ADB GEF PROJECT IMPLEMENTATION REPORT (PIR)

(This report covers implementation period from July1,2023 to June30,2024)

ADB Official Project Title: Scaling Up Demand-Side Energy Efficiency Sector Project: India[1]
ADB Project Number: 52196-001

I. GEF PROJECT SUMMARY

Project Ratings:

Development Objective Rating (DO): Satisfactory (S)

Implementation Progress Rating (IP): Moderately Satisfactory (MS)

Risk Rating: Modest Risk (M)

Information on Progress, challenges and outcomes on project implementation activities

The Asian Development Bank (ADB) and United Nations Environment Project (UNEP) has secured a grant from the Global Environment Facility (GEF) for India electric mobility (e-mobility) project to enable the Government of India and relevant stakeholders to make the transformative shift to de-carbonize transport systems, catalyze access to finance for a large-scale adoption of EV across vehicle segments and reduce air pollution in cities by promoting scale-up of electric mobility in India.

The GEF-7 funded India e-mobility project has 4 components:

Component 1:

- Integrated EV policy and framework for the e-Mobility transformation
- Government institutionalizes integrated e-Mobility national policy framework and facilitates effective implementation of increased e-vehicle infrastructure, including its measurement and monitoring in urban areas for Cities

Component 2:

- Environment and resource use management framework for batteries
- Policy for Lithium-Ion Battery (LIB) reuse and recycling and battery standards for EVs endorsed by the Government

Component 3:

- Enabling scale-up of e-vehicle markets through pilot demonstrations

[1] The GEF grant is part of TA-9874-IND associated with ADB project 52196-001 Scaling Up Demand-Side Energy Efficiency Sector Project: India. It is processed as additional financing to the on-going TA-9874-IND aligned with ADB loan to EESL, India.

- Enabling conditions for e-mobility investments created, new business models and charging infrastructure plans developed at city level

Component 4:

- Gender-Sensitive capacity development and awareness-raising for growing E-Mobility
- Demand for e-vehicles stimulated through increased capacity and awareness among government, consumers and private sector stakeholders on the benefit and business opportunities for accelerating electric mobility uptake

UNEP administered Components 1, 2 and 4: The activities under these UNEP components are being executed by WRI India under the guidance of NITI Aayog. After, securing the necessary government clearances, UNEP and WRI entered into a project cooperation agreement in June 2024 and the work has eventually started under these components in July 2024. The project would be implemented over a period of 4 years from July 2024 to June 2028. Due to dynamic changes in the EV ecosystem in India, UNEP administered components would be reevaluated and will be presented in the inception workshop planned in Sept 2024. The mid-term evaluation being commissioned by ADB (as the lead GEF agency for this project) would also support the evaluation of the outputs.

ADB-administered Component 3:
For Component 3, which is administered by ADB, Energy Efficiency Services Limited (EESL) is the Executing Agency (EA) and Convergence Energy Services Limited (CESL), a wholly owned subsidiary of EESL is the Implementing partner. ADB appointed a consulting firm (EY LLP) to work in conjunction with CESL/ EESL to implement and deliver TA outputs under Component 3. The project inception meeting was held on 18th January 2023 for Component 3.
The component covers the following outputs:

- Develop business models for scaling up electric mobility pilot initiatives
- Develop charging infrastructure plans at city level for 5 cities across the country
- Provide recommendations that would improve and enhance market conditions for e-mobility investments in the country

Information on Progress, challenges and outcomes on Environment and Social Safeguards

GEF funds has provided technical support and capacity development for the pilot project activities. The technical assistance is not anticipated to generate any adverse environmental impacts during operation. The project team has taken up due measures to ensure the same. The team has also obtained Environment Health Safety (EHS) certificates from vendor while signing contract for solar carport pilot execution. Similarly, in the upcoming electric bicycle tender, bidders are asked to submit plan for safe disposal of battery at end of life. The project does not involve any adverse impact on social safeguard measures and as such no GEF funds are being utilized for the same.

