



# Shri Piyush Goyal inaugurates International Conference on Green Initiatives & Railway Electrification

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Minister of Railways & Coal Shri Piyush Goyal inaugurated International Conference on Green Initiatives & Railway Electrification organised by Ministry of Railways through Institution of Railway Electrical Engineer (IREE) India here today i.e. 27th October 2017.

Minister of State for Railways & Minister of State for Communications (Independent Charge) Shri Manoj Sinha was specially present to grace the occasion. Member Traction Railway Board & Patron, IREE, Shri Ghanshyam Singh, other Railway Board Members, Additional Member Electrical, Railway Board & President, IREE Mr. V. K. Agarwal and senior officials were also present on the occasion.

Speaking on the occasion, Minister of Railways & Coal, Shri Piyush Goyal said, "Indian Railways is working with a renewed attitude and confidence. The mindset of Indian Railways has changed. Indian Railways is working with "will do/can do" spirit, for the Government, Development is a positive agenda. Indian Railways is working in a mission mode and coming up with solutions to the problems. Indian Railways is working with a commitment to serve in a time bound manner for the common people. For the common people, Railways is the preferred mode of transport. 1.3 million Railwaymen have dedicated themselves to serve with commitment. We are working in time bound manner, skillfully, effectively to transform Indian Railways truly to a world class, safe and modern transporter. As India showed the world a new light in replacement of LED bulbs, similarly Indian Railways shall lead the world by achieving 100 % electrification. Indian Railways by applying economies of scale shall be able to accomplish 100% electrification at lower prices with "an incentive cum penalty" framework scheme. A holistic plan is required to carry out 100 % electrification. This conference shall ensure to find solutions to all the bottlenecks with a view to implement the electrification in mission mode. "To think is easy, to act is difficult but to act as you think is most difficult" & Indian Railways has accepted this most difficult challenge. The question is are we destined to live in the past or we are ready to change? We will have to change as per the best in the world. With New India, we have to build New Indian Railways which is modern, safe and run with better speed. We should not let down the next generation by not incorporating modern ways.

Speaking on the occasion, Minister of State for Railways & Minister of State for Communications (Independent Charge), Shri Manoj Sinha said, "Indian Railways have set a massive target of 100 % electrification, meeting this huge target is a challenge, this conference will provide an insight how we may achieve this target. Also, Green Initiatives and adopting viable sources of energy over Indian Railways has been our priority in past three years."

Minister of State for Railways, Shri Rajen Gohain who could not attend the event has, however, in his message sent for the souvenir said, "Indian Railways is the most energy efficient mode of transport and therefore, is considered as the most environmentally sustainable transport system. With rapid economic growth, the transport sector is also growing and increasing its energy demand. Transport sector being the biggest consumer of energy, especially railway as the single largest consumer with share of about 2% of National energy consumption.

Mission Electrification, a strategic shift for Railways is a bold initiative taken up by Indian Railway wherein it has been decided to undertake electrification of complete railway network at a rapid pace. This along with Decarbonization initiatives will propel increased use of Renewables in Railways."

Chairman, Railway Board, Shri Ashwani Lohani in his message for the souvenir said, "Rail being the most energy efficient mode of transport is further working to **change the energy mix towards greener sources** and has taken number of steps in this direction. We need to continue to innovate so as to make railway cost effective, sustainable and a preferred carrier. In this regard, **100% Electrification** now targeted will serve an ideal stepping stone, wherein technological inputs are required to accelerate electrification. This conference will lead to many such solutions to speed up electrification projects, increase speeds and use of renewable energy in the rail sector in an effective manner leading to reduced operational costs."

Speaking on the occasion, Member Traction, Railway Board, Shri Ghanshyam Singh said, "Under the able leadership of Hon'ble Prime Minister and guidance of Hon'ble Minister of Railway, Indian Railway has committed itself to serve the people of this nation by improving its services and thus gradually transforming itself into an efficient and reliable public and goods transporting agency across the country. As announced by Hon'ble MR, to take the pace of Electrification to about **30 KM per day**, we are going for precast foundation, mechanization of construction & are introducing various technologies and systemic changes in our bidding system also by bringing in bigger contract packages. Electrification is a powerful measure to achieve cost effectiveness. It improves mobility by use of high power energy efficient Locomotives, facilitate shift of traffic from road to rail and also to reduce carbon footprints. In addition electrification will also reduce traction energy bill substantially from present energy bill of Rs 26,500 Cr. to Rs 16,000 Cr i.e. by about 40%, thereby will improve operating ratio. IR has already reduced the electric traction bill of Rs 10,600 Cr in 2014-15 by about Rs 1200 Cr over the last two years by procuring power under Open access and the same is likely to reduce further, giving railway an annual saving of about Rs 3000 Cr by end of this financial year."

