description | Total electrical energy exported by the project activity |
| Measured/calculated/default | Measured |
| Source of data | Plant Records (Power Export Bills/Joint Meter Reading Report) |
| Value(s) of monitored parameter | 25,190,712.000 (monthly values are available in Annex-3 to the monitoring report) |
| Monitoring equipment | Details of monitoring equipment provided in Table "Monitoring Equipment List" discussed under section C. |
| Measuring/reading/recording frequency: | <p>Monthly joint meter readings of main and check meters installed at interconnection point have been taken and signed by authorized officials of KKKHPL and HPSEB at 9:00 hrs on the first day of every month. During current monitoring period, this reading is measured on the basis of Main Meter installed at Interconnection point. Records of this joint meter reading at interconnection are maintained by KKKHPL. KKKHPL is archiving and preserving all monthly bills raised against net saleable energy. The same would be preserved for at least two years after end of the crediting period.</p> <p>Measuring /Reading Frequency – Continuously monitoring and hourly measurement Recording Frequency – Monthly Recording</p> <p>The hourly, daily & monthly log sheets are maintained in hard copies as well as in soft.</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | The main and check meter have been regularly test checked for accuracy. The main and check meter installed at the interconnection point have one year validity. The main and check meters are installed at the interconnection point in presence of both the parties namely, KKKHPL & HPSEB. These meters are calibrated at the National Accreditation Board for Testing & Calibration Laboratories (NABL) accredited laboratory e.g. RTL Jalandhar. |
| Purpose of data: | Calculation of baseline emission |
| Additional comments: | No Comment |

| | |
|---------------------------------|---------------------------------------------------------------------------------|
| Data/parameter: | E_{import} |
| Unit | KWh |
| Description | Total electrical energy imported by the project activity |
| Measured/calculated/default | Measured |
| Source of data | Plant Records (Power Export Bills/Joint Meter Reading Report) |
| Value(s) of monitored parameter | 2,991.833 (monthly values are available in Annex-3 to the monitoring report) |

| | |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring equipment | Details of monitoring equipment provided in Table “Monitoring Equipment List” discussed under section C. |
| Measuring/reading/recording frequency: | <p>Monthly joint meter readings of main and check meters installed at interconnection point have been taken and signed by authorized officials of KKKHPL and HPSEB at 9:00 hrs on the first day of every month. During current monitoring period, this reading is measured on the basis of Main Meter installed at Interconnection point. Records of this joint meter reading at interconnection are maintained by KKKHPL. KKKHPL is archiving and preserving all monthly bills raised against net saleable energy. The same would be preserved for at least two years after end of the crediting period.</p> <p>Measuring /Reading Frequency – Continuously monitoring and hourly measurement</p> <p>Recording Frequency – Monthly Recording</p> <p>The hourly, daily & monthly log sheets are maintained in hard copies as well as in soft.</p> |
| Calculation method (if applicable): | Not Applicable |
| QA/QC procedures: | The main and check meter have been regularly test checked for accuracy. The main and check meter installed at the interconnection point have one year validity. The main and check meters are installed at the interconnection point in presence of both the parties namely, KKKHPL & HPSEB. These meters are calibrated at the National Accreditation Board for Testing & Calibration Laboratories (NABL) accredited laboratory e.g. RTL Jalandhar. |
| Purpose of data: | Calculation of baseline emission |
| Additional comments: | No Comment |

| | |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data/parameter: | EG _v |
| Unit | KWh |
| Description | Net electrical energy exported by the project activity |
| Measured/calculated/default | Calculated |
| Source of data | Plant Records (Power Export Bills/Joint Meter Reading Report) |
| Value(s) of monitored parameter | 25,187,720.167 (monthly values are available in Annex-3 to the monitoring report) |
| Monitoring equipment | Not Applicable (as the data has been calculated by Himachal Pradesh State Electricity Board (HPSEB)) |
| Measuring/reading/recording frequency: | <p>This is a calculated parameter based on measured value of EG_{export} and E_{import}.</p> <p>Recording Frequency – Monthly Recording</p> <p>The monthly log sheets are maintained in hard copies as well as in soft.</p> |
| Calculation method (if applicable): | This parameter is calculated by the difference of EG _{export} and E _{import} |
| QA/QC procedures: | Records of monthly electricity sales bills can be used to cross check net power exported to HPSEB grid. |
| Purpose of data: | Calculation of baseline emission |
| Additional comments: | No Comment |

D.3. Implementation of sampling plan

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Not applicable.