Information on Progress, challenges and outcomes on stakeholder engagement

Output 3.1 - For finalizing cities for the city level assessments on assessing EV demand and charging infra planning, consultations were held with officials from UNEP, ADB, EA and other relevant stakeholders. Consultations were undertaken to refine the components and outcomes of the city level activities. As an outcome of series of

discussions with these stakeholders, a set of 5 cities were initially selected. The team reached out to 5 cities governments for the city assessment activity namely Varanasi, Shimla, Pune, Panaji and Chennai. Despite many follow ups three of these cities (Pune, Panaji and Chennai) did not respond adequately; subsequently additional cities were approached (Guwahati, Shillong, Bengaluru, Mysuru, Kochi, Puducherry, Gurugram and Jaipur). We started work in three cities namely Varanasi, Shimla and Shillong. Technical level discussions have also been held with key city government agencies like DISCOMs, Smart City, ULBs, and Energy Departments to further develop the national perspective and integrate city level plans with national initiatives for upscaling deployment of electric vehicles and charging infra. We have completed work in Varanasi, workshop was conducted and report was submitted and adopted by Varanasi Municipal commissioner. Beside Varanasi, work has progressed well in other two cities, namely Shimla and Shillong. The work in remaining two cities shall be initiated in near future as formal approval from city government(s) is awaited.

Output 3.2- A comprehensive stakeholder analysis was undertaken during the preparatory phase of the TA related activities focusing on potential pilots for 3-Wheeler Retrofit, Solar Carport with Battery Energy Storage System, Electric bicycles to promote micromobility and also a potential pilot on electric trucks. The project team has interacted with the below mentioned stakeholders and discussions have been held on the proposed activities for the project activities including pilot programs. Their valuable suggestions for implementation of the project activities have been duly incorporated in designing the technical specifications, business models and related documentation including bid documents.

Pilot Program	Stakeholders Consulted		
	Government	**Private**	**Associations**
3-Wheeler retrofit	• State Transport Departments • RTOs	OEMs • Zero 21 • Konvert Motors • Omega Seci Mobility • Volta EV • Enviro Smart • Piaggio • E-blu Financial Institutions and NBFCs • HDFC, • State Bank of India • PFC • ICICI etc Battery Swapping Players • Sun Mobility • Battery Smart	• Automotive Research Association of India (ARAI) • International Centre for Automotive Technology (ICAT).

Solar carport with BESS	• State Governments	OEMs • JBM • Servotech Battery Players • Lohum, • Sun Mobility EV Charger manufacturer • Exicom • Delta • Magenta	• Automotive Research Association of India (ARAI) • International Centre for Automotive Technology (ICAT)
Electric Bicycles	• Ministry of Road Transport and Highways • Ministry of Heavy Industry and Public Enterprises • NITI Aayog • Ministry of Housing and Urban Affairs, • Ministry of Women and Child Development • Ministry of Rural Development • National Rural Livelihood Mission • State Rural Livelihood Mission • Bureau of Energy Efficiency • Department of Posts • Power Finance Commission (PFC), • NTPC, • PowerGrid Corporation of India Limited (PGCIL)	OEMs • Hero Cycles • Motovolt • Aurita • E-Motorad • Geekay Bikes • Nexzu • Yulu • Zypp Battery Players • Lohum,	• All India Cycle Manufacturers Association • Automotive Research Association of India (ARAI) • International Centre for Automotive Technology (ICAT).
Electric Trucks	• Ministry of Heavy	OEMs	• Automotive Research

	Industry and Public Enterprises • Container Corporation of India	• Ashok Leyland • Tata Motors • Volvo Eicher • IPL Tech • iBoard	Association of India (ARAI) • International Centre for Automotive Technology (ICAT)

Information on Progress on gender-responsive measures

The activities under the project will contribute to the gender inclusion and mainstreaming. Gender sensitive capacity development and awareness raising for scaling up e-mobility is largely covered under Component 4. This component focuses on integrating gender inclusion capacity development activities related to e-mobility and proposes to engage with policymakers in designing gender-inclusive policy and solutions. As the work under this component administered by UNEP, has recently initiated, it is expected that the key activities under this output shall be initiated in the next reporting cycle after necessary adjustments

