
**Power market Reforms to enable Renewable Energy
(RE) based Electric Vehicle (EV) Charging in India**

**Project number/
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Terms of reference (ToRs) for the procurement of services

List of Abbreviations

BMU	Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety in Germany
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CPO	Charging Point Operator
DISCOM	Distribution Company (In India)
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FOR	Forum of Regulators
GHG	Green House Gases
IKI	International Climate Initiative
MoP	Ministry of Power
NDC TIA	Nationally Determined Contributions- Transport Initiative for Asia
RE	Renewable Energy
SERC	State Electricity Regulatory Commission

1. Project background

As part of the International Climate Initiative (IKI), the Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU) in Germany has supported a project called the NDC Transport Initiative for Asia (NDC-TIA), which is a joint consortium of seven organizations and engages in three partner countries from emerging economies i.e. China, India and, Vietnam. The central aim of the project is to promote a comprehensive approach to decarbonizing transport, i.e. a coherent strategy of effective policies that are coordinated among various sector ministries, civil society and, the private sector. In each of the partner countries, the consortium supports countries in facilitating and informing the stakeholder processes and in developing selected climate actions. This enables partners to make a sectoral contribution towards achieving their NDCs and increase ambition in transport sections of long-term strategies and 2025 NDCs. As a regional initiative, the project also disseminates knowledge in Asia. The consortium connects with regional stakeholders and other Asian countries in order to encourage taking a comprehensive approach to decarbonizing transport. At a global level, the project would disseminate knowledge and share experiences in the UNFCCC process.

GIZ is leading the project and its office in India is the overall coordinator for the India component of the project. One of the major focuses of the India component is electric vehicles (EV) charging infrastructure. With the growing concerns over carbon emissions and the need to curb oil imports to enhance India's energy security, Electric Vehicles (EVs) are becoming more and more popular due to varied reasons such as lower maintenance costs, cheaper fuel costs, eco-friendliness, and a few more. In view of this, many states are racing ahead through policy frameworks in this domain. Also, concerned ministries have already taken many steps to promote E-Mobility such as the introduction of the second phase of the Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles scheme (FAME India), Amendments in the Model Building Bye-laws for Electric Vehicle Charging Infrastructure, the introduction of Guidelines and Standards for Electric Vehicles charging infrastructure. Several measures have been undertaken by the government and the DISCOMs to develop a robust charging infrastructure.

Mainstreaming of electric vehicles (EV) will increase the electricity demand in the country. Electric vehicles have zero tailpipe emission, and hence this transition from fossil fuel to electricity will be cleaner if the electricity is generated (majority or all) using renewable energy (RE) technology. Procurement of electricity from renewable energy power plants can happen in two ways – on-site (grid/off-grid system) or through remote systems (grid-connected). EV chargers may use on-site RE based solar rooftop/ground-mounted systems coupled with energy storage, to generate electricity. Such systems can work with and without grid connectivity. Other possibilities like group/virtual metering, open access and open market procurement and trading may only be possible for grid connected EV chargers.

India is increasing the share of renewable energy in its energy mix and presently around 24% (~ 91 GW) of the total installed capacity of power stations in India is attributed to renewable energy. The Government of India has set an ambitious target of 450 GW of renewable energy by 2030. In this scenario, there is also a growing need to source green power for EVs given that currently majority of the power generated in India is from thermal power plants. While EV penetration is on a steady rise in the country, the state governments are working towards developing robust charging infrastructure to cater to the demands of EV users. Across the world, many countries have announced schemes and subsidies to facilitate sourcing of RE power for EV charging and this has indeed contributed to their carbon neutrality targets.

Managing EV charging schedules to match the peak generation of solar and wind power will help in consuming renewable energy which is unreliable and inconsistent. EV charging has the

potential to mitigate curtailment and facilitate grid integration of RE power. Therefore, it is pertinent to understand the challenges and opportunities in the existing policy, regulatory, and technological landscape in India for EV charging to complement RE power generation and thereby enable efficient grid management.

The deliverables from this assignment could act as a reference document along with proposed recommendations for the Indian government (central and states), policy makers, power sector stakeholders, etc. in framing, and/or revising policies, regulations for integrating Renewable Energy (RE) based Electric Vehicle (EV) Charging infrastructure. It will also provide information to the industry stakeholders on the future prospects for RE based EV Charging in India.

1.1 Objective of this assignment

The main objective of this activity is to provide recommendations to facilitate policy and regulatory support in Indian power system, power market and trading to access the use of renewable energy for fuelling Electric vehicle (EV) in India. It also aims to quantify the benefit of energy security, electrical grid, and climate with use of electric vehicles by modelling the emissions and carbon footprint, and thereby measure the contribution of EVs to achieve India's NDCs. The following are the key objectives of this assignment to be pursued.

- Review international best practices for integrating renewable energy (RE) for EV charging
- Undertake simulations-based modelling to estimate the reduction in vehicular and GHG emissions because of EV and RE penetration
- Understand the integration challenges to RE and EV charging
- Undertake feasibility of RE based EV charging
- Document recommendations for policy makers and implementation agencies to enable RE based EV charging in India

The outcome of this assignment will be one of the guiding documents for the policymakers, stakeholders, and industry professionals to undertake measures and initiatives to enable RE based EV charging in India.

This assignment should provide answers to the following key questions:

1. What are the requirements and amendments necessary in policy and regulations for the implementation of RE based EV charging and what is the added value to the customer and the environment?
2. What are the international best practices for integrating RE for EV charging and how to develop an enabling environment in India?
3. How to design a power market to play an enabling role for RE based EV charging?
4. How to enhance the feasibility of RE based EV charging in India?

2. Tasks to be performed by the consultant

The broad topic to be covered in this study is enabling RE based EV charging. A thorough review of the RE based EV charging integration technologies, its applications, enabling policies and regulations is to be performed. The study should also recommend how RE based charging could be integrated along with forecasting of EV load while considering charging patterns and consumer behaviour thoroughly.

Review of the international best practices to design a power market that enables integration of RE based EV charging is to be presented. Relevant policy and regulatory measures required should be documented. Techno-economic analysis must be undertaken to evaluate the techno-economic feasibility for implementation of RE based EV charging in India. To make RE based EV charging beneficial and attractive for the consumers, the consultant should devise effective, efficient and sustainable business models/schemes that could be implemented by the state and/or central government. The consultant must provide suitable recommendations for implementation of RE based EV charging in India.

Two workshops and multiple stakeholder consultations are to be conducted at different points in time with all the important stakeholders to get a constructive feedback/inputs and disseminate the results of the study.