President of Indian Railways Electrical Engineers (IREE) and Additional Member (Electrical), Railway Board, Shri V.K. Aggarwal said, "IREE conference aims to discuss implementable technological solutions and financing towards speedy electrification, induction of high speed locos & solutions to fruitfully use renewable energy models to achieve target of 1200 megawatt installation by 2020 and thus achieve the broader goal of transforming Indian Railways as one of the most efficient rail network in the world."

The main objective of the two days international conference is to bring green power project developers and other stakeholders on a common platform for making Indian Railways (IR) an efficient and Greener mode of transport. This will open an international discussion on various Green initiatives including use of renewable energy, shift towards electric traction, development of new locomotive technology, high speed rail traction system and development in generation of Solar/Wind power as well as use of energy in efficient ways. This conference has the aim for giving boost to 'Make in India' and 'Innovative India' campaigns of Hon'ble Prime Minister of India.

Theme of the conference aims at achieving following activities:

- 1) Moving Indian Railways towards 100% Electric traction – Showcase new technologies, mechanisation and innovative solutions for speedy electrification.
- 2) Meeting Indian Railways high speed Locomotive requirements.
- 3) OHE for 200 kmph- Requirements & How to achieve in existing OHE.

#### 4) Solutions for Energy Efficiency and increasing use of Renewable Energy on Indian Railways.

##### Objectives of the Conference:

In brief, this conference aims to:

- Increase awareness among the stakeholders about Green Energy options available on Indian Railways;
- Evaluation of the existing policies & risk factors, suggest improvements and explore future opportunities;
- Explain the commercial aspects of these technologies, identification of business opportunities and the related risk mitigation options;
- Formulate strategy for successful implementation;
- Discuss de-carbonization through successful carbon foot-printing;
- Comparison with other countries and benchmarking;
- Discuss case studies on successful pilot projects;
- Moving IR towards 100% Electric traction - Showcase new technologies and innovative solutions for speedy electrification;
- Meeting IR's high speed Locomotive requirements;
- OHE for 200 kmph- Requirements & How to achieve with existing OHE;
- Solutions for Energy Efficiency and increasing use of Renewable Energy on IR;
- To promote and popularize 'Make in India' initiative a new Indian Railways;
- Provide a platform to learn and share experiences of international & national experts and industry leaders on electrification, renewable energy technologies & solutions and best practices in the Rail Sector;
- Offer insights and in-depth discussions on a wide range of green initiatives and energy efficiency issues in the Rail Sector.

Mission Electrification, a strategic shift for Railways is a bold initiative taken up by Indian Railway wherein it has been decided to undertake electrification of complete railway network at a rapid pace. This along with Decarbonization initiatives will propel increased use of Renewables in Railways.

Eminent and respected speakers from India & abroad spoke on various subjects considering the wide range of the subjects including speakers like Mr. Camille Thill from Bombardier Transportation (Switzerland), Mr. Joaquín Jiménez, Senior International Vice Director ADIF (Spain), Dr.-Ing. André Dölling from Siemens (Germany) & Prof. Bipradas Dutta, President, Vivaswan Technologies, Inc (USA) and many others. During the conference, each technical session was chaired by the retired Members from different departments under the Ministry of Railways, Government of India.

This conference will work as a platform to learn & share experiences of international & national experts and industry leaders on electrification, renewable energy technologies & solutions and best practices in the Rail Sector. This will further promote and popularize 'Make in India' initiative a new Indian Railways through promoting a sustainable approach implementing Energy Efficiency and increasing use of Renewable Energy in Indian Railways.

In this regard, following action has been planned for improving efficiency and bringing in cost economies in freight and passenger operations. Reducing the Carbon Footprints through use of sustainable and green sources of energy is also a key focus area.

In line with this vision, following action plan is undertaken:

##### a) Electrification of Railway Tracks

Currently about 33,000 rkm of tracks are electrified i.e. **40% of Railway network is electrified** though it carries about **55% coaching and 65% freight traffic at about only 35% of total fuel bill of Indian Railways**. We are now going for 100% Railway electrification and to achieve this task, 33000 RKM of Railway network will be electrified on fast track by 2021-22. This will reduce energy bill from present level of Rs 26,500 Cr. to about Rs 16,000 Cr. i.e. savings of Rs 10,000 Cr. per annum with almost 100% operation on electric traction. To fast track the pace of electrification, Ministry of Railway would be involving PSUs like IRCON, RITES and PGCIL. Increase in the pace of electrification will **reduce** its fuel bill **by Rs. 10,000 cr. annually** as against the business as usual approach.

