
Green Energy Corridors

Transmission Infrastructure for Renewable Power

**Ministry of New and Renewable Energy
Government of India**

Grid Connectivity Issues

- Renewable energy resources not distributed uniformly-State and grid balancing issues limit addition of more renewable capacity.
- Augmentation of transmission capacity enables better management of renewable energy variability.
- Creation of renewable power evacuation and transmission infrastructure is under process in eight renewable resource rich states namely Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Rajasthan, Tamil Nadu and Jammu & Kashmir. Madhya Pradesh is now added
- MNRE has initiated efforts for creating renewable power evacuation infrastructure through implementation of Green Energy Corridor Project

Estimated fund requirement

(in Euro million)

- Estimated fund requirement : 3700
- Intra-State transmission: 2050*
- Inter state 1134
 - Inter State Transmission: 1100
 - Renewable Energy Management Centers: 34

(* Includes Euro 1 billion schemes under implementation)

- KfW, Germany has committed Euro 1 billion

Indo-German Joint Declaration of Intent for Green Energy Corridors

- **Signed in April 2013 for Indo-German Development Cooperation on Green Energy Corridors**
- **Concessional loan of Euro 1 billion, over the next six years, from KfW, Germany**
- **The loan is in 3 tranches- first of Euro 250 million**
- **Euro 2 million grant via GIZ for renewable energy grid integration including forecasting, scheduling, balancing, market design, development of technical grid specifications (Grid codes) etc**

Present Status

Intra State scheme: Grant (40%): Loan (40%): Equity (20%)

Inter State Scheme: Loan (70%): Equity (30%)

Loan Agreement for intra-state transmission

Tamil Nadu- for KfW loan of Euro 76 million loan agreement signed with KfW, Germany on 17 December 2014.

Rajasthan- for KW loan of Euro 49 million loan agreement signed with KfW, Germany on 17 December 2014 .

Loan Agreement for inter-state transmission

Power Grid Corporation of India- for Euro 500 million loan agreement signed with KfW, Germany on 17 December 2014

Proposals for KfW loan in respect of Andhra Pradesh, Gujarat, Himachal Pradesh and Karnataka are at advance stage of discussion between the Ministry of Finance and KfW.

GIZ Technical Assistance

- Euro 2 million under Indo-German Energy Programme's new component Green Energy Corridors to be supported by GIZ.
- Activities includes integration of renewable energy through: a) Support in setting up of REMCs; b) methods and tools for forecasting and scheduling and balancing; c) market design; and d) regulatory framework.
- GIZ, Germany has appointed a consulting consortium :(Ernst and Young, India; Fraunhofer IWES, Germany; University of Oldenburg, Germany; and Fichtner, Germany).
- Report is expected by June 2015.

Renewable Energy Management Centre (REMC)

- **Forecasting of RE generation in jurisdiction area on day-ahead, hour ahead, week-ahead, month-ahead basis.**
- **Real time tracking of generation from RE sources and its geo-spatial visualisation.**
- **Close coordination with respective LDC for RE generation and control for smooth grid operation.**
- **Single source information repository and coordination point for RE penetration.**
- **On-line Dynamic security Assessment tool like Dynamic performance, Harmonic performance.**

Exploring new loan

There is a requirement of concessional finance at least Euro 1 billion for over five year period, for the under implementation Green Energy Corridors project and also for new upcoming projects .

Thank You