The consultant must consider the relevant documents for the portion related to Indian policies, regulations and schemes from the organizations relevant for the study (for e.g., state electricity regulatory commission, state transport department, state power department, central electricity regulatory commission, central electricity authority, bureau of Indian standards, ministry of power, department of heavy industry, etc.).

The simulation tool can be preferably an open source or commonly used commercial tool available with the consultant. The consultant should propose the software to be used in their technical bids and highlight the benefits and limitations related to the assignment. It is to be noted that there is no budget provision for licensing of software under this assignment. The proposed software tool must be finalized post discussion and approval from GIZ at the start of the assignment. The consultant must maintain strict confidentiality of the data and must use it solely for the purpose of the project. All the documents as part of deliverables must be submitted in editable formats (MS Word, MS Excel, MS PowerPoint) as well as final PDF versions. All the resource material utilized for research and reference during the course of this engagement should be submitted to GIZ India.

3. Detailed scope of work

The scope of work requires the consultant to undertake a step-by-step approach to enable RE based EV charging in India. The key steps involve:

1. Undertaking city level analysis for RE based EV charging. This would involve development of a roadmap and recommendation report in close consultation with the major public and private institutions.
2. Undertaking a global and India level assessment of technology, policy, regulatory and grid integration related measures to enable RE based EV charging. This also involves undertaking extensive stakeholder consultation and developing recommendations for implementation of key policy and regulatory measures/interventions by the relevant institutions under Government of India, such as Forum of Regulators (FOR), Ministry of Power (MoP), Central Electricity Regulatory Commission (CERC), Central Electricity Authority (CEA) etc.
3. Undertake constant meetings with the relevant public institutions to implement the required norms in the form of policy or regulation or guideline in the Indian power sector. The implementation has to be backed up using calculations, simulation studies and relevant rationale.

Work Package 1: Analysis, Roadmap and Recommendations for City-level implementation of RE based EV charging

The Consultant needs to undertake conceptualization and recommendation for City-level implementation of RE based EV charging in India.

Three (3) cities in India will be selected for a deep dive into the aspects of RE based EV charging. Cities will be mix of renewable energy rich, moderate, and deficient. The 3 cities that have to be chosen for this study are Bengaluru, Kolkata and Panaji.

Task 1.1: Stakeholder mapping

Undertake stakeholder mapping of different departments in the selected cities which are involved in RE and EV adoption. In addition, provide the matrix for EV preparedness index for the identified city. This would include defining the roles and responsibilities of concerned departments in the RE and EV ecosystem such as Municipal corporation, State Transport Unit, DISCOM, State Electricity Regulatory Commission etc.

Task 1.2: Review of existing power infrastructure scenario

This shall include, but not limited to:

1. Evaluate the RE (also look at state RE policy) generation capacity addition and EV (also look at state EV policy) charger deployment targets.
2. Evaluation of options for sourcing RE power for EV charging in the cities (for example: use of open access from Independent power producer)
3. Evaluate the RE and EV charging specific policies and regulations that would enable or potentially hamper implementation of RE based EV charging
4. Feeder level assessment of hosting capacity for EV charging stations/EV load while considering line loading (congestion), voltage profile, losses etc.(conducting feeder level power flow analyses to understand the feasibility of maximum charging station capacities),
5. Assessment of potential of setting up charging stations across the city based on locally available RE and existing distribution network
6. Assessment of open access policy in India w.r.t to EV charging to explore the benefits of, and challenges in RE open access
7. Analysis of tariff and metering arrangements in place for RE power and EV charging
8. Review of demand response programs undertaken by the DISCOMs
9. Analysis of the challenges experienced/foreseen by DISCOMs and prosumers
10. Identify the challenges/conflicts/open questions/issues between DISCOM, System operators, electricity market operators and other key stakeholder in adoption of RE for EV charging in general, particularly relevant to India.
11. Review the technology for RE based EV charging at individual EV level (for example, EV embedded with PV modules, standalone parking PV powered charging point etc.) and at utility level

Task 1.3: Technical review of planning and operation of distribution grid for integration of renewable energy with EV charging

This shall include, but not limited to:

1. Analyze the technical limitations in the DISCOM's network to integrate RE with EV charging using power flow analysis method
2. Investigate sourcing options for RE power for EV charging
3. Simulate the benefits of RE based EV charging and extend the methodology as mentioned under WP3.
4. Feasibility of undertaking demand response programs with RE based EV charging stations – load shifting, peak shaving
5. Review load forecasting and RE forecasting scenario in the respective DISCOMs
6. Review the ongoing discussions/developments related to changes in electricity market structure

7. Undertake extensive stakeholder consultations to strengthen the findings, analysis and recommendations.

Deliverables (WP1)

D 1 All the deliverables required as follows:

- Three (3) reports (one for each city) containing the findings from all the tasks related to this work package. The report must be comprehensive covering all the topics mentioned in the tasks. It should contain a detailed explanation of the theoretical and practical implementation of the all the topics. The report should have distinct demarcations indicating content corresponding to different tasks/topics under the work package.
- Open-source simulation models with explanations
- Dynamic variable based excel model for feasibility analysis

Work Package 2: Review of International best practices to assess adoption of RE based EV charging

RE based EV charging has been touted as the next evolution to creating a sustainable and carbon free means to mobility. The consultant must undertake International review of the RE based EV charging integration technologies as well as the policy and regulatory parameters that enable the same. This work package involves 2 tasks, namely:

Task 2.1 – Review of international and national climate and renewable energy targets and achievements. This includes Review of India's climate and energy, emission targets, transport related targets

Task 2.2 – Review of international best practices and case studies where attractive and innovative RE based charging models have been adopted. This review will assess policy reforms, tariff schemes, market-based tools and incentives, regulatory measures, business models, and financing tools followed internationally that led to wide scale adoption of RE based charging

Task 2.1: Technology: International and Indian overview of RE and EV Charging

The Consultant will document and review the technological requirements for enabling RE based EV Charging. The technological review will include the following:

1. Review of various international (USA, Germany, Denmark, The Netherlands, Austria, France, Japan, China and Norway) country (or specific cities belonging to the countries listed) specific technological requirements/standards for enabling renewable energy based EV Charging as follows:
 - Map the flow of power from RE generators to the EV Chargers including the various infrastructure parameters involved in between.
 - Identify the various technical parameters/ standards/ guidelines that enable integration of renewable energy into the grid of the respective countries
 - Identify the various technical parameters/ standards/ guidelines that enable procurement of power from grid for EV Charging in the respective countries
 - Identify the various technical parameters/ standards/ guidelines that enable integration of RE for EV Charging in the respective countries

- Identify the communication protocols required for enabling integration of RE for EV Charging in the respective countries
- Identify the metering provisions required for enabling integration of RE for EV Charging in the respective countries
- Identify the various implementation challenges for deployment of RE integrated EV charging in the respective countries
- Identify and compare the different technical interventions required for integrating EV Chargers to different renewable energy sources such as solar and wind energy.

