



MOMENTUM
JHARKHAND

The investment destination
GLOBAL INVESTORS' SUMMIT 2017
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ENERGY INFRASTRUCTURE

LIGHTENING THE LIVES OF JHARKHAND



झारखण्ड सरकार

Contents

- ▶ Advantage Jharkhand
- ▶ Energy Sector -Indian Scenario
- ▶ Energy Sector-Jharkhand Scenario
- ▶ Investment Opportunities
- ▶ Policy Interventions

Advantage Jharkhand

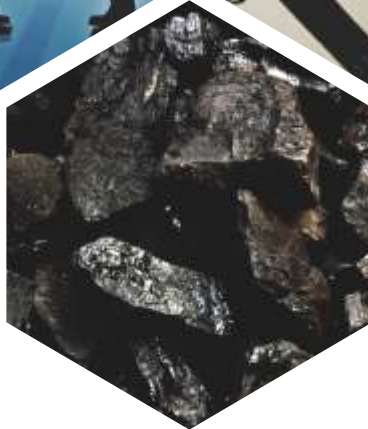
Investment Climate



Strong Policy Framework



Huge Demand Supply Gap



Availability of Sources



Established Infrastructure



Available Ancillary Industries

1st

- ✓ Ranked 1st in Labor reforms and inspection related compliances in India^[1]
- ✓ Endowed with 40% of India's mineral wealth. Leading producer of steel, coal, mica and copper in India (1st rank in coal, 2nd rank in Iron Ore, Apatite rock phosphate, Cobalt, Silver Ore and 3rd rank in Copper, Graphite)
- ✓ Lowest man days lost due to long history of industrial harmony^[2]
- ✓ 1st in country to have SWAN under NeGP and CSC in rural areas^[3]

2nd

- ✓ 10.5% GSDP^[4] growth rate - Second fastest in Eastern India^[5]

5th

- ✓ Ranked 5th Foreign Direct Investment FDI destination in India^[6]

7th

- ✓ Ranked 7th in "Ease of Doing Business" in India in 2016 with an evaluation score of 96.57%^[7]

1 World Bank Report on Assessment of State Implementation of Business Reforms
 2 Indian Labour Journal -2015
 3 SWAN: State wide Area Network; CSC: Common Service Centers
 4 GSDP – Gross State Domestic Product

5 CAGR during 2004-05 to 2014-15
 6 Source: FDI Intelligence Survey
 7 World Bank Report

Energy Sector- Indian Scenario

Commercial Energy

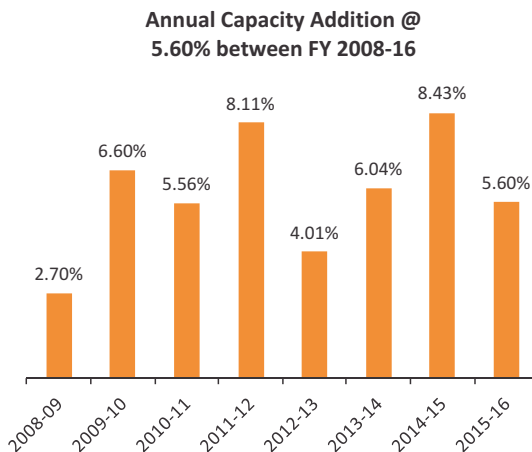
- ▶ Consumer of 3.7% of the world's Commercial energy
- ▶ ✓5th largest consumer in the world
- ▶ Recorded CAGR @ 10.97% during the decade (2005-14)

Capacity Addition

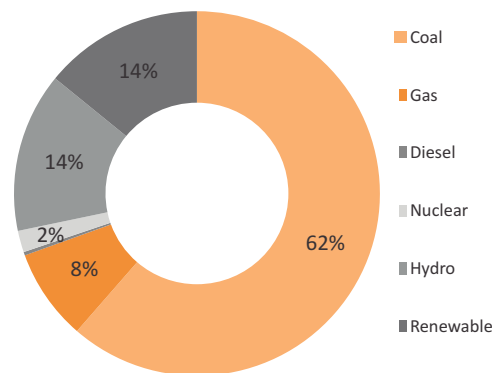
- ▶ Moved from 8th to 5th rank in terms of adding generation capacity
- ▶ Increase Electricity generation @ CAGR of 7.72% in a decade

Demand Forecast

- ▶ Estimated electricity consumption growth @ CAGR of 8.84%.
- ▶ Demand expected to grow @5% annually



