2025 -CHUTAK Hydroelectric Project – MGM Response to Request for Review

1. **The DOE should explain how it has validated the investment analysis, in particular, the validity of the input values at the time of the investment decision according to EB 41, Annex 45, para. 6.**

EB41/Annex 45/para 6 states:
"6. Guidance: Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing. The DOE should also validate that the listed input values have been consistently applied in all calculations.

Rationale: The use of investment analysis to demonstrate additionality is intended to assess whether or not a reasonable investor would or not decide to proceed with a particular project activity without the benefits of the CDM. This decision will therefore be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point. Any expenditures occurred prior to the decision to proceed with the investment in the project will not impact the final investment decision as such expenses sunk costs which remain unaffected by the decision to proceed or not with a project activity."

The project IRR is the basis for the demonstration of additionality in this project. The key parameters used in the calculation, the values used and the source of the data are shown below.

Table 1. Parameters used for economic analysis

Parameter	Value (Note 1 crore = 10 million)	Source	File name
Costs			
Investment	INR 6212.6 million	Abstract of Cost (Implementation approval letter for Chutak hydroelectric project (44 MW) dated 23/11/2006 from Ministry of Power, Government of India.)	Proof Sub Loan & Project Cost Chutak.pdf, page 1, applied in Chutak IRR.xls, sheet "SR Chutak" Row 13.
Equity	INR 1863.8 million	Implementation approval letter for Chutak hydroelectric project (44 MW) dated 24/08/2006 from Ministry of Power, Government of India.	Proof -Equity Chutak Project.pdf, p. 1, applied in Chutak IRR.xls, sheet "SR Chutak" Row 15.
Subordinate Loan	INR 3640 million	Implementation approval letter for Chutak hydroelectric project (44 MW) dated 23/11/2006 from Ministry of Power, Government of India.	Proof Sub Loan & Project Cost Chutak.pdf, p. 1, applied in Chutak IRR.xls, sheet "SR Chutak" Row 16.
Loan	INR 708.8 million	Determined as difference between total investment and (Equity + Subordinate loan).	Calculation shown in Chutak IRR.xls, sheet "idc chutak" cell L37.
O&M Costs	INR 93.2 million	Calculated in accordance with Central Electricity Regulatory Commission Guidelines of 26 March 2004, as shown in IRR calculation workbook.	finalregulations_terms&condition.pdf/ Page 39. Calculation shown in Chutak IRR.xls, sheet "SR Chutak" Row 36.
Depreciation Charges	INR 157.8 million	Calculated in accordance with Central Electricity Regulatory	finalregulations_terms&condition.pdf/Pages 37, 38,

		Commission Guidelines of 26 March 2004.	applied in Chutak IRR.xls, sheet "SR Chutak" Row 35.
Interest on working capital	INR 17.1 million	Calculated in accordance with Central Electricity Regulatory Commission Guidelines of 26 March 2004.	finalregulations_terms&condition.pdf/ Page 40, applied in Chutak IRR.xls, sheet "SR Chutak" Row 38.
Interest rate on Loan	8%	As per Rural Electrification Corporation limited applicable for all public sector projects	REC-Interest Rates.pdf/ Page 2, applied in Chutak IRR.xls, sheet "SR Chutak" Row 34.
Benefits			
Power generation	Gross generation: 212.93 MUs; Net generation: 210.38 MUs 1 MU (million Units) = 1 GWh	Salient Features of Chutak Hydroelectric Project (4x11 MW) in J&K by NHPC, Annexure I of the Ministry of Power, Government of India document F.No. 22/1/2001-DO (NHPC)	Chutak annexure 1.pdf/ Page 2 shows Gross generation. Net generation is Gross generation less auxiliary consumption and transformer losses. Calculation of net generation is shown in Chutak IRR.xls, sheet "SR Chutak" Rows 19-27.
Electricity sales price	INR 2.77/kWh	Calculated in accordance with Central Electricity Regulatory Commission Guidelines of 26 March 2004.	finalregulations_terms&condition.pdf/Chapter 3, Page 30-49, applied in Chutak IRR.xls, sheet "irr chutak", col. K.

Time of investment decision and validity of parameters considered

The investment analysis was developed in December 2005, as indicated in the file Chutak IRR.xls, based upon the data sources as stated above. According to the Central Electricity Regulatory Guidelines of 26 March 2004, the values obtained from this document should remain in force for a period of five years and hence applicable at the time of the development of the investment analysis and the project starting date.

All the values used in Investment analysis including the input values are in line with the requirements as per EB 41, Annex 45, para. 6.