Task 2.2: Policy and Regulatory: International and Indian overview of RE and EV Charging

The Consultant will document and review the current policy framework and enabling environment for RE and EV Charging. The policy and regulatory review will include the following:

1. Review of various international (USA, Germany, Denmark, The Netherlands, Austria, France, Japan, China and Norway) country (or specific cities belonging to the countries listed) specific schemes/policies/plans for renewable energy as follows:
 - Identify schemes/policies/plans that promote deployment of renewable energy in respective countries
 - Identify the incentives (fiscal and non-fiscal)/ subsidies provided to promote deployment of renewable energy
 - Analyse the power-mix in respective countries. Project the growth of renewable energy with explainable parameters/assumption in short term (2021-2023), medium term (2024-2026) and long term (2027-2030)
 - Identify schemes/policies/plans that promote development of virtual power plants in respective countries
 - Identify schemes/policies/plans that enable the renewable energy power market and trading in respective countries and understand its working. This should include identifying the various other initiatives being undertaken by the countries to promote integration of renewable energy in the power-mix of their respective countries, such as increasing RPO (Renewable Purchase Obligations) targets, facilitating RECs (Renewable Energy Certificates), developing power markets and trading system for renewable energy, transaction for green bonds etc.
2. Review of various international (USA, Germany, Denmark, The Netherlands, Austria, France, Japan, China and Norway) country (or specific cities belonging to the countries listed) specific schemes/policies/plans for EV Charging as follows:
 - Identify schemes/policies/plans that promote deployment of EV Charging in respective countries
 - Identify the incentives (fiscal and non-fiscal)/ subsidies provided to promote deployment of EV Chargers
 - Analyse the EV-EVSE ratio in respective countries. Project the growth of EV Chargers with explainable parameters/assumption in short term (2021-2023), medium term (2024-2026) and long term (2027-2030)
 - Identify schemes/policies/plans that promote deployment of renewable energy integrated EV Charging in respective countries
 - Identify the incentives (fiscal and non-fiscal)/ subsidies/ tariff rebates provided to promote deployment of renewable energy integrated EV Charging
 - Identify schemes/policies/plans that enable load forecasting of EV Chargers (also including V2X capabilities of EV Chargers and EVs) in respective countries and enable its participation in the power markets and trading

- Identify and analyse key pilot/demonstration/commercially implemented cases studies across the identified countries.
3. Review on all aspects related to sourcing Renewable Energy for EV charging in India
- Review the utility led EV charging infrastructure programs (National and International), including program planning, customer engagements, site evaluation project design and construction, and customer follow-up
 - Evaluate the Indian Electricity Grid Code, regulations for Open Access – Intrastate and interstate, supporting schemes in state EV policies, renewable energy policies etc that would enable participation of RE based EV charging in the Indian power market for sourcing and trading of RE for operations of EV charging as well as flow of power from EV chargers to grid.

Deliverables (WP2)

D2 entire work package tasks will be documented in

- One report consisting of the results of topics listed under 1+ 2.
- One report consisting of the results of the topics listed under 3

Work Package 3: Decarbonization of the Indian transport sector and assessing the contribution of electric mobility

This work package involves 2 tasks, namely:

Task 3.1 – Review and analysis of existing international and national GHG emission estimation models, protocols, and studies on GHG emission estimation and carbon footprint reduction from renewable energy sources and electric vehicles

Task 3.2 – Undertake a modelling exercise to estimate the reduction in vehicular and GHG emissions as a result of EV and RE penetration

Task 3.1: Review and analysis of existing international and national GHG emission estimation models, protocols, and studies on GHG emission estimation and carbon footprint reduction from renewable energy sources and electric vehicles

A status quo of the existing models and studies for GHG emission reduction potential from renewable energy sources and electric vehicles will be performed under this task.

The consultant shall undertake the following:

1. Identify the extent of incentives available with CO₂ compliance due to electric vehicles including the accounting method for calculating CO₂ emissions of electric vehicles and the types of credit mechanisms available to manufacturers by including electric vehicles in their fleet, in India and globally.
2. Some of the emissions accounting methodologies prevalent globally include treating electric vehicles as zero emission vehicles, equating the electrical energy consumption from electric vehicles with emissions from the equivalent volume of gasoline, and the scientifically accurate approach of determining net upstream impacts when an electric vehicle displaces a combustion vehicle from the fleet. It is expected that the Consultant shall evaluate the CO₂ risk of integrating electric vehicles in GHG standards over a range

of market scenarios and policy conditions (such as slow EV uptake, moderate EV uptake, and rapid EV uptake)¹.

3. The consultant should either identify an existing approach/tool available in the literature or develop an approach to estimate RE consumption by EVs. The approach/tool should be demonstrated on the distribution network of the identified cities.

Task 3.2: Undertake a modelling exercise to estimate the reduction in vehicular and GHG emissions as a result of EV and RE penetration

The model should be an integrated system analysis focusing on minimizing emissions from the transport sector by maximizing the EV penetration and changing the modal share of transportation overall. National-level long term transport energy model could be developed for mid-century mitigation and deep decarbonization pathways especially for transport sector which can provide long term scenario of EV penetration in the country. This should also focus on the issues of linking national renewable energy mission to electric mobility mission to generate a comprehensive plan of sustainable development and helping India to achieve the Paris Agreement commitments.

India Energy Model developed by NITI Aayog can be further utilized in this context to develop the transport sectoral deep decarbonization or net zero emissions scenario. India Energy Model is built on open source MESSAGEix integrated modelling platform and has very detailed transport sectoral module which can be further utilized to assess the impacts of fuel shift, modal share change and low carbon technology use to decarbonize the sector.

This study shall be undertaken for India in addition to the 3 cities mentioned under WP1.