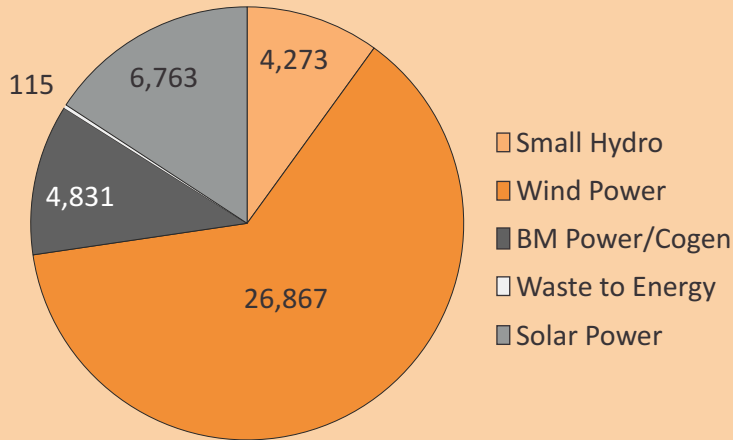
Total Power Generation Capacity - 302,834 MW



**As on April 2016

Renewable Energy Sector- Indian Scenario

Total Power Generation Capacity ~42,849 MW



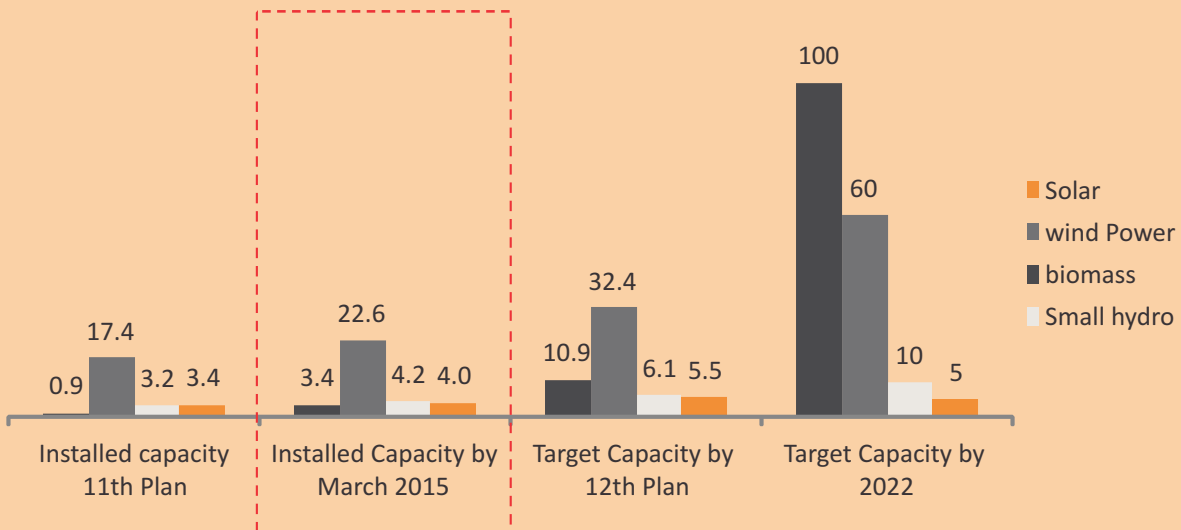
Achievements

- Highest ever capacity addition increase in solar power 1,112 MW in one year
✓ 42% increase in solar capacity during 2014-15
- Grid parity with record low tariff of Rs 4.63 / unit
- 25 solar parks with capacity of ~1000 Mw each planned
- Tender by NTPC to setup 2,170 MW