SECTION E. Calculation of emission reductions or GHG removals by sinks**E.1. Calculation of baseline emissions or baseline net GHG removals by sinks**

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The baseline emissions are the product of electrical energy baseline EG_y expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor. Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors.

$$BE_y = EF_y * EG_y$$

Where:

BE_y = are the baseline emission due to displacement of electricity during the year y in tonnes of CO_{2e}

EF_y = is the net quantity of electricity generated by the project activity during the year y in MWh, and

EG_y = is the CO_2 baseline emission factor for the electricity displaced due to the project activity in tones CO_2 /MWh.

As per the registered PDD, combined margin emission factor is 0.8 tCO_2 /MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows.

$BE_y = EF_y * EG_y = 0.9586 * (25,187,720.167 /1000) = 24,144 tCO_{2e}$ (Rounded down conservatively)

E.2. Calculation of project emissions or actual net GHG removals by sinks

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The registered project activity is a run-of-river hydroelectric project. There are no anthropogenic emissions by sources of GHGs in the project boundary as a result of the project activity.

E.3. Calculation of leakage

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There are no anthropogenic emissions identified by sources outside the project boundary. Further, the project participant confirms that the equipments used by the project activity are not transferred from another project. Hence, there is no leakage calculation required for the project activity.

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

| Item | Baseline emissions or baseline net GHG removals by sinks (t CO_{2e}) | Project emissions or actual net GHG removals by sinks (t CO_{2e}) | Leakage (t CO_{2e}) | GHG emission reductions or net GHG removals by sinks (t CO_{2e}) achieved in the monitoring period | | |
|--------------|-------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------|-----------------|--------------|
| | | | | Up to 31/12/2012 | From 01/01/2013 | Total amount |
| Total | 24,144 | 0 | 0 | 0 | 24,144 | 24,144 |

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

| Item | Values estimated in ex ante calculation of registered PDD | Actual values achieved during this monitoring period |
|--------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|
| Emission reductions or GHG removals by sinks (t CO ₂ e) | 26,199 ⁴ | 24,144 |

E.6. Remarks on difference from estimated value in registered PDD

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The actually achieved emission reduction in the current monitoring period is 24,144 tCO₂e; while the estimated annual emission reduction as per the approved PDD is 26,199 tCO₂e (as extrapolated for 369 days). Thus, the actual emission reduction is 7.84 % lesser than the estimated value which is due to variation of water availability in "Sanjoin nala" (where the project activity is installed). The water availability in "Sanjoin nala" is get affected by rainfall or monsoon season, hence, this factor is beyond the control of the PP. In the Year 2016, was not good monsoon year, thus resulting into lesser actual generation as comparative to approved PDD.

⁴ The current monitoring period is from 29/10/2015 to 31/10/2016 (i.e. 369 days) hence estimated amount of GHG emission reduction for the current monitoring period in the registered PDD has been extrapolated for 369 days i.e. = (25,967 tCO₂e/365 days) x 369 days = 26,199 tCO₂e. Detailed calculation has been provided in work sheet "Annual Avg ERReg,PDD" of ER sheet.

Appendix 1. Contact information of project participants and responsible persons/entities

| | |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project participant and/or responsible person/ entity | <input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity |
| Organization name | KKK Hydro Power Limited |
| Street/P.O. Box | DLF Industrial Area, Phase-I |
| Building | I-41 |
| City | Faridabad |
| State/Region | Haryana |
| Postcode | 121 003 |
| Country | India |
| Telephone | 0129-2257552-53, 2270235 |
| Fax | 0129-2270212 |
| E-mail | kkkhpl@kkkhydropower.com |
| Website | www.kkkhydropower.com |
| Contact person | - |
| Title | Director |
| Salutation | Mr. |
| Last name | Kohli |
| Middle name | Kumar |
| First name | Pawan |
| Department | - |
| Mobile | - |
| Direct fax | 0129-2270212 |
| Direct tel. | 0129-2257552-53, 2270235 |
| Personal e-mail | kkkhpl@kkkhydropower.com |

Annex 1

Details of the Operational Hours of the Reported Period

Machine-1 (1.5 MW)

| S. No. | Description | 29.10.2015 TO 31.10.2016 (Figures in Hours) |
|--------|--------------------------------------------|------------------------------------------------|
| 1 | Total No. of Hours | 8856 |
| 2 | Shut Down due to Non Availability of Water | 3616.31 |
| 3 | Forced Shut Down Hours | 87.01 |
| 4 | Planned Shut Down Hours | 179.77 |
| 5 | Total Shut Down Hours | 3,883.09 |
| | Total Operational Hours | 4,972.91 |