2. **Taking into consideration that a common practice analysis should compare the project to "similar" projects (assuming a capacity range of +/- 50%, i.c. 20 - 65 MW would have been appropriate), the DOE should clarify how many similar activities were assessed in the common practice analysis and the essential distinction between them and the project activity.**

Hydro projects of capacity in the range of 20-65 MW (i.e. ±50% of the proposed project activity) were considered in the state of Jammu and Kashmir, where the project is located, as well as in the Northern Region, which is the power grid to which Jammu and Kashmir belongs The source of the data for the common practice analysis is the *Carbon dioxide database*, which is publicly made available by Central Electricity Authority, Government of India. The file name is CO_2 baseline database version 02 dated June 2007: "CEA Database 2.0.xls". This file is attached. Details of the analysis follow.

The proposed project is located in Jammu and Kashmir State. Table 1 shows similar hydro projects (i.e. in the range 20 – 65 MW).

Table 1: Hydroelectric Projects in the capacity range of 20-65 MW in the state of Jammu & Kashmir, India

Sl. No.	Name of the Power Plant	Unit	Date of Commissioning	Capacity as on 31/03/2006 (MW)	Region	State	Type
1	**CHENANI I&III**	**0**		**30.8**	**NR**	**JAMMU & KASHMIR**	**HYDRO**
	CHENANI-I	1	1-Sep-71	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	2	1-Sep-71	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	3	1-Oct-71	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	4	1-Apr-75	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	5	1-Jun-75	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-III	6	30-Jun-00	2.5	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-III	7	30-Jun-00	2.5	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-III	8	30-Jun-00	2.5	NR	JAMMU & KASHMIR	HYDRO

Source: Baseline Carbon Dioxide Emission Database Version 2.0(www.cea.nic.in)

It can be seen from Table 1 that there was only one power plant within the capacity range. Moreover, all the units of this power plant were commissioned prior to 2001. All but three units were in fact commissioned in the early 1970s.

Jammu and Kashmir State is part of the Northern Region Grid of India. The Table below shows similar hydro projects in the entire Northern Region.

Table 2: Hydroelectric Projects in the capacity range of 20-65 MW in Northern Region of India

Sl. No.	Name of the Power Plant	Unit	Date of Commissioning	Capacity as on 31/03/2006 (MW)	Region	State	Type
1	**WY.CANAL A -D**	**0**		**62.4**	**NR**	**HARYANA**	**HYDRO**
	WY.CANAL-A	1	29-May-86	8	NR	HARYANA	HYDRO
	WY.CANAL-A	2	13-Jun-86	8	NR	HARYANA	HYDRO
	WY.CANAL-B	3	15-May-87	8	NR	HARYANA	HYDRO
	WY.CANAL-B	4	1-Jun-87	8	NR	HARYANA	HYDRO
	WY.CANAL-C	5	27-Mar-89	8	NR	HARYANA	HYDRO
	WY.CANAL-C	6	18-Apr-89	8	NR	HARYANA	HYDRO
	WY.CANAL-D	7	16-Apr-04	7.2	NR	HARYANA	HYDRO
	WY.CANAL-D	8	20-Apr-04	7.2	NR	HARYANA	HYDRO
2	**BASSI**	**0**		**60**	**NR**	**HIMACHAL**	**HYDRO**
	BASSI	1	13-Sep-70	15	NR	HIMACHAL	HYDRO
	BASSI	2	24-Dec-70	15	NR	HIMACHAL	HYDRO
	BASSI	3	15-Jul-71	15	NR	HIMACHAL	HYDRO
	BASSI	4	3-Feb-81	15	NR	HIMACHAL	HYDRO
3	**GIRI BATA**	**0**		**60**	**NR**	**HIMACHAL**	**HYDRO**
	GIRI BATA	1	16-Apr-78	30	NR	HIMACHAL	HYDRO
	GIRI BATA	2	30-Jun-78	30	NR	HIMACHAL	HYDRO

