

Memorandum of Understanding
among the Government of India, the Government of
Sri Lanka, the Power Grid Corporation of India Ltd.
and the Ceylon Electricity Board
on the Feasibility Study for Inter-connection of
India-Sri Lanka Electricity Grids

This Memorandum of Understanding (hereinafter referred to as the MoU) made on the 9th day of June, Two Thousand and Ten among the Government of the Republic of India (hereinafter referred to as GoI) on the first part, the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as GoSL) on the second part, the Power Grid Corporation of India Ltd., incorporated under the Companies Act, No. 1 of 1956 and having its Registered Office at B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110 016 and Corporate Office at Plot No. 2, Sector- 29, Gurgaon - 122001, Haryana (hereinafter referred to as "POWERGRID" which expressions shall unless repugnant to the context herein include its successors and permitted assigns) on the Third part; and Ceylon Electricity Board., established under the Act, No. 17 of 1969 having its Head Office at No. 50, Sir Chittampalam A Gardiner Mawatha, Colombo 2, (hereinafter referred to as "CEB" which expression shall unless repugnant to the context herein include its, successors and permitted assigns) on the Fourth part (GoI, GoSL, are hereinafter individually referred to as the 'Party' and collectively as 'Parties' and POWERGRID and CEB are hereinafter individually referred to as 'Executing Agency' and collectively as 'Executing Agencies'.)

WHEREAS the Parties have agreed to carry out a feasibility study for Interconnection of India-Sri Lanka Electricity Grids (hereinafter referred to as the "Interconnection") and in this regard, both Parties have constituted a Steering Committee to provide overall guidance to the study and a Task Force to study the various alternatives for the Interconnection.

WHEREAS the Task Force vide its report dated 28th September, 2007 have suggested that POWERGRID and CEB as Executing Agencies shall prepare the feasibility study report.

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WHEAREAS the Parties have decided that the feasibility study shall be carried out jointly by the Executing Agencies with the assistance of an external consultant where necessary as permitted by the MOU.

AND WHEREAS the Parties have agreed to share the cost of the feasibility study, the cost of which is US\$ 3 Million (equivalent to INR 120 Million or LKR 324 Million) in equal proportion.

NOW, therefore, in consideration of the premises and mutual MoUs, covenants and conditions set-forth herein which shall form an integral part of this MoU, it is hereby agreed by and between the parties and executing agencies as follows:

1 SCOPE OF WORK

The details of the tasks to be carried out by the Executing Agencies are attached as **Annex-I**.

i. System studies for the Interconnection

POWERGRID shall carry out system studies for Indian Grid for 500 MW and 1000 MW power exchange scenarios between India and Sri Lanka and for different HVDC configurations. POWERGRID and CEB shall carry out the studies for corresponding grid strengthening requirements in the respective grids.

ii. Design Studies and Equipment Parameter Finalization

POWERGRID shall carry out design studies for finalizing equipment parameters, tower configurations, foundation design, conductor and insulator finalization etc. Design studies regarding HVDC station layout, ground electrode station design etc. would be carried out jointly by POWERGRID and CEB.

iii. Survey, Soil Investigations, Environment Impact Assessment and Land Identification

POWERGRID shall engage external agencies/consultant(s) with concurrence of CEB to carry out the marine survey for route alignment of marine cable and the environment impact assessment studies for marine route. POWERGRID

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shall carry out surveys and route alignment of transmission lines in Indian territory and environment impact assessment Studies for the land-based segment within Indian territory. CEB shall carry out the surveys and route alignment of transmission lines in the Sri Lankan territory and environment impact assessment Studies for the land-based segment within Sri Lankan territory.

iv. Preparation of Bill of Quantities and Cost Estimates

POWERGRID shall prepare Bill of Quantities (BOQ) and cost estimates for the entire Interconnection. The Consultant shall prepare the BOQ and the estimates for the marine cable portion and provide the same to the POWERGRID to be included in the BOQ and cost estimates. CEB shall prepare the BOQ and estimates for the Sri Lankan portion and provide to POWERGRID to be included in the BOQ and cost estimates.

v. Economic & Financial Analysis, Least Cost Planning

CEB shall carry out the economic and financial analysis considering the cost of power procurement, generation development plans etc. to assess the economic benefit to India and Sri Lanka. POWERGRID will provide CEB the information required from the Indian side for this analysis and the BOQ and cost estimates

vi. Funding and Recovery of Investment

POWERGRID and CEB shall jointly carry out assessment of the phased funding requirements, evolution of a suitable tariff mechanism as well as a payment security mechanism for transmission services provided by the Interconnection.

vii. Legal and Institutional Issues

POWERGRID and CEB shall jointly identify the legal and institutional issues in respect of exchange of electricity between India and Sri Lanka.

viii. Report Preparation

POWERGRID and CEB shall jointly compile the results of all the above tasks and prepare a Report on the Feasibility Study.