Machine-2 (1.5 MW)

| S. No. | Description | 29.10.2015 TO 31.10.2016 (Figures in Hours) |
|--------|--------------------------------------------|------------------------------------------------|
| 1 | Total No. of Hours | 8856 |
| 2 | Shut Down due to Non Availability of Water | 2756.04 |
| 3 | Forced Shut Down Hours | 114.22 |
| 4 | Planned Shut Down Hours | 36.95 |
| 5 | Total Shut Down Hours | 2,907.21 |
| | Total Operational Hours | 5,948.79 |

Machine-3 (1.9 MW)

| S. No. | Description | 29.10.2015 TO 31.10.2016 (Figures in Hours) |
|--------|--------------------------------------------|------------------------------------------------|
| 1 | Total No. of Hours | 8856 |
| 2 | Shut Down due to Non Availability of Water | 4459.12 |
| 3 | Forced Shut Down Hours | 102.44 |
| 4 | Planned Shut Down Hours | 86.96 |
| 5 | Total Shut Down Hours | 4,648.52 |
| | Total Operational Hours | 4,207.48 |

Annex -2

Plant Outage Details for the Reported Period

| S. No. | Months | Type of shut down, hrs | | | Reasons |
|--------|------------|---------------------------|--------|---------|-----------------------------------------------------------------------------------------------------------------------|
| | | Non availability of water | Forced | Planned | |
| 1 | Oct-15 | 145.72 | 0.33 | 0 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 2 | Nov-15 | 1435.73 | 9.2 | 0.12 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 3 | Dec-15 | 1490.44 | 9.03 | 4.32 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 4 | Jan-16 | 1492.63 | 2.69 | 146.88 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 5 | Feb-16 | 1388.52 | 8 | 4.64 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 6 | Mar-16 | 1065.64 | 37.13 | 9.65 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 7 | Apr-16 | 326.23 | 13.94 | 17.97 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 8 | May-16 | 176.79 | 97.67 | 9.14 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 9 | Jun-16 | 501.82 | 38.43 | 5.94 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 10 | Jul-16 | 610.14 | 22.74 | 24.93 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 11 | Aug-16 | 1.76 | 41.37 | 76.07 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 12 | Sep-16 | 714.33 | 12.21 | 0.87 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| 13 | Oct-16 | 1481.72 | 10.93 | 3.15 | Planned shut down due to Civil / Mechanical / Electrical work/Forced shut down due to Grid failed / HPSEB instruction |
| | Total Hrs. | 10831.47 | 303.67 | 303.68 | |

Annex -3

Details of Total electrical energy exported, total electrical energy imported and net electrical energy exported by the project activity during reported period

| MONTH | Total electrical energy exported by the project activity (EG _{export}) (kWh) | Total electrical energy imported by the project activity (E _{import}) (kwh) | Net electrical energy exported by the project activity (EG _{y = EG_{export} - E_{import}}) (kWh) |
|--------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Oct-15 | 138,212.000 | 21.000 | 138,191.000 |
| Nov-15 | 1,006,700.000 | 64.826 | 1,006,635.174 |
| Dec-15 | 858,600.000 | 239.780 | 858,360.220 |
| Jan-16 | 514,500.000 | 1,287.930 | 513,212.070 |
| Feb-16 | 734,900.000 | 105.736 | 734,794.264 |
| Mar-16 | 1,850,800.000 | 253.882 | 1,850,546.118 |
| Apr-16 | 3,206,600.000 | 62.117 | 3,206,537.883 |
| May-16 | 3,551,400.000 | 154.426 | 3,551,245.574 |
| Jun-16 | 2,821,200.000 | 170.777 | 2,821,029.223 |
| Jul-16 | 2,708,200.000 | 164.424 | 2,708,035.576 |
| Aug-16 | 4,057,600.000 | 305.952 | 4,057,294.048 |
| Sep-16 | 2,525,500.000 | 40.203 | 2,525,459.797 |
| Oct-16 | 1,216,500.000 | 120.780 | 1,216,379.220 |
| TOTAL | 21,448,712.000 | 2,830.850 | 21,445,881.150 |

