Nationally Determined Contributions - Transport Initiative for Asia (NDC-TIA, India Component)

Funded under the International Climate Initiative (IKI) by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)

"Integration of Electric Vehicles Charging Infrastructure with Distribution Grid: Global Review, India's Gap Analyses and Way Forward"

Agenda – Release of the Report

Report 3: Electric Vehicle Charging Infrastructure and its Grid Integration in India: Status Quo, Critical Analysis and Way Forward

Date: 28th July 2022 | **Venue/Channel:** Meeting link | **Timing:** 16:15 to 17:15 hrs (IST)

Time (hrs.)	Event	Speaker
16:15 - 16:20	**Opening Remarks**	Prof. Rangan Banerjee Department of Energy Science and Engineering IIT Bombay (Currently Director, IIT Delhi)*
16:20 - 16:25	**Presidential remarks**	Dr. Winfried Damm Head - Indo-German Energy Programme, GIZ India
16:25 - 16:35	**Report Launch and Keynote Address**	Mr. Sudhendhu Jyoti Sinha, Advisor, Infrastructure Connectivity & Electric Mobility Vertical, NITI Aayog, Government of India
16:35 - 16:40	**Guest address**	Mr. A. K. Rajput, Chief Engineer (R&D), CEA
16:40 - 17:10	**Presentation on Report 3:** *'Electric Vehicle Charging Infrastructure and its Grid Integration in India: Status Quo, Critical Analysis and Way Forward'*	Prof. Zakir Hussain Rather Department of Energy Science and Engineering, IIT Bombay, India
17:10 - 17:15	**Closing Remarks**	Dr. Indradip Mitra Team leader- E-mobility, Indo-German Energy Programme, Country Coordinator for NDC-TIA India Component, GIZ India

*To be confirmed

Brief Description of the Study

The global Electric Vehicle (EV) fleet is poised to increase exponentially in what has been dubbed as the electric mobility revolution. The push for EVs is driven by the global climate agenda established under the Paris Agreement to reduce carbon emissions to limit global warming. Importantly, not only would a switch from combustion-engine vehicles to EVs lead to lower emissions, but it would also result in a reduction of air pollution. In addition, the deployment of EVs is also driven by national agendas to reduce oil demand and, as such, dependence on oil imports, as well as the encouragement of local EV manufacturing industry for job creation. On the other hand, through several grid support services, EVs are expected to strengthen the grid and help accommodate higher renewable energy penetration while maintaining secure and stable grid operation.

The Nationally Determined Contribution-Transport Initiative for Asia (NDC-TIA) is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) supports the initiative based on a decision adopted by the German Bundestag. NDC-TIA is a joint project of seven organisations and with the engagement of China, India, and Vietnam. The central aim of the NDC-TIA project is to promote a comprehensive approach to decarbonising transport, i.e., a coherent strategy of effective policies that are coordinated among various sector ministries, civil society, and the private sector. The activities under NDC-TIA India component are carried out in close collaboration with our implementation partner NITI Aayog, Government of India. The detailed information on NDC-TIA project can be found here - Decarbonising transport in Asia with a focus on China, India and Vietnam.

Under the NDC TIA India Component, the study, "**Integration of Electric Vehicles charging infrastructure with distribution grid: Global review, India's gap analyses and way forward**" focuses on EV charging infrastructure, related policy and regulatory measures, grid integration of EVs, and the way forward for smooth EV adaption in the Indian EV ecosystem. This study is carried out by consortium led by IIT Bombay along with Florence School of Regulation (FSR), Technical University Denmark (DTU), Cardiff University and Universidad Pontificia Comillas. The study developed a framework along with the inputs from a detailed critical international review on EV charging infrastructure development and its grid integration from different EV rich countries. The developed framework has been used as a basis for identifying gaps and scope for improvement in EV charging infrastructure adoption at the national level and in the States. The study based on a combination of research analysis, surveys, bilateral consultations with stakeholders, and supporting workshops have been used to identify and recommend National and state-specific interventions that can be sandboxed for the use by regulators, policymakers, DISCOMS, and other stakeholders, and later adopted across the country.

For further information and resources from the India component of NDC-TIA project, kindly visit this website - https://www.ndctransportinitiativeforasia.org/india.

Brief Description of the Reports

The outcome of this study is documented in a series of four technical reports. The four reports listed below cover different aspects of EV integration in a structured manner for effective, organised, and easy dissemination of the study outcome.

- **Report-1:** Fundamentals of Electric Vehicle Charging Technology and its Grid Integration
- **Report-2:** International review of Electric Vehicle Charging Infrastructure and its Grid Integration
- **Report-3:** Electric Vehicle Charging Infrastructure and its Grid Integration in India: Status Quo, Critical Analysis and Way Forward
- **Report-4:** Gap analysis and Recommendations for EV Integration in India

Report-3: Electric Vehicle Charging Infrastructure and its Grid Integration in India: Status Quo, Critical Analysis and Way Forward

This specific report is the third report in the series of four reports of this study. This report is focused on detailed documentation and analysis of EV charging infrastructure and its grid integration in Indian EV ecosystem covering the current status analysis of various aspects including EV charging technology, standards and protocols applicable in India, grid integration status of EVs, stakeholders in Indian EV ecosystem, policy and regulatory matters related to EV charging infrastructure (both at central and state level). Moreover, gap analysis in EV charging infrastructure and its grid integration in Indian EV ecosystem is also presented in this report. Since the Indian EV market currently constitutes of mainly electric 2W, 3W and 4W (e-cars), the main focus of this report is on these passenger vehicle segments. E-buses and heavy-duty trucks that currently have very low penetration in Indian EV market, are not the focus of this report.

Previous released reports (Report-1 and Report-2):

Report-1: *Fundamentals of Electric Vehicle Charging Technology and its Grid Integration*

This specific report is the first in the series of four reports documenting the fundamentals of EV charging technology, standards, communication protocols, and grid integration of EVs with the distribution system. The functional role of EV charging in the EV ecosystem is discussed in detail.

(Link to download the report from NITI Aayog Website)

Report-2: *International Review of Electric Vehicle Charging Infrastructure and its Grid Integration*

This specific report is the second in the series of four reports. It documents analysis of international experience on EV charging infrastructure developments, grid integration of

EVs, policy and regulatory review, various case studies, demonstrations and commercial implementation of EV charging technology and grid integration. The countries covered in depth in this report are the United Kingdom, the United States of America, Germany, The Republic of China, Norway, Denmark, The Netherlands and Sweden. This report aims to provide an overview of EV charging evolution from EV rich countries, which would help the Indian stakeholders, both Government and private, develop measures that could be implemented in India. This report would act as one of the reference documents to facilitate framing customised recommendations for seamless adoption of EV charging infrastructure and integrating EVs with the Indian grid.

(*Link to download the report from NITI Aayog website*)