Further, gender mainstreaming efforts have been undertaken through ADB loan, Scaling up demand side energy efficiency sector project, which is aligned with this GEF grant, through provisioning of training for women commercial drivers to expand their existing businesses or start new businesses besides sensitizing EESL project staff on gender issues. As on date, 228 women drivers were enrolled for training, out of which 206 women drivers have successfully completed the training. Some of the key gender inclusive features implemented under component 3 of this project are listed below:

Elderly, Women, Children and Disabled (EWCD) features included in project activities: The city level assessment study covers the importance of gender equality in urban transport. The report also covers recommendations for inclusion of EWCD feature while planning deployment of EV charging infrastructure. Solar carport pilot has considered gender equality and social inclusion considerations. The Solar carports presently being set up under the pilot program, has paid special attention to provide user-friendly environment for electric vehicle charging by incorporating various EWCD design features to ensure better accessibility, safety, and convenience for all users.

Women Centric Electric Bicycle Pilot Program- Program for Sustainable Transport for Rural Entrepreneurs through E-bicycles (S.T.R.E.E.) : With focus on empowering women entrepreneurs in rural India, CESL through this pilot is deploying ~1800 electric bicycles in the next six to eight months period to Self Help Group Women, Anganwadi Workers, ASHA Workers etc. in states like Bihar, Andhra Pradesh, Kerala and Madhya Pradesh. This is an important pilot which will demonstrate a working model for mobility in rural context and accelerate adoption of low speed electric bicycles as a key means of transportation. The electric bicycle will help them in performing their daily activities such as transport of goods, (agricultural produce or handmade products to local markets more efficiently), and deliver products to customers, manage supplies, and handle logistics more effectively. This can increase their market reach and lead to increased income. MoU has been signed between Ministry of Rural Development and CESL for implementation of the pilot program. Agreements have also been signed with State government agencies such as State Rural Livelihood Missions of Bihar, Kerala, Madhya Pradesh and Andhra

Pradesh for execution of the pilot. The pilot also covers training and capacity development of ~500 women beneficiaries on benefits of micromobility.

Knowledge activities/ Products

Knowledge product under component 1, 2 and 4 will be delivered once activities under these components are completed. For component 3, the following activities are envisaged: Under Output 3.1 and 3.2, knowledge products such as case studies under pilot studies will be developed besides individual city reports on charging infrastructure planning and location assessment for charging infrastructure for five cities. The project knowledge products will be shared through the media, networks, seminars involving government, and city officials.

As an outcome of the above, report on infrastructure readiness to cater to EV demand in cities has been adopted in Varanasi City. The workshop was held in Varanasi with support from City Municipal commissioner on 10th August 2024. Similar reports have been developed for cities of Shimla and Shillong and the same are expected to be adopted by the respective city departments in the months of September and October 2024.

As part of Output 3.1, a report on potential business models on electric bicycles, 3W retrofitting, battery swapping, battery leasing, solar carport with BESS and EV charging as a service covering go to market strategy and business proposal for mass scale-up of e-2, e-3 and e-4 wheelers in India has also been developed.

Further, as part of Output 3.2, the project team in partnership with the Ministry of Rural Development, is planning a workshop with key focus on micromobility. The objective of the workshop is to facilitate interaction and brainstorming on strategies for scaling up the use of electric bicycles and making them more affordable through demand incentives and financing options. The event will see participation from Central and State government entities, including PSUs, financing institutes, original equipment manufacturers (OEMS), think tanks and other relevant stakeholders.