2 COST ESTIMATE FOR FEASIBILITY STUDY AND PAYMENT TERMS

The total cost of the feasibility study is estimated to be US\$ 3.0 Million (equivalent to approx. INR 120 Million or LKR 324 Million). GoI and GoSL shall share the total cost for the feasibility study in equal proportion that is US\$ 1.5 Million each. The details of the cost estimates for the tasks to be carried out by POWERGRID and CEB are attached in Annex-II.

The estimated cost of carrying out the work related to marine survey work/environment impact assessment in the marine portion etc. by external agencies/consultant(s) is US\$ 1.5 Million. The cost of the remaining tasks to be carried out separately by POWERGRID and CEB (in Indian and Sri Lankan territory) is US\$ 0.875 Million and US\$ 0.625 Million respectively.

The funds shall be made available to POWERGRID and CEB for their share of work as well as for external agencies/Consultant(s) that is US\$ 2.375 Million and US\$ 0.625 Million respectively, by both the Governments in equal proportion as below:

- i) 90% of the estimated cost as an advance on signing of the MoU.
- ii) Balance 10% on completion and submission of the feasibility study Report to the task force/steering committee in an acceptable manner subject to the requirement under paragraph 3 below.
- iii) Payment of taxes and duties shall be reimbursed at actual by the respective Governments.

The external agencies/consultant(s) under the supervision of the task force for undertaking marine survey work for route alignment of marine cable and the environment impact assessment studies for marine route, shall be paid by the POWERGRID with the concurrence of the CEB.

3 PROGRESS REPORTING PROCEDURE AND COMPLETION SCHEDULE

- 3.1 The Executing Agencies shall submit the Feasibility Study Report within six (6) months of signing of the MoU or release of the advance payments by both GOI and GOSL, whichever is later. However, efforts shall be made to complete the report at the earliest possible schedule.
- 3.2 At the end of every month after signing the MOU, the Executing Agencies shall submit progress reports to the Steering Committee and the Task Force constituted for the India-Sri Lanka Electricity Grid Interconnection. The progress report shall be submitted separately by each Executing Agency for Tasks assigned to them, and jointly by the two Executing Agencies for Tasks to be conducted jointly. The Steering Committee/ Task Force shall assist and advise Executing Agencies to ensure timely completion of the feasibility study.
- 3.3 The Steering Committee and/or the Task Force shall meet at least once in two months during the Feasibility Study, to review the progress of the work.
- 3.4 The Parties shall facilitate obtaining statutory clearances/ approval/ compliance/ recommendation letters to concerned authorities as may be required for execution of above tasks. With regard to Para 1 (iii), the Parties shall facilitate in arranging the environment and defence clearances as well as any other statutory clearances required for carrying out these works in their respective territories. The Parties shall also facilitate in providing information about the topography for the sea crossings, marine ecology and any other information required for the above tasks.
- 3.5 The Parties shall facilitate in providing appropriate safety and security of person, material and machinery engaged in the work at all the working locations for smooth and timely execution of the work.

3.6 The Parties shall facilitate in providing Visa/Permit/ Authorization to the Executing Agencies and their contractors for execution of work in each others' territory.

4 ENGAGEMENT OF SUBCONTRACTORS AND ADVISORS

Each Executing Agency may engage subcontractors and advisors to conduct the tasks assigned to them, or to assist them in conducting the tasks jointly assigned to the Executing Agencies. All reasonable efforts shall be made by each Executing Agency to keep the other Executing Agency informed about the assignment of tasks to such third parties or the appointment of advisors.

5 PARTIES TO ASSIST EACH OTHER

The Executing Agencies shall provide all assistance to each other for smooth completion of feasibility studies and for the compilation of reports.

6 REPORTS AND OWNERSHIP

Interim reports prepared by the Executing Agencies either jointly or independently, and the final report of the feasibility study shall be of adequate coverage, technical detail and depth of analysis, to be submitted to any commercial, bilateral and multilateral funding agency for consideration of financing the Interconnection.