4	**GHANVI**	**0**		**22.5**	**NR**	**HIMACHAL**	**HYDRO**
	GHANVI	1	7-Dec-00	11.25	NR	HIMACHAL	HYDRO
	GHANVI	2	30-Jul-00	11.25	NR	HIMACHAL	HYDRO
5	**CHENANI I&III**	**0**		**30.8**	**NR**	**JAMMU & KASHMIR**	**HYDRO**
	CHENANI-I	1	1-Sep-71	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	2	1-Sep-71	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	3	1-Oct-71	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	4	1-Apr-75	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-I	5	1-Jun-75	4.66	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-III	6	30-Jun-00	2.5	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-III	7	30-Jun-00	2.5	NR	JAMMU & KASHMIR	HYDRO
	CHENANI-III	8	30-Jun-00	2.5	NR	JAMMU & KASHMIR	HYDRO
6	**MATATILLA**	**0**		**30.6**	**NR**	**UTTAR PRADESH**	**HYDRO**
	MATATILLA	1	28-Feb-65	10.2	NR	UTTAR PRADESH	HYDRO
	MATATILLA	2	30-Jun-65	10.2	NR	UTTAR PRADESH	HYDRO
	MATATILLA	3	30-Sep-65	10.2	NR	UTTAR PRADESH	HYDRO
7	**DHAKRANI**	**0**		**33.75**	**NR**	**UTTARANCHAL**	**HYDRO**
	DHAKRANI	1	15-Nov-65	11.25	NR	UTTARANCHAL	HYDRO
	DHAKRANI	2	31-Mar-66	11.25	NR	UTTARANCHAL	HYDRO
	DHAKRANI	3	10-Jan-70	11.25	NR	UTTARANCHAL	HYDRO
8	**DHALIPUR**	**0**		**51.00**	**NR**	**UTTARANCHAL**	**HYDRO**
	DHALIPUR	1	10-Dec-65	17	NR	UTTARANCHAL	HYDRO
	DHALIPUR	2	25-Mar-66	17	NR	UTTARANCHAL	HYDRO
	DHALIPUR	3	31-Mar-70	17	NR	UTTARANCHAL	HYDRO
9	**KULHAL**	**0**		**30.00**	**NR**	**UTTARANCHAL**	**HYDRO**
	KULHAL	1	11-Apr-75	10	NR	UTTARANCHAL	HYDRO
	KULHAL	2	26-Sep-75	10	NR	UTTARANCHAL	HYDRO
	KULHAL	3	24-Dec-75	10	NR	UTTARANCHAL	HYDRO
10	**PATHRI**	**0**		**20.40**	**NR**	**UTTARANCHAL**	**HYDRO**
	PATHRI	1	25-Jul-55	6.8	NR	UTTARANCHAL	HYDRO
	PATHRI	2	18-Sep-55	6.8	NR	UTTARANCHAL	HYDRO
	PATHRI	3	14-Dec-55	6.8	NR	UTTARANCHAL	HYDRO
11	**KHATIMA**	**0**		**41.40**	**NR**	**UTTARANCHAL**	**HYDRO**
	KHATIMA	1	30-Apr-55	13.8	NR	UTTARANCHAL	HYDRO
	KHATIMA	2	2-Apr-56	13.8	NR	UTTARANCHAL	HYDRO
	KHATIMA	3	3-Aug-56	13.8	NR	UTTARANCHAL	HYDRO

Source: Baseline Carbon Dioxide Emission Database Version 2.0(www.cea.nic.in)

It can be seen from Table 2 that all the projects in the entire northern Northern Region were commissioned prior to 2001 and mainly during the period 1955 to 1989. It must also be noted that the Chutak Hydroelectric Project is situated in a remote area (Kargil) which is more than 4000 metres above sea level, where temperatures drop below -35 to -40 degrees Celsius in winter, the atmospheric pressure

is low and accessibility for half the year is poor due to road blockages. As a result, the performance efficiency of men and machines in the area is low and the project costs and risks are high. None of the other projects in the Northern Region face such barriers or have been constructed under such conditions.

Recall, as noted in the PDD, Section B.5, that the above lists of hydro projects represent a very small part of the overall generation. Even considering all hydro projects below 50 MW installed capacity, these projects make up only 1.6% of total generation in Jammu and Kashmir State and only 0.8% of total generation in the Northern Region Grid.

It can thus be concluded that this type of project is not common practice in the Jammu & Kashmir State, as well as the entire Northern Region.

3. The DOE should explain how the CDM prior consideration for the project activity has been validated in line with EB 41 Annex 46, para. 5.

EB 41/Annex 46/ Para 5:
5. Proposed project activities with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. Such demonstration requires the following elements to be satisfied:

(a) The project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, *inter alia*, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a CDM project activity.

The events and dates related to key decisions demonstrating CDM considerations are listed as items 1 through 6 in Table 2 below.

(b) The project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, *inter alia*, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), evidence of agreements or negotiations with a DOE for validation services, submission of a new methodology to the CDM Executive Board, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat;

Key events and dates involving CDM project development are shown as items 9 through 12 in Table 2 below.