Grievances

N/A

GEO LOCATION INFORMATION

Location Name	Latitude (WGS84 Format)	Longitude (WGS84 Format)	Location Description	Activity Description
Statue of Unity, Kevadia	N 21° 52′ 44.6'	E 73° 41′ 41.3''	Location for Solar Carport	Location for Solar Carport
Varanasi	N 25° 19′ 0'	E 83° 0′ 37''	Area under respective municipal city limits	City Level Assessment for EV demand and network plan for charging infrastructure
Shimla	N 31° 6′ 15''	E 77° 9′ 59''		
Shillong	N 25° 34′ 8''	E 91° 52′ 59''		
Vaishali	N 25° 45′ 0''	E 85° 25′ 0''	Districts in states such as Kerala, Madhya Pradesh, Andhra Pradesh and Bihar	Deployment of Electric Bicycles in various districts in India
Muzaffarpur	N 26° 7′ 21''	E 85° 23′ 26''		
Pallakad	N 10° 46′ 23''	E 76° 39′ 13''		
Kannur	N 11° 52′ 3''	E 75° 21′ 27''		
Vidisha	N 23° 31′ 33''	E 77° 48′ 39''		
Kuppam	N 12° 44′ 57''	E 78° 20′ 30''		

PROJECT MINOR CHANGE IN SCOPE/MINOR AMMENDMENTS: N/A

- [ ] Results framework
- [ ] Components and cost
- [ ] Institutional and implementation arrangements
- [ ] Financial management
- [X] Implementation schedule
- [X] Executing Entity
- [X] Executing Entity Category
- [ ] Minor project objective change
- [ ] Safeguards
- [ ] Risk analysis
- [ ] Increase of GEF project financing up to 5%
- [ ] Co-financing
- [ ] Location of project activity
- [ ] Other

There is a change of institutional arrangements and the nature of the executing entity. As per the approved project design, NITI Aayog was the designated executing agency for the UNEP components. However, due to administrative challenges in receiving the funds and operationalizing the PMU, NITI Aayog recommended the engagement of a third-party agency, WRI India (a CSO) as the executing agency dispensing the responsibilities under their guidance.

For the UNEP components, the implementation schedule is from July 2024 to June 2028. Further, due to the time gap between the project design and the implementation start, changes in the project activities are anticipated. A thorough assessment of the activities and their current relevance, changes to brought in the design, etc. would be captured as part of the planned mid-term review of the project (led by ADB). The key recommendations from this study would support the crystallization of the revised work plan for the next 4 years.

FOR SCCF/LDCF INDICATORS: N/A

CORE INDICATOR 1: Total Number of Direct Beneficiaries	Male: Female:
CORE INDICATOR 2: Area of land managed for climate resilience (ha)	
CORE INDICATOR 3: Total no. of policies/plans that will mainstream climate resilience	
CORE INDICATOR 4: Total number of people trained	Male: Female:

II. Project Profile

1. General Information	1	GEF ID:	**10276**
	2	Focal Area(s):	Climate Change
	3	Region:	Asia
	4	Country: India	India
	5	GEF Project Title :	Electrifying Mobility in Cities: Investing in the Transformation to Electric Mobility in India
	6	Project Size (FSP; MSP) :	FSP
	7	Trust Fund (GEFTF; SCCF; LDCF) :	GEFTF
2. Milestone Dates	8	GEF CEO Endorsement Date (mm/dd/yy)	06/03/2021
	9	ADB Approval Date if the GEF Fund (mm/dd/yy)	09/21/2021
	10	GEF Grant Signing of the GEF Fund (mm/dd/yy)	
	11	Implementation Start Date of the Project and of the GEF Component (mm/dd/yy)	11/30/2021
	12	Date of 1st GEF Grant Disbursement (mm/dd/yy)	04/18/2022
	13	Final date of GEF Grant Disbursement (mm/dd/yy)	TBA
	14	Proposed Implementation End (mm/dd/yy)	31/03/2025[2]
	15	Actual Implementation End (mm/dd/yy)	N/A
	16	Expected Financial Closure Date (mm/dd/yy)	TBA
	17	Actual Financial Closure Date (mm/dd/yy)	TBA
3. Funding	18	PPG/PDF Funding (USD)	USD 68,808
	19	GEF Grant (USD)	USD 5,366,976
	20	Total GEF Fund Disbursement as of 30 June 2024(USD)	USD 488,052
	21	Confirmed Co-Finance at CEO Endorsement (USD)	USD 162,780,000
	21	Materialized Co-Finance at project mid-term (USD)	N/A
	22	Materialized Co-Finance at project completion (USD)	N/A
	23	Proposed Mid-term date (mm/dd/yy)	10/30/2024
	24	Actual Mid-Term date - if applicable (mm/dd/yy)	N/A