7 FORCE MAJEURE

The Executing Agencies shall ensure due compliance with the terms of this MoU. However, no Executing Agency shall be liable for any claim for any loss or damage whatsoever arising out of failure to carry out the terms of the MoU to the extent that such a failure is due to force majeure events such as fire, rebellion, militancy, war, calamity, foreign rebellion, mutiny, civil commotion, riot, strike, lock-out, forces of nature, accident, act of God and any other reason beyond the control of concerned Party. But any Executing Agency claiming the benefit of this Article shall satisfy the

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Parties of the existence of such an event and give a written notice of 15 days after the event of force majeure to the Parties. The works covered under this MoU shall be started as soon as practicable by the Executing Agencies concerned after such eventuality has come to an end or ceased to exist.

8 SETTLEMENT OF DISPUTES

Any differences or dispute between the Parties to the said MOU (including the Executing Agencies) arising out of or in connection with this work shall be discussed and settled amicably amongst the Parties to the said MOU (including the Executing Agencies). In case of any dispute is not resolved it shall be referred to the aforesaid Steering Committee for a final decision.

9 AMENDMENTS

This MoU may be amended or modified if necessary by a written instrument signed by the Parties and the same shall be considered as an integral part of this MoU.

10 LANGUAGE OF CORRESPONDENCE

All correspondence between the Parties, reports, technical data, certificates and any other documents pertaining to the work and this MoU shall be in the English language.

11 NOTICES

All notices required or referred to under this MoU shall be in writing and signed by the respective authorized signatories of the Executing Agencies to be designated by them, unless otherwise notified.

12 VALIDITY

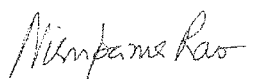
This MoU shall be deemed to have come in to force with effect from the date of its signing and shall be valid until the feasibility study work is completed, unless replaced/ revised/modified by another MoU by mutual consent of the

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Parties. In case the feasibility study work gets extended, then all the provisions of this MoU shall continue to operate until the feasibility study work is completed, unless terminated or modified as per the provisions of the MoU. The MoU may be terminated on mutual consent of the Parties.

IN WITNESS WHEREOF the Parties and the Executing Agencies have executed these presents through their Authorized Representatives at New Delhi.



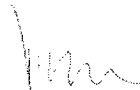
For and on behalf of
Government of India



For and on behalf of
Government of Sri Lanka



For and on behalf of
POWERGRID



For and on behalf of
Ceylon Electricity Board

Annex-I

Details of the tasks to be carried out by POWERGRID and CEB for the Feasibility Study of the Interconnection between Indian and Sri Lankan Grids

A. Works to be Carried out by POWERGRID

1. System studies

- Power system studies for the Indian grid for the exchange of 500 MW and 1000 MW power between India and Sri Lanka.
- Study alternatives with respect to the configuration of HVDC modules, termination points in both sides of the interconnection (jointly with CEB).
- Assessing adequacy of the transmission system on the Indian side of the Interconnection, evolution and grid strengthening requirement, if any.
- Recommend the network configuration and establish the parameters of the interconnection required for subsequent tasks of the feasibility study (jointly with CEB)

2. Design studies and equipment parameter finalization

- Rating of different equipment
- Substation/terminal station layout (jointly with CEB)
- Tower configurations, foundation design, conductor and insulator finalization based on specific requirement like saline pollution Ground Electrode station design (jointly with CEB)

3. Survey, Soil investigations, Environment Impact Assessment and Land identification

- Complete Marine Survey for route alignment of marine cable (by Consultant)
- Survey for Transmission line route alignment in Indian territory
- Selection of HVDC station in Indian territory