The scope would include two main areas of evaluation:

- i. Fuel shift
- ii. Modal shift which will lead towards faster attainment of emissions peaking and subsequently to net zero

1. Fuel shift assessment needs to cover:

- Potential of RE use in transportation: charging batteries for EVs through 100% RE, use of RE in railway coaches, use of blended biofuel in inland and international shipping etc.
- Potential of alternative low emission fuels: Use of hydrogen in various transport segments and green production of hydrogen. Use of blended biofuels in different transport modes.
- Fuel shift assessment of India Roadmaps of alternative low/zero emission fuel use in various transport segment in India and then aggregating towards overall transport sectoral demand for alternative fuels in India

2. Modal shift assessment needs to cover:

- Net emissions reduction due to shifting towards efficient public as well as private transportation with a specific focus on electric mobility
- Comparison of fuel efficiency vs transport service utility for all modes (L/km vs pass-km)
- Optimal modal shares to minimize the sectoral emissions

¹ Incentivising Electric Vehicles to meet fuel consumption standards for passenger cars in India, Whitepaper, ICCT (May 2019)

The Consultant should also undertake an overall assessment of Net Zero emissions scenario in transport sector, which shall include:

- Impacts of carbon tax, flexibility credit mechanisms for alternative green technologies like hydrogen fuel cell, electric mobility, blended fuels, etc. on low carbon technology penetration in the sector
- Investment demand for achieving net zero emissions scenario considering a mix of green transportation methods and technologies
- Impact on Air Quality Index (AQI)
- The Consultant shall undertake parametric based modelling taking into considerations various parameters such as demographic and economic assessment, transport planning, CO2 emission norms and targets, RE and EV deployment and targets, etc. for developing further models required under this study.
- A specific comparison between e-mobility vs. green hydrogen should be carried out
- The transport expert shall undertake an assessment and projection of the transport scenario for the 3 cities as well as India overall and provide such inputs to the integrated system modelers for developing emission models to develop a rationale around enabling RE based EV charging in India.

Deliverables (WP3)

D3.1 The tasks related to 3.1

- One report consisting of the results of topics listed under 1+ 2.
- One report consisting of the results of the topics listed under 3
- The model developed for the item 3

D3.2 The tasks related to 3.2

- A detailed report containing description, methodology, data input, scenario design, processing, outputs, interpretation of the outputs, implications of the various outputs
- A users' manual for operating the model developed under WP3.2. The work must be conducted for pan India basis and additionally for the 3 cities mentioned in WP1.
- Minimum 5 full days capacity building event (physical or virtual) for the users to get trained in using the models developed under WP 3.2
- The open source model developed in the assignment , along with all the data and codes needs to be delivered to GIZ
- A journal paper needs to be made out of this work package and submitted to a peer reviewed reputed journal in co-authorship with GIZ

Work Package 4: Technical and commercial aspects of renewable energy based EV charging and enabling recommendations for India

This work package involves 4 tasks, namely:

Task 4.1 – Grid integration Aspects

Task 4.2 – Feasibility of RE integrated EV Charging

Task 4.3- 100% RE based charging system for public buses

Task 4.4: Flexibility from EVs for enhancing RE integration

Task 4.1: Grid integration Aspects

This task would include review and analysis of the following but not limited to:

1. Formulate, model on an open-source platform, and create a simulation of the distribution grid with different types of renewable sources including solar, wind, and storage in the presence of electric vehicles.
2. Power Quality Impact of Renewable Energy based Generators and Electric Vehicles on Distribution Systems
3. Integration of renewable energy sources and electric vehicles in V2G network with robust optimization and variability
4. Energy management of renewable power based on maximum deployment of EVs
5. Analyse the technical limitations in the DISCOMs to integrate RE with EV charging using power flow analysis method
6. Feasibility of undertaking demand response programs with RE-integrated EV charging stations – load shifting, peak shaving
7. Review load forecasting including EV loads and RE forecasting scenario in the respective DISCOMs
8. Examine how the EV charging and different RE sources complement each other
9. Evaluate the concept of charging batteries with RE power in a central charging hub for swappable batteries. This should also include optimizing the size of RE power generation and the number of batteries (including their battery capacity) for deployment
10. Examine how coordinated control and operation among RE sources, EVs, storage and load in a distribution system can be exploited/utilized to i) increase hosting capacity of EVs, ii) maximize RE generation utilization locally, iii) address distribution system issues such as, duck curve, line congestion, poor voltage profile, power quality, and loss minimization.

Task 4.2: Feasibility of RE integrated EV Charging

This task would include review and analysis of the following but not limited to:

For the given below three scenarios (additional scenarios can also be included), undertake the following. All the three scenarios should consider exiting and futuristic cases for generation, EV, Storage and load growth

- A. **Scenario 1:** Conventional electricity based EV Charging
- B. **Scenario 2:** RE based EV Charging (Two types: 1. RE system is integrated with EV charger/(s) and can operate off-grid as well, and 2. RE system connected to the EV charger/(s) through the grid)
- C. **Scenario 3:** Conventional cum RE based EV Charging
 - Analysis of capital cost (CAPEX) and operating Cost (OPEX)
 - Analysis of the net present value (NPV) and Levelized Cost of storage (LCOS)
 - Conduct a sensitivity analysis for CAPEX, OPEX, NPV, LCOS with the scenarios defined under the scope of work
 - Evaluate the various public and private-led business models for RE integrated EV Charging. Evaluate benefits and drawbacks of each type of business model. Integrate such business models in the above financial models.
 - Compare the scenarios (the three mentioned and additional if any) for India and identify the most feasible solution for India
 - Recommend solutions (such as tax incentives, preferential RE tariff for EV Charging, etc.) to promote 100% RE based EV Charging in India. Explore options such as green bonds, green certificate, green tariff etc.

- Analyse the integration of different options in electricity market to enable RE based EV charging
- Undertake rationale based discussions with RE developers and EV Charging Operators in India to understand the nuances and feasibility of operating RE based EV Charging and the business models.

Task 4.3: 100% RE based charging system for public buses

This task should explore different potential viable options for adoption of 100% RE based charging for public buses in the three target cities (Bengaluru, Kolkata and Panaji). The following tasks should be performed.

1. Develop/ procure models for different travel patterns for public EV buses in the target cities considering all the field level constraints, futuristic plans of the local transportation department/agency etc.
2. Develop a tool to estimate energy consumption by a given city public transport considering transition to 100% EV based buses over a pragmatic period in a phased manner
3. For each city, propose a practically feasible plan for developing 100% RE based charging system for all the EV buses. Consider use of RE through different possible modes, such as, developing local bus shed rooftop based bus depots, rooftop PV of buses, wind energy based local generation sources, procurement of electricity from RE through market, open access etc.
4. For point-2 and 3 above, consider different types of charging options, such as, slow charging, rapid charging, ultra rapid charging, opportunity charging etc.
5. Perform techno-economic feasibility of each scenarios and proposes the best possible model/approach to achieve 100% RE based public transportation system for each city.
6. Propose adequate business model for the identified approaches suggested under point-5 above.
7. Develop guidelines for adoption of the above proposed feasible plans for other cities in India

Task 4.4: Flexibility from EVs for enhancing RE integration

Under this task, the consultant is required to study how EVs can be used to enhance RE integration to the grid. Following tasks must be performed for this task.