[2] ADB part of the GEF project is aligned with ADB TA-9874-IND which in turn is associated with ADB project loan (52196-001) to EA. The current end date of TA is 31st March 2025 and therefore the proposed implementation end date of GEF project is slated to be the same. The TA end date might get extended and correspondingly the implementation end date for ADB part of the GEF project would also get extended and the same will be communicated. UNEP part of the GEF project implementation has started in June 2024 and is likely to continue for next four years.

4. Evaluations	25	Proposed Terminal Evaluation date (mm/dd/yy)	TBA
	26	Actual Terminal Evaluation Date (mm/dd/yy)	N/A

III. Project Implementation

A. Project Description:

The total GEF financing for India e-mobility project: $5.36 million

For Components 1,2 and 4 -Executing agency is WRI India under the guidance of NITI Aayog and the GEF fund of $2.14 million is administered by UNEP[3]

For Component 3 – Executing Agency is EESL and Implementing Agency is CESL[4] and the GEF fund of $3.22 million is administered by ADB

1. Component 1: **Integrated EV policy and framework for the e-mobility transformation**

Outcome 1.1: **Integrated, resilient planning in 3 cities.** Government institutionalizes integrated e-Mobility national policy framework and facilitates effective implementation of increased e-vehicle infrastructure, including its measurement and monitoring in Cities (UNEP)

Output 1.1: Integrated National Policy Framework with inclusive (Elderly, Women, Children and Differently abled) EWCD features to guide transformation to e-Mobility developed and operationalized for adoption by identified Government Authorities

Outcome 1.2: Replicating integrated, resilient planning in six cities: Six additional secondary cities will be selected based on (i) their readiness and commitment to take a GCAP approach, (ii) their potential for reducing GHG emissions, (iii) their vulnerability to climate and other risks; and (iv) assessments of infrastructure, services and capacity gaps. The alternative will support preparation of integrated urban development plans and build capacity in the six cities to prepare and implement plans.

Output 1.2: City e-Mobility and charging infrastructure plan developed for City Administration and integrated with urban development and planning processes for cities

Output 1.3: Methodology and data needs for estimating GHG reductions developed for Cities

2. Component 2: **Demonstrating Low Impact and Climate Resilient Development**

Outcome 2.1: Policy for Lithium-Ion Battery (LIB) reuse and recycling and battery standards for EVs endorsed by the Government (UNEP)

[3] A thorough assessment of the activities and their current relevance, changes to be brought in the design, etc. would be captured as part of the planned mid-term review of the project (led by ADB). The key recommendations from this study would support the crystallization of the revised work plan to be presented in the inception workshop for the UNEP components.

[4] CESL is a 100% wholly owned subsidiary of EESL which deals with Electric Mobility and Charging Infrastructure.

Output 3.1: Market assessment, charging infrastructure plans, business models and financing applications developed and disseminated to city authorities and public and private entities

3. Component 3: **Enabling scale up of e-vehicle markets through pilot demonstrations**

Outcome 3.1: Enabling conditions for e-mobility investments created, new business models and charging infrastructure plans developed at city level (ADB).
In terms of implementation activities of the TA in India, the whole TA consists of following two interrelated Outputs with other components administered by UNEP

Output 3.1: *Market assessment, charging infrastructure plans, business models and financing applications developed and disseminated to city authorities and public and private entities*

Output 3.2: *Pilot sub- projects implemented establishing business model (2W, 3W & 4W) for further investments by public and private entities and financing institutions*.