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- Selection of HVDC Ground Electrode Station in India and requisite testing
 - EIA for Marine portion (by Consultant)
 - Environment Impact Assessment Studies for the land-based segment within impact Indian territory
 - To advise CEB on selection of site for HVDC station and HVDC Ground Electrode Station based on technical considerations.
4. Preparation of Bill of Quantities and Cost Estimates for the construction of interconnection
- Bill of Quantities for the entire inter connection (consultant to provide the Bill of Quantity for the marine cable portion and CEB to provide for transmission system of Sri Lankan portion)
 - Preparation of Cost Estimates for the entire Interconnection (consultant to provide the cost estimate for the marine cable portion and CEB to provide for transmission system of Sri Lankan portion).
5. Funding and Recovery of Investment)
- Assessment of phased funding requirement to meet the implementation schedule of the Interconnection (jointly with CEB).
 - Analyze and recommend a suitable tariff mechanism for recovery of the investment as well as the payment security mechanism (jointly with CEB).
6. Legal and Institutional Issues
- Identifying legal and institutional issues in respect of exchange of electricity between India and Sri Lanka (jointly with CEB).
7. Report Preparation
- Compilations of results of all the tasks performed earlier (jointly with CEB)
 - Preparation of Feasibility Report (jointly with CEB)

B. Works to be Carried out by CEB

1. System Studies

- Power system studies for the Sri Lankan grid for exchange of 500 MW and 1000 MW power between India and Sri Lanka.
- Study alternatives with respect to the configuration of HVDC modules, termination points in both sides of the interconnection (jointly with POWERGRID).
- Assessing adequacy of the transmission system on Sri Lankan side of the connection and evolution of grid strengthening requirement, if any.
- Recommend the network configuration and establish the parameters of the Interconnection required for subsequent tasks of the feasibility study (jointly with POWERGRID)

2. Design studies and equipment parameter finalization

- Substation/terminal station layout (jointly with POWERGRID)
- Ground Electrode station design (jointly with POWERGRID)

3. Survey, Soil Investigation, Environment Impact Assessment and Land Identification

- Survey of transmission line route alignment in Sri Lankan territory
- Selection of site for HVDC station and HVDC Ground Electrode Station in Sri Lankan territory (in consultation with POWERGRID).
- Environment Impact Assessment Studies for the land-based segment within Sri Lankan territory
- Selection of HVDC Ground Electrode Station in Sri Lanka and requisite testing

4. Preparation of Bill of Quantities and Cost Estimates

- Bill of Quantities for transmission system of Sri Lankan portion.

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- Preparation of Cost estimate for transmission system of Sri Lankan portion.
- 5. Economic & Financial Analysis, Least Cost Planning
 - Assessment of cost of power procurement for existing and future projects,
 - Assessment of generation development plans of Sri Lanka.
 - Study of firmness of power plant additions expected after 2012 that would impact the economic viability of inter-connection.
 - Economic & Financial Analysis, Least Cost Planning (Jointly with POWERGRID) Evaluation of economic and financial viability of the inter-connection over short term and long term basis, with assessment of economic benefit to India and Sri Lanka.
- 6. Funding and Recovery of Investment (Jointly with POWERGRID)
 - Assessment of phased funding requirement as per the implementation cycle (jointly with POWERGRID)
 - Analyze and recommend a suitable tariff mechanism for recovery of the investment as well as payment security mechanism (jointly with POWERGRID)
- 7. Legal and Institutional Issues
 - Identifying legal and institutional issues in respect of exchange of electricity between India and Sri Lanka (jointly with POWERGRID)
- 8. Report Preparation
 - Compilations of results of all the tasks performed earlier (jointly with POWERGRID).
 - Preparation of Feasibility Report (jointly with POWERGRID).

Annex-II

Cost of the Tasks to be carried out by POWERGRID and CEB for Feasibility Study of Interconnection between Indian and Sri Lankan Grids

| Sl. No. | Description of Work | Cost (US\$) | Executing Agency |
|--------------|---|--|-----------------------------------|
| 1. | Marine Survey/ Environment Impact Assessment in the Marine portion | 1.5 Million (equivalent to INR 60 Million or LKR 162 Million) | POWERGRID with concurrence of CEB |
| 2. | System study, Route survey, Site selection, BOQ and cost estimates for Indian portion, Design studies including ground electrode design studies | 0.875 Million (equivalent to INR 35 Million or LKR 94.5 Million) | POWERGRID |
| 3. | System study, Route survey, Site selection, BOQ and cost estimates for Sri Lankan portion, Economic & Financial Analysis & Least Cost Planning | 0.625 Million (equivalent to INR 25 Million or LKR 67.5 Million) | CEB |
| | | 3.0 Million | |
| Total | | (equivalent to INR 120 Million or LKR 324 Million) | |

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- Share of GoI: 1.5 Million (equivalent to INR 60 Million or LKR 162 Million)
- Share of GoSL: 1.5 Million (equivalent to INR 60 Million or LKR 162 Million)

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