1. Dimension the potential of flexibility support from EV load considering both unidirectional and bidirectional chargers. Consider different flexibility metrics available in the literature to assess the potential of flexibility that Charging load can provide to the grid.
2. Propose framework for assessing flexibility support from EVs
3. Study the potential EV charging in reducing RE curtailment
4. Develop business models for flexibility support from EVs for increased RE penetration
5. Propose the potential options for integration of flexibility from EVs in the electricity market

Deliverables (WP4)

D4.1 The tasks related to 4.1

- A detailed report consisting of the items described under tasks 1 to task 10
- An open source based network load flow model describing tasks 1 and task 10
- A two days long workshop (physical or virtual) to disseminate the finding of Task 4.1

D4.2 The tasks related to 4.2

- A detailed report consisting of the items described under WP 4.2
- The excel based business models and financial analysis described under WP4.2
- One day workshop (physical or virtual) to disseminate the findings of WP4.2

D4.3 The tasks related to 4.3

- A detailed report documenting all the tasks performed under Task 4.3 including
- i) Route plan and travelling model for EV buses for each city,
 - ii) An open source tool to estimate energy consumption by EV bus based public transportation system considering phase wise transition to 100% EV buses,
 - iii) A detailed plan for developing 100% RE based charging system for all the EV buses in each city,
 - iv) A users guide for utilising the proposed models to other cities in India
 - A one day workshop (physical or virtual) for disseminating the findings of the WP 4.3

D4.4 The tasks related to 4.4

- A report documenting how EVs can support RE integration, including estimation of flexibility support, reduction in RE curtailment, market potential and business model for exploiting flexibility from EVs

Work Package 5: Recommendations to enable RE based EV charging for India

The consultant shall integrate all of the findings from WP1 till WP4 and prepare the final set of recommendations. The recommendations should be able to resolve the following but not limited to:

1. Why should RE based EV charging be implemented?
 - What is the motivation?
 - Who will be benefitted?
 - How is this beneficial to the electricity sector, transport sector, and the entire EV ecosystem?
 - When investing into charging infrastructure, why is it crucial to invest into (the more expensive) “smart” charging infrastructure and V2G technologies from the beginning (as they are key to the integration of RE and EVs in the long run)?
2. What are the feasible locations for RE based EV charging? Which location is suitable for which type of consumer? The locations may be categorized as:
 - Grid connected onsite
 - Grid connected remote
 - Off-grid

3. What are the policy and regulatory measures required to enable RE based EV charging? These may (but not limited to) include recommendations such as:
 - Amendment to the Indian Electricity Grid Code, Supply Code and Power markets and trading
 - Reforms to the Indian electricity markets including recommendations on market and trading mechanisms and business models
 - Recommendations on regulatory provisions for grid connected as well as off grid systems
 - Policies for aggregation of EV charge points by Charging Station Operators (CPOs) to source RE
 - Innovative business models and concepts (such as virtual power plants) to implement RE based EV charging, as well as guidelines for the sustainability of charging infrastructure investments
 - Recommendations for legislative and regulatory amendments Recommendations for policy considerations for program design, including permitting, standards and interoperability, and recommendations to encourage EV deployment
 - Tariff design, taxation mechanisms and incentivization to enable RE based EV charging infrastructure deployment and adoption

Undertake extensive stakeholder consultations to strengthen the findings, analysis and recommendations.

Finally, the Consultant has to undertake the following:

1. Consolidate learning from WP1 to WP4 to develop holistic recommendations under WP5.
2. Undertake extensive consultations with the relevant public institutions to implement the required norms in the form of policy or regulation or guideline in the Indian power sector to enable RE based EV charging infrastructure deployment and adoption. The implementation has to be backed up using calculations, simulation studies and relevant rationale. This also involves undertaking extensive stakeholder consultant and developing recommendations for implementation of relevant policies and regulations by the relevant institutions under Government of India, such as Forum of Regulators (FOR), Ministry of Power (MoP), Central Electricity Regulatory Commission (CERC), Central Electricity Authority (CEA) etc. A minimum of 10 consultations on recommendations shall be undertaken with the relevant public stakeholders mentioned herein.
3. The successful implementation of the engagement would be considered when a public institution (such as Forum of Regulators (FOR), Ministry of Power (MoP), Central Electricity Regulatory Commission (CERC), Central Electricity Authority (CEA) etc.) would accept (acceptance for future implementation consideration) the report submission for the power market to enable RE based EV charging infrastructure, which has to be prepared by the Consultant as part of this engagement.

Deliverables (WP5)

D5 The tasks related to WP5

- The consultant must prepare a detailed report on finalized set of recommendations
- The consultant shall prepare specific recommendation documents on categorical themes and engage with relevant stakeholders and policy makers and regulators in series of consultations/ discussion sessions
- The consultant must organize a final workshop (physical or virtual) with 2 days duration in order to disseminate the findings and recommendations

- The consultant must prepare one research article based on the results achieved in the entire assignment, excluding WP3, and submit to a peer reviewed scholarly journal for publication with the co-authorship of GIZ and Indian partners.

Work Package 6: Framework for ad hoc support

Work package 6 is not divided into pre-defined tasks. Instead, the consultant will give support on an ad-hoc short-term basis. The consultant would be given short-time assignments. Based on specific requests, various activities that could be included here are:

1. Provide inputs for publications in scientific peer-reviewed journals/ conferences with the co-authorship of GIZ and Indian partners based on the results achieved in the project which is not included in the task list above
2. Provide a report based on acting upon the request of Indian stakeholders.
3. Provide inputs for preparation of presentations, papers intended to be delivered in workshops not included in the task list above.
4. Support in organizing conferences workshops not envisaged in any other work package.
5. Additional travel of experts to attend meetings etc.

The purpose of this work package is to enable GIZ to quickly react to requests of the Indian partners. Support for ad-hoc activities will only be initiated after GIZ's request in writing. GIZ will also request the consultant to specify the level of efforts required for such activities and it must be mutually agreed before start of that ad-hoc activity.

Duration and location of the assignment

GIZ shall hire the consultant **for 18 calendar months** and the location of the assignment delivery will be in GIZ, Delhi. In case there is an extension or change in scope and/or timeline as defined in this ToR, a separate addendum to the Contract will be signed.

Milestones of the assignment

The consultant is expected to provide the following deliverables at a specified time. All the deliverables must be approved by GIZ before the final submission. Specific work packages must be executed in the following order.