Table 2. Key events, dates, and supportive evidence

S.No.	Events	Date	Evidence (File name)
1	Task Force on CDM proposed by Executive Director (R&D) of NHPC (It clearly states that NHPC was exploring the	17/10/2005	NHPC-Task Force on CDM.pdf (Page 3)

	possibilities of making the projects more viable by considering CDM revenues. Chutak Project is also mentioned on the same page)		
2	Minutes of Meeting taken by Secretary (Power) to discuss CDM (NHPC informed that they are preparing CDM projects in respect of NImoo Bazgo HE Project and Chutak project with assistance of the World Bank).	15/12/2005	MoM-Ministry of Power.pdf (Page 3; para 3)
3	In a letter to Additional Secretary, Ministry of Power the Executive Director (R&D) of NHPC has sought assistance for undertaking formulation of Project Design Document (PDD) and Appropriate Baseline methodology for these three projects which includes Chutak Project.	28/02/2006	Assistance for CDM.pdf (Page 1)
4	Draft MOU for the year 2006-07 between Ministry of Power and National Hydroelectric Power Corporation Ltd. (NHPC) (Activity "initiating process to obtain CDM benefits for the most suitable NHPC Projects" was changed to "Approval of designated National Authority for CDM benefits" with no change in the target dates.)	08/03/2006	Draft MoU NHPC & GoI.pdf (Page 4)
5	MoU between Ministry of Power, GoI and NHPC Ltd. (In this MoU, different performance parameters and their weightages for the year 2006-07 were listed. One of the performance indicators was to seek approval of Designated National Authority for CDM benefits for Nimoo Bazgo / Chutak unit)	28/03/2006	MoU NHPC & GoI.pdf (Date is stated on page 9 of document and p. 11 of PDF file. DNA is mentioned in page 10 of document and p. 12 of PDF file)
6	Offer Submitted for Development of Chutak & other Hydroelectric projects as CDM Projects	24/07/2006	MGM-IDBI Offer.pdf.
7	Implementation approval for Chutak Hydroelectric Project	24/08/2006	Proof -Equity Chutak Project.pdf
8	**Start date of the project**	23/09/2006	Chutak Construction start

	Activity		date.pdf
9	Bids Invited for providing CDM consultancy Services for Chutak & other hydroelectric Projects	23/10/2006	Tender Document CDM.zip/Global Invitation to applicants.doc
10	Revised Offer for Development of Chutak & other Hydroelectric projects as CDM Projects	26/02/2007	Revised MGM-IDBI Offer.pdf.
11	Award of contract for developing Chutak and other Hydroelectric project as CDM Projects	06/03/2007	NHPC-LOI.pdf
12	PDD, version 1, dated 01/07/2007 submitted to DNV for validation	11/07/2007	

Note that items 1 through 6 (inclusive) demonstrate awareness and serious consideration of CDM, all prior to project start date shown as item 8. Items 9 through 12 refer to events and dates related to CDM project developed, which start on 23/09/2006, one month after project start date, and continue until 11/07/2007, when the PDD was submitted to DNV for validation.

The above chronology of events proves beyond doubt the prior consideration of CDM for the project activity and that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

4. **The DOE/PP are requested to justify the basis for changing the ex-ante emission factor from 0.76 tCO_2/MWh used in the PDD published for public consultation to 0.793 tCO2/MWh.**

The PDD was web hosted during 31 October 2007 to 29 November 2007.The combined margin emission factor used in the published PDD for emission reduction calculations is 0.76 from December 2006, but the latest emission factor available in CEA website at that time was June 2007 data. This emission factor value was referred from the Central Electricity Authority website – CO_2 baseline database – version 1.1 dated December 2006. The combined margin emission factor was cross checked during validation and was found outdated at the time of submission of the PDD for web hosting. Hence a clarification was raised in the validation report to use the latest data available at the time of PDD submission, i.e., CO_2 baseline database version 02 dated June 2007. Based on the CEA baseline database version 02, the combined margin was revised to be 0.793 in the final PDD submitted for registration. Hence there is a change in combined margin emission factor.

5. **The DOE is requested to clarify the difference between the electricity generation value used in the emission reductions calculation and the one used in the IRR calculation.**

The generation figures taken at the time of IRR calculation were based on Report "Salient Features of Chutak Hydroelectric Project (4x11 MW) in J&K by NHPC, Annexure I of the Ministry of Power, Government of India document F.No. 22/1/2001-DO (NHPC)" attached as "Chutak annexure 1.pdf". Page 2 of report shows Gross generation. Net generation is Gross generation less auxiliary consumption and transformer losses. Calculation of net generation is shown in Chutak IRR.xls, sheet "SR Chutak" Rows 19-27. The results are shown in Table 1 above. Net generation: 210.38 MUs (=GWh) per year.

The value used for the ER calculation in PDD version 10 was based on an earlier report. This value is slightly larger than the more recent estimate used in the IRR calculation, shown above. The reason is explained in the file "Note reg Chutak generation.pdf". Therefore, for consistency and to be conservative, we use this value to revise the ER estimate. The revised ER calculation is shown in "Chutak PDD_exante_ER_19dec08.xls", attached.

A revised PDD incorporating possible corrections that are notified will be submitted in due course.