Targets

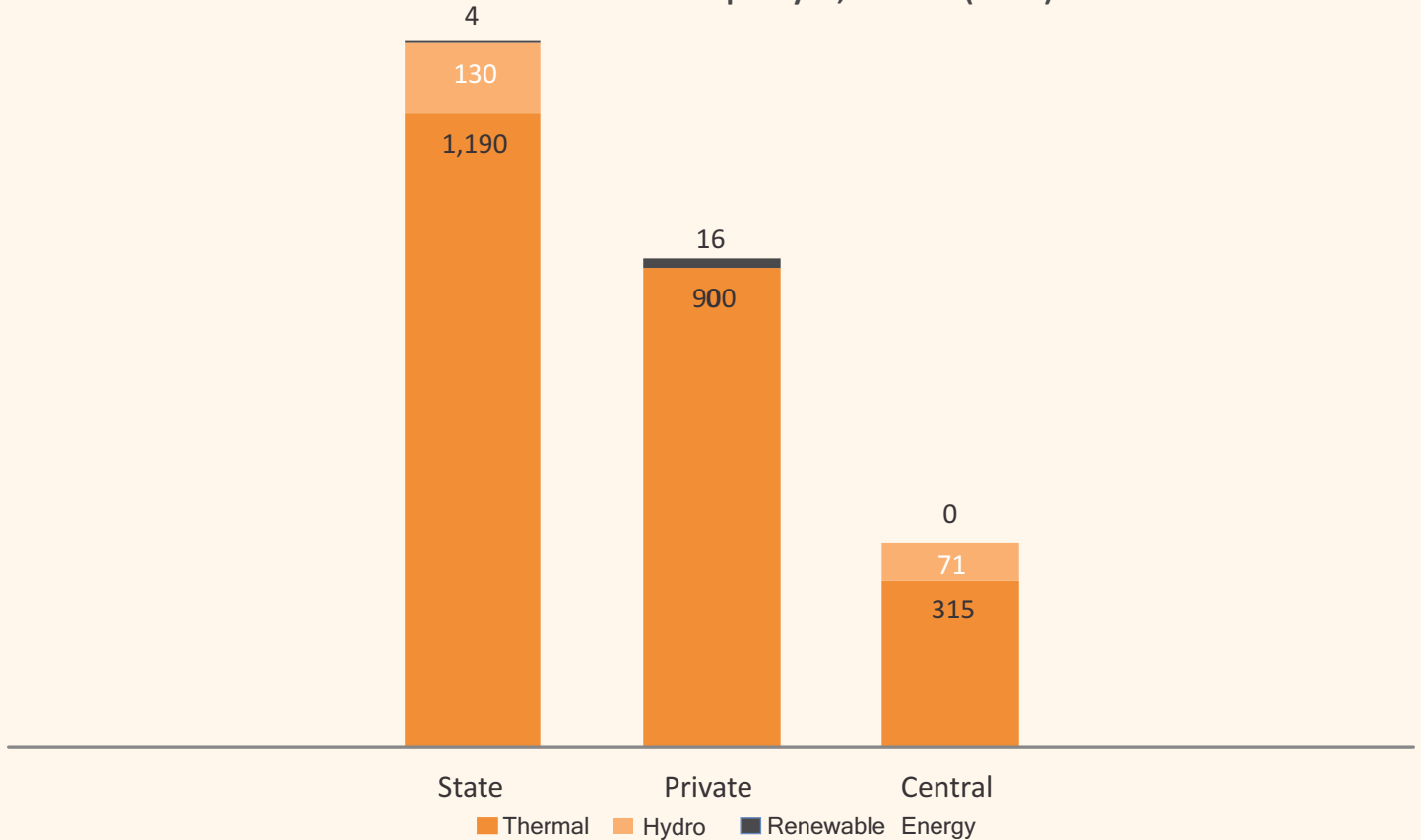
- Reducing emission from 35 % to 30% by 2030
- Achieving about 40% cumulative electric power installed capacity from non fossil fuel based energy source by 2030
- Creating additional carbon sink of 3 billion tones

Installed Generation Capacities and targets

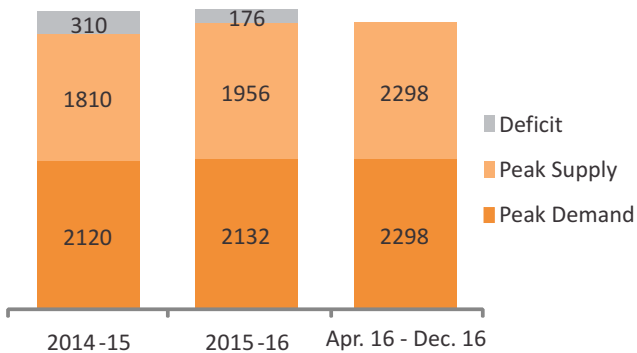


Energy Sector in Jharkhand

Total Power Generation Capacity: 2,626 MW (FY 16)



Peak time Demand Vs Supply:



Projects under pipeline

Projects	Capacity in MW
Central Government	10,400
State Government	5,320
Total	15,720

Source: Jharkhand Economic Survey 2015-16 & CEA

Proposed projects expected to be completed by 2018 to bridge the deficit and become surplus power generation state.

Key highlights of Energy Sector in Jharkhand

Highlights

Vision

- Materialize the outlined strategy under State Energy Policy to transform Jharkhand into "power hub" of the nation through various upcoming generation projects in the State.