- Parallel execution of WP1 and WP2 – both the work packages must begin simultaneously at the beginning of the project.
- WP3, WP4 and WP5 shall be followed after completion of WP1 and WP2

Sr. No.	Deliverable under Work Packages (WP)	Key highlights of the content	Expected time of delivery
1.	Report under WP1	<ul style="list-style-type: none"> • Presentation of Roadmap and recommendations for city level implementation 	Six (08) months from the start of the engagement.
2.	Report under WP1	<ul style="list-style-type: none"> • Review of International best practices to assess adoption of RE based EV charging 	Six (08) months from the start of the engagement.

3.	Report and technical simulation model under WP3	<ul style="list-style-type: none"> Decarbonization of the Indian transport sector and assessing the contribution of electric mobility 	Ten (10) months from the start of the engagement.
4.	Report and feasibility models under WP4	<ul style="list-style-type: none"> Technical and commercial aspects of renewable energy based EV charging and enabling recommendations for India 	Thirteen (14) months from the start of the engagement.
5.	Report under WP5	<ul style="list-style-type: none"> Recommendations to enable renewable energy based EV charging in India Extensive stakeholder consultations 	Eighteen (18) months from the start of the engagement.
6.	Work under WP6	<ul style="list-style-type: none"> Ad-hoc support 	Within the Eighteenth (18) months from the start of the engagement.

Workshops, training

Roundtable discussions with key stakeholders, individual interviews and few information dissemination workshops are expected under this assignment. It is envisaged that the format of the workshop under WP5 would be virtual (in case COVID cases persists) or physical. The final format of the workshop would be decided by GIZ in consultation with the consultant at the appropriate time. The consultants will be responsible for technical content preparation, making presentations for the dissemination of study findings in the workshops planned under this study.

The costs/expenses for the workshop shall be borne by GIZ and should not be added in the financial budget of the Consultant.

The Consultant shall not be paid for the additional expenses for consultations with the relevant stakeholders to be undertaken during the project. Hence the cost of consultations shall be made part of the total engagement fee (i.e Financial Proposal) to be submitted by the Consultant.

4. General management of the project assignment

1. A project kick-off meeting shall be conducted along with official starting of the project. With an intention to scope the entire project, meet the key stakeholders if required. (A project implementation plan shall be submitted in the **inception report** as an output of the meeting)
2. In the evaluation of the proposal maximum weightage shall be given to interpretation of objective and scope, and proposed methodology.
3. Notwithstanding the GT&C (General Terms & Conditions), the confidentiality of data collected by Consultants during the project tenure shall not be shared with any agency outside the cooperating partners/stakeholders.

4. All deliverables shall be provided in editable electronic format, following the procedures and format defined by GIZ.
5. Diagrams, maps, pictograms etc. should be used wherever possible with the target to ensure proper visualization of study results.
6. All graphics, images and presentations must be delivered in high quality and high resolution.
7. At the end of assignment, the consultant shall transfer/handover all the research publications, project reports, Gol order, policy, regulations & standard documents etc. used during the assignment.

5. Payment schedule

GIZ shall hire the consultant **for 18 calendar months** and the location of the assignment will be in Delhi NCR. Following shall be the payment schedule for the scope under the tender which has to be performed by the consultant:

S. No.	Work Package (WP)	Payment as a percentage %	Weeks/Months
1.	Project Kick-off	10%	Within 1 month from the award of contract
2.	WP1	15%	Within 6 months from the award of contract
3.	WP2	15%	Within 6 months from the award of contract
4.	WP3	15%	WP2 + 4 month
5.	WP4	10%	WP3 + 4 month
6.	WP5	15%	WP4 + 4 month
7.	WP6	20%	From 1 month from the award of contract till the end of 18 months (project completion, whichever comes last)

6. Concept

In the bid, the bidder is required to show how the objectives defined in Section 3 are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept).

Technical-methodological concept

Strategy: The bidder is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Section **Error! Reference source not found.**). Following this, the bidder presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Section 3).

The bidder is required to present the actors relevant for the services for which it is responsible and describe the **cooperation** with them.

The bidder is required to present and explain its approach to **steering** the measures with the project partners and its contribution to the results-based monitoring system.

The bidder is required to describe the key **processes** for the services for which it is responsible and create a schedule that describes how the services according to Section 3 are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Section 3.

The bidder is required to describe its contribution to knowledge management for the partner and GIZ and promote scaling-up effects (**learning and innovation**).

Details about backstopping

The bidder is required to describe its backstopping concept. The following services are part of the standard backstopping package, which (like ancillary personnel costs) must be factored into the fee schedules of the staff listed in the bid in accordance with section 5.4 of the AVB:

- Service-delivery control
- Managing adaptations to changing conditions
- Ensuring the flow of information between GIZ and field staff
- Consultant's responsibility for seconded personnel
- Process-oriented technical-conceptual steering of the consultancy inputs
- Securing the administrative conclusion of the project
- Ensuring compliance with reporting requirements
- Providing specialist support for the on-site team by staff at company headquarters
- Sharing the lessons learned by the consultant and leveraging the value of lessons learned on site

7. Personnel concept

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs, the range of tasks involved and the required qualifications.

7.1 Eligibility criteria of the Consulting firms

The Lead Bidder/Consulting firm as well as the supporting bidder(s) (in case of a Consortium) should be registered and incorporated in India as per The **Companies act, 1956/2013 with a valid Company Registration Certificate PAN card and GST Certificate of the registered Company.**

The Lead firm should have an average annual turnover for the last three financial years of at least 200,000 Euros. The lead firm needs to provide the Audited balance sheet including Profit & Loss Account statement of Last three (3) Financial Years FY 17-18, FY 18-19, and FY 19-20.

The lead firm should have at least 15 employees in the firm as of the last year. The lead firm should have undertaken reference projects with a minimum value of 10,000 Euros.

The firm (lead and consortium) should have experience as follows:

- 5 years project experience on developing policies/regulations/guidelines in power sector in India
- 5 years project experience on policy, regulatory and technical aspects, standards related to Grid Integration of RE and EV in India and Global (2 countries on RE).
- 5 years project experience on policy, regulatory and technical aspects, standards related Renewable Energy sector in India
- 5 years project experience on policy, regulatory and technical aspects, standards related Transport (especially Electric mobility) sector in India
- 3 years project experience on Transport planning.
- 2 years project experience on Integrated system modelling, especially on transport and emissions.

7.2 Eligibility criteria of the proposed personnel

A total of up to 550 person-days may be spent in completing the assignment.

The split up of effort classified according to each work package provided below:

Work Package 1: up to 120 person days.

Work Package 2: up to 90 person days.

Work Package 3: up to 90 person days.

Work Package 4: up to 90 person days.

Work Package 5: up to 90 person days.