Note: For Month OCT 2015

JMR is prepared 31 days i.e. 01/10/2015 to 31/10/2015 as per HPSEB guidelines, but monitoring period is start on 29/10/2015. Hence, the value of parameter (EG_{export}) for 3 days i.e. 29/10/2015 to 31/10/2015 is calculated as below.

| Period | Total electrical energy exported by the project activity (EG _{export}) (kWh) | Total electrical energy imported by the project activity (E _{import}) (kwh) |
|--------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 01/10/2015 to 31/10/2015 | 1428200 | 226.288 |
| 29/10/2015 to 31/10/2015 | 138212 | 21 |

Annex –4

Emission Reduction Calculation sheet for the reported period

| Monitored Period | Total electrical energy exported by the project activity (EG _{export}) | Total electrical energy imported by the project activity (E _{import}) | Net electrical energy exported by the project activity (EG _y = EG _{export} - E _{import}) | CO ₂ emission factor of the grid | Baseline Emissions | | Project Emissions | Leakage | Emission reductions due to project activity |
|------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------|--------------------|--------------------|--------------------|-------------------------------------------------------------------------|
| | | | | (EF _y) | (BE _y = EF _y x EG _y) | | (PE _y) | (L _y) | (ER _y = BE _y - PE _y - L _y) |
| | kWh | kWh | kWh | tCO ₂ e / MWh | Unit Conversion Factor (1MWh = 1000 kWh) | tCO ₂ e | tCO ₂ e | tCO ₂ e | tCO ₂ e |
| Oct-15 | 138,212.000 | 21.000 | 138,191.000 | 0.9586 | 0.001 | 132.47 | 0 | 0 | 132.47 |
| Nov-15 | 1,006,700.000 | 64.826 | 1,006,635.174 | 0.9586 | 0.001 | 964.96 | 0 | 0 | 964.96 |
| Dec-15 | 858,600.000 | 239.780 | 858,360.220 | 0.9586 | 0.001 | 822.82 | 0 | 0 | 822.82 |
| Jan-16 | 514,500.000 | 1,287.930 | 513,212.070 | 0.9586 | 0.001 | 491.97 | 0 | 0 | 491.97 |
| Feb-16 | 734,900.000 | 105.736 | 734,794.264 | 0.9586 | 0.001 | 704.37 | 0 | 0 | 704.37 |
| Mar-16 | 1,850,800.000 | 253.882 | 1,850,546.118 | 0.9586 | 0.001 | 1,773.93 | 0 | 0 | 1,773.93 |
| Apr-16 | 3,206,600.000 | 62.117 | 3,206,537.883 | 0.9586 | 0.001 | 3,073.79 | 0 | 0 | 3,073.79 |
| May-16 | 3,551,400.000 | 154.426 | 3,551,245.574 | 0.9586 | 0.001 | 3,404.22 | 0 | 0 | 3,404.22 |
| Jun-16 | 2,821,200.000 | 170.777 | 2,821,029.223 | 0.9586 | 0.001 | 2,704.24 | 0 | 0 | 2,704.24 |
| Jul-16 | 2,708,200.000 | 164.424 | 2,708,035.576 | 0.9586 | 0.001 | 2,595.92 | 0 | 0 | 2,595.92 |
| Aug-16 | 4,057,600.000 | 305.952 | 4,057,294.048 | 0.9586 | 0.001 | 3,889.32 | 0 | 0 | 3,889.32 |
| Sep-16 | 2,525,500.000 | 40.203 | 2,525,459.797 | 0.9586 | 0.001 | 2,420.91 | 0 | 0 | 2,420.91 |
| Oct-16 | 1,216,500.000 | 120.780 | 1,216,379.220 | 0.9586 | 0.001 | 1,166.02 | 0 | 0 | 1,166.02 |
| Reported Period from 29/10/2015 to 31/10/2016 | 25,190,712.000 | 2,991.833 | 25,187,720.167 | 0.9586 | 0.001 | 24,144.95 | 0 | 0 | 24,144.00 |

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Document information

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|-----------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 05.1 | 4 May 2015 | Editorial revision to correct version numbering. |
| 05.0 | 1 April 2015 | Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement. |
| 04.0 | 25 June 2014 | Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement. |
| 03.2 | 5 November 2013 | Editorial revision to correct table in page 1. |
| 03.1 | 2 January 2013 | Editorial revision to correct table in section E.5. |
| 03.0 | 3 December 2012 | Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11). |
| 02.0 | 13 March 2012 | Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20). |
| 01 | 28 May 2010 | EB 54, Annex 34. Initial adoption. |
| Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report | | |