Non-renewable

- First State to sign Ujwal Discom Assurance Yojna (UDAY) MoU and amongst first to unveil "24X7 Power for All" roadmap
- 100% village electrification by December 2017 and 100% household electrification by March 2019
- Significant investment in transmission network (INR 13,000 Cr.) and distribution infrastructure (INR 14,000 Cr.) over the next 4 years to facilitate power evacuation and seamless power availability to the State on 24 x 7 basis


Renewable

- Solar isolation: 4.5 to 5.5 kWh/M²/day
- Number of sunny days: More than 300
- Envisaged projects (State target by 2019 - 20):
 - 2,100 MW: Solar PV Power
 - 50 MW: Solar Thermal Power
 - 500 MW: Rooftop Solar PV Power

Investment Opportunities - Coal Mining & Generation

- Development of Rajbar E & D Coal block linked to TVNL expansion (approx. size 422 million metric tonnes with annual coal production rate of 10 million metric tonnes) by appointment of MDO (Mine Developer & Operator) through global tender process, to be initiated by March 2016
- Capacity addition of 2 X 660 MW super critical units as brownfield expansion project within the same boundary of Tenughat Thermal Power Station, Lalpania in the Bokaro district (Existing capacity: 2 X 210 MW), Estimated project cost 6,500 Crores
- Opportunity for setting up cement plant in TVNL area: availability of land, fly ash and power at chargeable basis
- 4000 MW Thermal Power project in Tilaya (linked to Kerandari Coal Block) with estimated project cost of over 24,000 Crores: JIPL will be returned to Jharkhand Govt. and the tender on the basis of tariff based competitive bidding will be re-floated by the month of March, 2017
- 1320 MW project in Karapura with an estimated project cost of 8,500 Cr., for which the bidding will be initiated within 6 months
- Investment opportunity for EPC contractors in 4000MW NTPC and GoJ (JBVNL) Joint Venture at Patratu project (tender is already floated for 2400 MW project), additionally there is also scope for MDO's in Banhardi Coal Block linked to the project
- Investment opportunity for two projects in Chandwa currently owned by Asset Re-construction Company (India) Ltd.:
 - Phase I: 2 X 270 MW Thermal power plant (90% work completed) with an approx. investment of INR 1500 Crores
 - Phase II: 2 X 270 MW thermal power plant (60% work completed), investment amount to be estimated
- Enormous investment opportunity for EPC and BTG manufacturers

Investment Opportunities - Transmission

- 
- The transmission capacity addition of nearly 11,750 MVA, with 61 new Grid sub-stations along with 12,700 Km of transmission lines are planned to be developed over the next 3 years.
 - Investment opportunity for transmission systems, transmission lines & grid-sub systems equipment manufacturers, Optical Ground wire manufacturers, communication equipment manufacturer based on OPGW system, tower manufacturer etc. in the following projects:
 - INR 3,500 Cr. Project under PPP route, out of which Phase 1 project with investment of approx. 1800 Cr. in Koderna, Chandil & Dumka is already in process and will be available within a month and phase 2 with approx. investment of 1700 Cr. in Jasidihi, Domchanch, Panki, Nagar Utari, Jadugoda etc. will be available within 3 months
 - Projects worth nearly INR 3,500 Cr are to be implemented by State Transmission Company with the support of World Bank, to be offered to credible private players through domestic/ international competitive bidding over the next 3 years
 - Projects worth nearly 2,500 Cr. to be developed by State Transmission Utility with the support of State Government & Financial Institutions providing opportunities to private players

Investment Opportunities - Distribution



- Nearly 27 lac new households to be added to the distribution network and 100% metering at all levels of distribution network to be achieved by 2019, providing opportunity to meter and cable manufacturers
- 322 new PSS are to be commissioned over the next 4 years to increase the existing PSS capacity from 3,687 MVA to 7,188 MVA, providing significant opportunities for electrical equipment manufacturers to establish their manufacturing base
- Private players to be roped in for Power Sub-station augmentation, strengthening and maintenance
- Implementation of SCADA in large towns of Jharkhand with Smart grid and smart metering solution.
- Rural franchisee in 25 Rural Sub-division is being planned to be implemented, to bring efficiency in operations through private investments
- Select divisions/ circles to be bid out to private players with the distribution infrastructure to given revenue sharing basis with concession period of 25 years, for which the modalities are being finalized