##### b) Mission 41K & Open Access

To further bring down the energy bill on Indian Railways, Railway have started procuring power through 'Open Access' and in this year the electric traction bill is likely to reduce by Rs 2500 Cr. i.e. 25% on annualized basis as against the bill of 2014-15. As you may be aware that earlier Mission 41K was launched with an aim to generate a cumulative saving of about **₹41,000 cr** in electric traction bill from 2015 to 2025 by procuring power from '**Open Access**'. You will be happy to know that we are doing much better than what was targeted and till Sept. 2017 we have saved about Rs. 5100 Cr, i.e. Rs. 1000 Cr, more than what was estimated in Mission 41k document.

##### c) Harnessing Renewable Energy on Indian Railways to reduce energy cost and carbon footprints

Indian Railways has planned to set up about 1000 MW solar and about 200 MW wind power plants by 2020-21 across Zonal Railways & Production Units. So far more than 60 MW of solar & wind power plants have already been installed covering **270 stations & 120 administrative buildings & hospitals** and further orders for about 150 MW have been placed for solar plants on roof tops of Railway Buildings. Moreover Railways are also working for setting up 400MW capacity through various other agencies to source energy in various states through land based solar plants.

Railways is effectively using its roof top for putting up solar plants under PPP, which has made it possible for Railways to purchase power at a much lesser cost. There by again saving in the energy bill without any investment. Under this model about 150 MW solar plants have been ordered till date.

##### d) Production of Energy Efficient High Horsepower Locomotives

Indian Railway is also on the path of development of High speed Passenger locomotive with speed potential of 200 kmph. Works on high speed locomotive is going on full steam and is expected to be turned out by CLW in March 2018. In addition Indian Railways is planning to acquire high horse power, (9000 HP) passenger locomotive capable of hauling trains at 200 kmph on routes identified for semi high speed operation (160-200 kmph). It is planned to upgrade the existing 6000 HP freight and passenger locos to 9000 HP to improve the hauling speeds for freight trains and number of coaches for Passenger trains. It's a 'Make in India' initiative already started at CLW.

##### e) Head On Generation (HOG)

Indian Railways have introduced HOG system wherein the lighting, air-conditioning and other electrical loads of passenger coaches would be fed directly from electric power drawn by locomotive from grid. This system will do away with the requirement of diesel power car for feeding electric supply to coaches and also enable in carrying additional passengers. On date 34 trains are already running on HOG system & are giving a saving of about Rs. 87 Cr

per annum and additionally 64 trains will be taken on HOG system in the current fiscal year.

#### **f) Electrical Multiple Units (EMUs)**

All new EMUs produced will be energy efficient with three phase technology having regeneration capability. Working on multi prolonged strategies to reduce this energy consumption Railways are now inducting only 3 phase energy efficient regenerative locomotives and EMUs from 2016-17.

During the conference Hon'ble Minister for Railways & Coal. Shri Piyush Goyal dedicated Solar Power Plant of 5 MWp to the nation. This is the first largest Plant commissioned by Indian Railway on the roof top of Hazrat Nizamuddin, New Delhi, Anand Vihar & Delhi Railway Station.

This project was awarded under PPP model in December 2016 at Rs. 4.14 per unit and it was the lowest tariff on Indian Railways at that time. The Plant has been commissioned in record period of 10 months. The entire cost of the project i.e., Rs.37.45 Cr. have been bought in by the Developer under Public Private Partnership model. The developer will also maintain it for 25 years and Railways will only pay energy consumed at Rs. 4.14 per unit and the facility of Net-metering is also available where the excess power supply is fed into the DISCOMs. This will save Rs. 421.4 Lac and will meet about 30% of the requirement of these installations. It will also reduce 6082 Tonnes CO2 emission per year.

The Railway Minister also released a souvenir on this occasion.

There were also following technical sessions:-

- a.) Theme: Green Energy Projects-Opportunities for Partnerships.
- b.) Theme: Meeting IR's High Speed Locomotive Requirements.
- c.) Theme: Energy Efficiency - Technology & Solutions.
- d.) Theme: Roadmap towards reducing carbon Footprint.
- e.) Theme: Moving Indian Railways (IR) towards 100% Electric Traction.
- f.) Theme: Biodiesel-Technology & Solutions.

Vote of thanks was proposed by Shri Dayal Dogra, General Secretary, IREE and Principal, Chief Electrical Engineer, Northern Railways.

#### **About IREE**

Engineers is a professional body of Railway Electrical Engineers. It is a technical body under the auspices of Ministry of Railways sharing knowledge and experience of various Railway engineers and others connected with Electrical Engineering.

The Institution, registered at Nasik in 1995, has been recognized by Railway Board in the year 1998. The Institution aims to disseminate and share the technical knowledge among the Railwaymen and industry regarding the available and new technology related to design, construction and maintenance of electrical assets including energy management portfolio. It is the platform for adoption of new emerging technologies to serve the need of Railway Electrical Engineering.

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