Work Package 6: up to 70 person days

The below specified qualifications represent the requirements to reach the maximum number of points.

Note: This engagement requires experts based in India with excellent English language proficiency (both written and verbal). The bids are allowed to be submitted by a Consortium of organizations, each of which must be registered in India.

Following is a recommended team structure with the desired skills and experience:

8.2.1 Team Leader (as per technical evaluation grid 2.1)

- (2.1.1) Qualification: The team leader must be qualified (post-graduation or equivalent) in Engineering/ Science/ Management/Policy Advocacy.

- (2.1.2) Language: Not Applicable.
- (2.1.3) General Professional Experience: 12 years of professional experience in the Power sector
- (2.1.4) Specific Professional Experience: 10 years in policy advocacy on projects in Indian power system. Additionally, 5 years of experience in developing policies/regulations/guidelines for projects in Indian power sector with Indian public authorities (especially DISCOMs/Ministry of Power/ Central Electricity Authority (CEA)/ Central Electricity Regulatory Commission (CERC)/ Forum of Regulators (FOR)/ State Electricity Regulatory Commission (SERC)/ Power System Operation Corporation Limited POSOCO).
- (2.1.5) Leadership/Management Experience: 5 years of management/leadership experience as a project team leader or manager in a company.
- (2.1.6) Regional Experience: Not Applicable
- (2.1.7) Development Cooperation Experience: Not Applicable
- (2.1.8) Other: Not Applicable

8.2.2 National Short-term expert pool for development of Power market and reform with exactly 2 members (as per technical evaluation grid 2.6)

- (2.6.1) Qualification: 2 experts with university qualification (post-graduation or equivalent in Engineering/ Science/ Management/Policy Advocacy).
- (2.6.2) Language: Not Applicable.
- (2.6.3) General Professional Experience: 1 expert with at least 8 years of experience and 1 expert with at least 3 years of professional experience in electricity/power sector.
- (2.6.4) Specific Professional/Academic Experience: 1 expert with at least 8 years of experience and 1 expert with at least 3 years of professional experience in policy advocacy on projects in Indian power system. Additionally, each with at least 3 years of experience in developing policies/regulations/guidelines for projects in Indian power sector with Indian public authorities (especially DISCOMs/Ministry of Power/ Central Electricity Authority (CEA)/ Central Electricity Regulatory Commission (CERC)/ Forum of Regulators (FOR)/ State Electricity Regulatory Commission (SERC)/ Power System Operation Corporation Limited POSOCO).
- (2.6.5) Regional Experience: Not Applicable.
- (2.6.6) Development Cooperation Experience: Not Applicable.
- (2.6.7) Other: Not Applicable

8.2.3 National Short-term expert pool for Grid Integration for Renewable Energy and Charging Infrastructure with exactly 2 members (as per technical evaluation grid 2.7)

- (2.7.1) Qualification: 2 experts with university qualification (Post-graduation or equivalent in Engineering/ Science).
- (2.7.2) Language: Not Applicable.
- (2.7.3) General Professional Experience: 1 expert with 5 years of professional experience in Renewable Energy and other 1 expert with 3 years of professional experience in EV Charging Infrastructure sector.

- (2.7.4) Specific Professional/Academic Experience: 1 expert with 4 years of professional experience in technical aspects of Grid Integration of Renewable Energy and 1 expert with 3 years of professional experience in technical aspects of Grid Integration of EV Charging Infrastructure.
- (2.7.5) Regional Experience: Not Applicable.
- (2.7.6) Development Cooperation Experience: Not Applicable.
- (2.7.7) Other: Not Applicable

8.2.4 National Short-term expert pool for Policy and Regulatory for Renewable Energy and Charging Infrastructure with exactly 2 members (as per technical evaluation grid 2.8)

- (2.8.1) Qualification: 2 experts with university qualification (Bachelor's/Master's degree in Engineering/ Science/ Management/Policy Advocacy).
- (2.8.2) Language: Not Applicable.
- (2.8.3) General Professional Experience: 1 expert with 3 years of professional experience in Renewable Energy and 1 expert with 3 years of professional experience in EV Charging Infrastructure sector.
- (2.8.4) Specific Professional/Academic Experience: 1 expert with 2 years of professional experience on policies/regulations/guidelines for Renewable Energy and 1 expert with 2 years of professional experience on policies/regulations/guidelines of EV Charging Infrastructure. Each expert having experience in tariff structuring, tax reforms in the power sector, and innovative financing schemes such as green bonds is a must.
- (2.8.5) Regional Experience: Not Applicable.
- (2.8.6) Development Cooperation Experience: Not Applicable.
- (2.8.7) Other: Not Applicable

8.2.5 Expert for Policy and Regulatory for Transport sector (as per technical evaluation grid 2.2)

- (2.2.1) Qualification: University qualification (Bachelor's/Master's degree in Engineering/ Science/ Transport/ Planning/ Management/ Policy Advocacy).
- (2.2.2) Language: Not Applicable.
- (2.7.3) General Professional Experience: 3 years of professional experience in Transport sector.
- (2.2.4) Specific Professional/Academic Experience: 2 years of professional experience on policies/regulations/guidelines on Transport sector especially on Transport emissions and Transport planning.
- (2.2.5) Leadership/Management Experience: Not Applicable.
- (2.2.6) Regional Experience: Not Applicable.
- (2.2.7) Development Cooperation Experience: Not Applicable.
- (2.2.8) Other: Not Applicable

8.2.6 Expert for Transport Planning (as per technical evaluation grid 2.3)

- (2.3.1) Qualification: University qualification (Bachelor's/Master's degree in Engineering/ Science/Transport/ Planning).

- (2.3.2) Language: Not Applicable.
- (2.3.3) General Professional Experience: 3 years of professional experience in Transport sector.
- (2.3.4) Specific Professional/Academic Experience: 2 years of professional experience in Transport planning. Additionally, worked on 1 project on EV Transport planning.
- (2.3.5) Leadership/Management Experience: Not Applicable.
- (2.3.6) Regional Experience: Not Applicable.
- (2.3.7) Development Cooperation Experience: Not Applicable.
- (2.3.8) Other: Not Applicable

8.2.7 National Short-term expert pool for Integrated System (Transport & Emission) modelling with exactly 2 members (as per technical evaluation grid 2.9)

- (2.9.1) Qualification: 2 experts each with university qualification (Bachelor's/Master's degree in Engineering/ Science/ Transport/ Emission modelling/ Planning).
- (2.9.2) Language: Not Applicable.
- (2.9.3) General Professional Experience: 2 experts each with 3 years of professional experience in Integrated System modelling sector.
- (2.9.4) Specific Professional/Academic Experience: 2 experts each with 3 years of professional experience in developing Emission models for the Electricity and Transport sector.
- (2.9.5) Regional Experience: Not Applicable.
- (2.9.6) Development Cooperation Experience: Not Applicable.
- (2.9.7) Other: Not Applicable

8. Requirements on the format of the bid

The structure of the bid must correspond to the structure of the ToR. In particular, the detailed structure of the concept is to be organized in accordance with the positively weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English (language).