Investment Opportunities- Renewable

Solar



Wind



-
- Tender has been already floated for 125MW hydel power project for 13 different places on PPP mode ranging from 0.7MW to 24MW projects
 - Target to reach the capacity of 2600 MW solar energy by 2022, out of which Letter of Intent has already been issued for 1100 MW, providing enormous investment opportunities for Project Developers Solar panel manufacturers and inverter manufacturers
 - Investment opportunities for solar power plant developers, manufacturers etc. in implementation of DDG projects for off-grid electrification of 230 un-electrified villages
 - Installation of 2000 solar water pumping systems on farmers lands
 - Investment opportunity in setting up of Grid Connected Rooftop Solar Power Plants on government building (5 MW), individual roofs & commercial & industrial establishments (50 MW)
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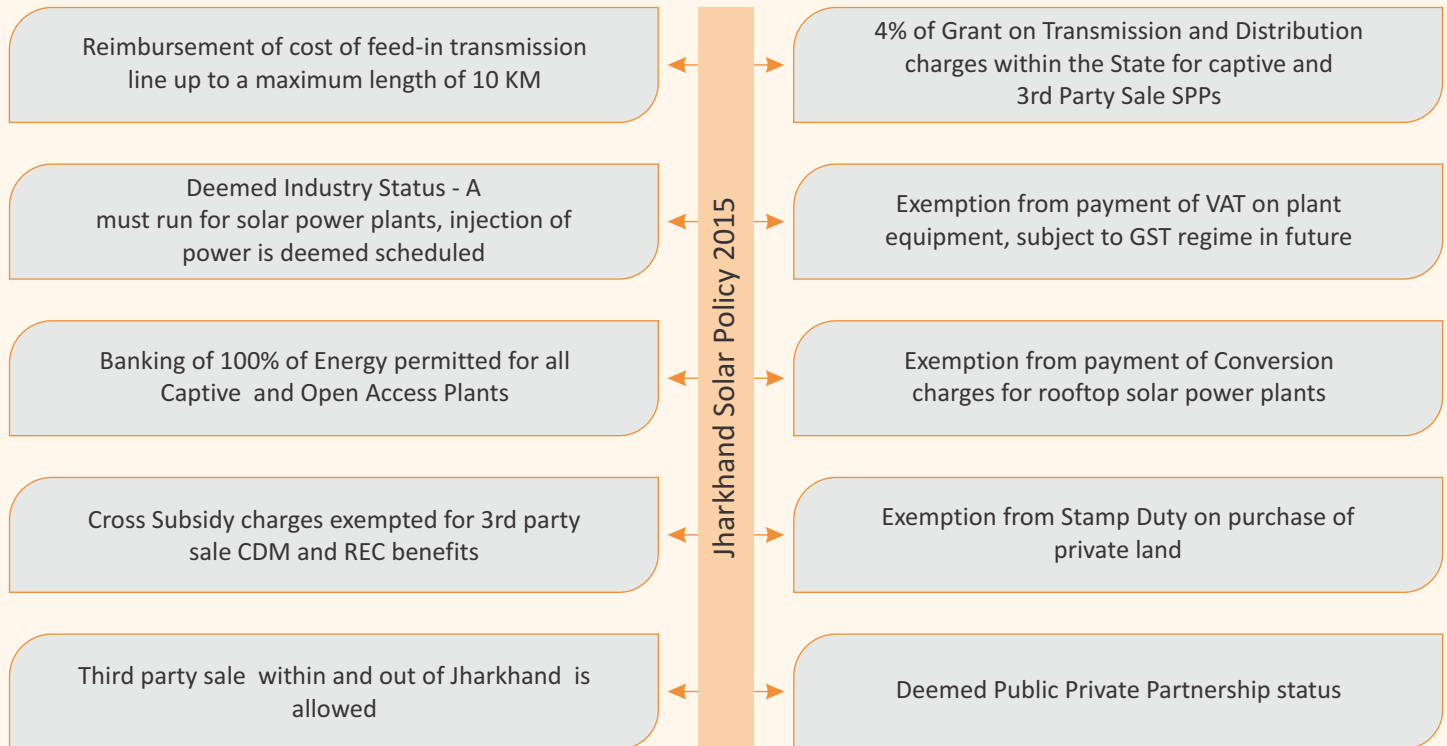
Waste to Energy



Small Hydro



Policy Enablers- Jharkhand Solar Policy 2015



Industrial Investment Promotion Policy 2016

Incentives for setting up of Projects

- Mega projects investment higher than Rs 100 cr are eligible for 50% reduction of Electricity duty for 5 years from the date of commencement
- Renewable Energy Generation projects are eligible for 50% reduction of Electricity duty for 10 years from the date of commencement
- IPPs signing MoU with State are offered 25% of installed capacity power for supply to State at 1st right of refusal at tariff decided by State Regulator.



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