4. Component 4: Gender- sensitive capacity development and raising awareness for growing e-mobility

Outcome 4: Demand for e-vehicles stimulated through increased capacity and awareness among government, consumers and private sector stakeholders on the benefits and business opportunities for accelerating electric mobility uptake (UNEP)

Output 4.1: Capacity enhanced among policy makers on considering gender mainstreaming and EWCD considerations in the e-Mobility Sector
Output 4.2: End-users education and awareness on low-carbon transportation enhanced in urban areas
Output 4.3: Drivers, Service Technicians and Financing Institutions trained for strengthening EV services and access to finance,
Output 4.4: Institutional capacity developed at Central, State and City government official's levels to improve coordinated planning and actions monitoring with private/ industry support

B. Implementation Progress (IP) Rating:

Overall the project has made significant progress in the reporting period especially on component 3. Market assessment, charging infrastructure plans, business models and financing applications developed and disseminated to city authorities and public and private entities As an outcome of Output 3.1, a report was developed having case studies on national and international best practices in the areas namely: Electric Bicycles, 3W Retrofit, Battery Swapping Market, Solar Carport with BESS and EV Charging as a Service. The assignment is supporting the executing agency, to deliver two key interlinked set of activities under the GEF funds (i) market assessment, charging infrastructure plans, business models and financing applications developed, and disseminated to city authorities and public and private entities; and (ii) pilot subprojects implemented establishing business model (2 wheels, 3 wheels, and 4 wheels) for further investments by public and private entities and financing institutions. The repot has been completed. As part of the city level assessment activity, the project team launched a pivotal study titled "Electrifying Transport in Varanasi & EVCI Network Planning 2025-35."

A similar workshop for report dissemination is planned in Shimla in 3rd week of September 2024 and Shillong in 4th week of October 2024. The report helps identify the best ways to electrify transport in the city and develop a plan for a network of electric vehicle charging stations, making it easier for people to switch to electric vehicles and reduce pollution. The outcome of the activity leads to a positive step towards reducing emissions and improving air quality in the selected cities.

Under Output 3.2, Pilot sub- projects are being implemented. The project team explored the pilot on 3-Wheeler retrofit. However, after due diligence it was decided to drop the pilot due to limited number of OEMs and safety related issues and explore other available options as per the CEO document. As per the CEO document it had been envisaged that in case both the proposed pilot programs for (2W and 3W) fail to take off due to prevailing market conditions, it was proposed that the project may explore the following two options for piloting:

1) Second Life Battery integrated Charging Stations
2) Solar Powered Charging Station integrated with Battery Storage

Accordingly, the project team initiated the pilot on Solar Carport EV charging with Battery Energy Storage System (BESS). The study undertook several stakeholder consultations with OEMs (JBM, Servotech, Exicom, Delta, Magenta) and Battery Players (Lohum, Sun Mobility) to understand the viability of the project in India. The installation work has been initiated at one of the five sites and is expected to commission by early October,2024.

The project team kickstarted another pilot on 2Wheeler electric bicycles in later half of 2023. In absence of any prevailing standards for electric bicycles, the project team conducted multiple stakeholder consultations with OEMs (Hero, Motovolt, Nexzu, Aurita, E-Motorad etc.) and All India Cycle Manufacturers Association- AICMA . The consultations have seen immense participation from electric bicycle OEMs considering the potential of the low-speed EV market. Multiple demonstrations have been held on pan India basis to accrue the benefits of electric bicycles to the end user. CESL has signed MoU and agreements with various organizations for implementation of the project. Tender has been prepared and will be published by mid of September,2024.

Further, the project team is exploring the possibility of deployment of electric trucks on pilot basis as a measure to decarbonize freight transportation. Based on the past experience of EA in deployment of electric buses, as part of this pilot program, EA proposes to deploy electric trucks at zero financing cost to the end client effectively removing financial barriers that often deter businesses from transitioning to greener alternatives. This approach empowers businesses to adopt electric trucks without the burden of upfront costs or interest expenses, making them affordable and accessible. However, the project is still at a very nascent stage.

a. GEF Grant Disbursement

For ADB led component, total disbursement of USD 488,062 has taken place and contract has been awarded for USD 1,029,248.50. The plan is to disburse the pilot amount of USD 1,750,000 on solar car port pilot and e-bicycle pilot in the next seven months period. First disbursement for UNEP led component has happened after June 2024 and will be reported in the next PIR.