The complete bid shall not exceed 50 pages (excluding CVs & other company documents as mentioned in grid for assessing eligibility of firms). Consultant should only provide details of the relevant assignments/ projects done. It should not include an exhaustive list of unrelated e-mobility/transportation projects/assignments.

The CV per person shall not exceed 6 pages. The CVs must clearly portray the requirements as mentioned under Section 7 of the ToR. A format for CV has been provided for reference.

If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

9. Further requirements

- a) The proposal should clearly line out how the consultants complement each other according to their fields of expertise to give evidence that all relevant work fields are covered appropriately.
- b) In case the bidder is a consortium, a clear proposal (based on deliverables) is to be submitted along with a clear definition of the roles and responsibilities of each member of the consortium.
- c) All communication with media (TV, radio, print, and other media) must be approved by the responsible person of GIZ. And the evaluation of the proposal will follow the attached evaluation matrix.
- d) Timelines shall be strictly adhered and any delay in any of the deliverable shall be reported and aligned with GIZ in advance.
- e) The different phases / activities shall be documented in a professional manner to be shared with relevant stakeholders for information dissemination.
- f) All work results, including reports, must be in format, design, and layout as specified by GIZ and must follow GIZ design guidelines
- g) The travel cost or expenses will be budgeted in the Contract based on the activities undertaken under this assignment. Any cost or expenses beyond the budgeted amount in the Contract will be borne by the selected Bidder.
- h) The consultant should submit the deliverables to GIZ for its approval. GIZ will review the content and quality and provide feedback to the consultants. It is imperative that the consultants should be able to satisfy GIZ regarding the deliverables submitted.
- i) There will be monthly progress meetings between consultants and GIZ. In addition to this, there should be meetings organized at the completion of various important milestones/deliverables within the project.
- j) Backstopping services need to be specified. Back stoppers must be listed and need to be available during the contract duration. However, no extra budget should be kept for the same.
- k) All activities including meetings and tasks in different focus areas need to be aligned with the GIZ project coordinator (to be nominated by GIZ at the beginning of this assignment).
- l) The shortlisted consultants might be requested to make a presentation of the technical bids by GIZ as a part of the selection process.
- m) Each expert proposed for the study and whose CV has been used for technical evaluation has to declare bindingly that s/he shall be available for executing their respective tasks within the assignment until the full term and further if the assignment gets extended on mutually agreed terms.
- n) The proposal should clearly line out how the consultants complement each other according to their fields of expertise to give evidence that all relevant tasks are covered appropriately.
- o) At the beginning of each step, a work-plan must be submitted to GIZ for alignment.
- p) The consultant should at all times of the assignment possess the copyrights (licenses in the case of software packages) of the documents, pictures, technical papers, standards used in the study.
- q) At the end, of the assignment, the Consultant should provide all the documents, research documents, software, outcomes etc to GIZ. The outcome/final deliverable and all the documents under the study shall become the sole proprietary of GIZ.
- r) The consultant should propose the software (if they deem it to be necessary) to be used in their technical bids and highlight the benefits and limitations related to the

assignment. It is to be noted that there is no budget provision for licensing of software under this assignment.

10. Submission of proposal

The consultant is expected to submit a technical proposal in a sealed envelope (refer **bidding conditions**). Regular rounds of feedback/progress reporting should be planned for and must be described in the proposal.

The shortlisted candidates may be invited either for a virtual or physical (depending on COVID-19 situation) presentation in GIZ Delhi Office within 30 days of the submission of the proposal.

11. Specific Conditions pertain to COVID-19 Measures

The specific conditions pertain to COVID-19 measures are integral part of contract and shall act as binding under special agreement and interpreted along with GTCC.

In addition to the provisions as detailed in clause 09 of The General Terms of Contract governing the delivery of works and services commissioned by **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (local)**, the Consultant confirms that he/she accepts the Consulting engagement with full knowledge and understanding of the travel and other requirements of the engagement including specifically the need, on the part of the Consultant, to take all required precautions (including prevention and risk mitigation measures) against the risks arising from the ongoing Novel Corona Virus (COVID - 19) Pandemic.

The Consultant shall provide to the GIZ an RT-PCR Negative Test Report for Novel Corona Virus (COVID - 19) prior to starting the Consulting Engagement and shall additionally comply with the following at all times in the course of the Consulting Engagement:

1. Obtain Medical and other Insurance Cover in respect of the Novel Corona Virus (COVID - 19) Infection/Disease and consequences thereof – (GIZ will reimburse the insurance cover up to 5000 Indian Rupees on lumpsum basis)
2. Strictly follow and comply with the prescribed Mask, Hand Washing/Sanitization and Social Distancing Protocols.
3. Take safe and secure mode of transportation.
4. Observe all local restrictions/precautions as applicable for the specific areas of travel covered by the Consulting Engagement.
5. If eligible, get vaccinated against the Novel Corona Virus (COVID - 19).
6. Install and maintain as active at all times the Government of India's Arogya Setu App.
7. If exposed to any active case of Novel Corona Virus (COVID - 19) to take all steps as advised by the Government of India's advisories in such case.
8. If feeling unwell and experiencing any of the symptoms of Novel Corona Virus (COVID - 19) infection - to take all steps as advised by the Government of India's advisories in such cases including but not limited to getting an RT-PCR Test for Novel Corona

Virus (COVID - 19), self-isolation, notifying the GIZ and also the concerned local Novel Corona Virus (COVID - 19) isolation/treatment facility.

9. Other compliance as may be notified by the GIZ and the Government of India from time to time in relation to Novel Corona Virus (COVID - 19) infection/disease.

Furthermore, The Consultant accepts the Consulting Engagement on a best and informed judgement basis with full knowledge of the tasks to be performed, the place of performance and the precautions and safeguards to be reasonably taken try the Consultant to mitigate all types of risks associated with the said Consulting Engagement. The Consultant undertakes the Consulting Engagement at his/her own risk and responsibility and shall not, under any circumstances, and at any time, be entitled to assert any liability or other claims whatsoever against the GIZ, its Management, Officers and Employees for any consequences or risks or harm that may arise to the Consultant in the course of or as a consequence of undertaking the Consulting Engagement or any actions or consequences arising in relation to such Consulting Engagement.

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