b. Stakeholders Engagement

For Outcome 3.1 and 3.2, the project team has carried out extensive stakeholder engagement activities with regular meetings and campaigns/ demonstrations and consultations with key government officials from various ministries and departments as tabulated in earlier sections.
The project team has also consulted with private sector entities, associations and thinktanks through stakeholder consultations and seminars to bring greater efficiency, innovation, and practices that can improve project outcomes and enhance savings. Several challenges were faced during interaction with stakeholders at city level due to change in management/ leadership. However, the overall stakeholder support for the project has been positive.

c. Gender Action Plan Implementation Status

Gender-sensitive capacity development and awareness raising for scaling up e-mobility in India, is being covered under Component 4. This component focuses on integrating gender inclusion capacity development activities related to e-mobility and proposes to engage with policymakers in designing gender-inclusive policy and solutions. The work under this component (along with other components) will be reassessed and will be initiated as per the agreed revised work plan which is currently under development.

Moreover, gender mainstreaming efforts have been undertaken through ADB loan, Scaling up demand side energy efficiency sector project, which is aligned with this GEF grant, through provisioning of training for women commercial drivers to expand their existing businesses or start new businesses besides sensitizing EESL project staff on gender issues. As on date, 228 women drivers were enrolled for training, out of which 206 women drivers have successfully completed the training. Some of the key gender inclusive features implemented under component 3 of this project are inclusion of Elderly, Women, Children and Disabled (EWCD) features while planning and proposing of EV charging infrastructure in the concerned 5 cities. The Solar carports presently being set up under the pilot program, has paid special attention to provide user-friendly environment for electric vehicle charging by incorporating various EWCD design features to ensure better accessibility, safety, and convenience for all users. Besides these, women centric electric bicycle pilot program- Program for Sustainable Transport for Rural Entrepreneurs through E-bicycles (S.T.R.E.E.) caters to not only deployment of e-bicycle to women entrepreneurs, but also provide them related training and capacity building exercise on the same. A gender capacity building and training module will be developed for training of these women beneficiaries on the functionality, usage, maintenance battery charging optimization, periodic maintenance, warranty services, spares, and usage of tool kit and operations of the electric bicycles through different methods like in person sessions, online sessions or manuals etc.

d. Social and Environmental Safeguard Plan Implementation Status

The project is not anticipated to generate any adverse environmental impacts during operations. The land used for creating project demonstration site, such as charging infrastructure for 2W, 3W and 4W will be within the urban areas and these will be mainly using the existing transport and public infrastructure land. The solar carport and electric bicycle pilots ensure proper waste management of demonstration projects. For carports, the vendor will ensure and provide mandatory Environmental Health and Safety (EHS) certification whereas in electric bicycles pilot, the vendor has to ensure the safe disposal of end-of-life batteries as per the applicable Government of India guidelines. No site is related to indigenous communities which is affected by the project.The project does not involve any adverse impact on social safeguard measures and as such no GEF funds are being utilized for the same.

C. Global Environmental Benefits (GEB) Objective/ Development Objective (DO) Rating:

All the pilot projects are in the implantation stage and no benefits have so far accrued. However the results of the pilot demonstration project are expected to generate 201,000 tCO_2e of Direct GHG emission reductions. Based on preliminary assessment, through successful deployment of a completely green end – to – end charging facility for EV's that is off grid will result in reduction of around ~247689 tCO_2e. Further, successful deployment of 1800 electric bicycles is expected to lead to reduction of around ~4595 tCO_2e . The potential reduction calculation and the related assumptions can be found at Annex D of this report. As per the above presented figures, it is anticipated that the direct GHG emissions reduction shall meet the indicated figures in the results framework of the endorsed CEO document.

D. Risk Rating:

Following risk is enlisted:

Risk and Description	Probability	Severeness	Current Status/ Parameters	Update on Countermeasures/Management response
Delayed implementation of Component 1,2 and 4 of project	Medium	Moderate	The agreement to initiate the activities under components 1, 2 and 4 were signed only in June 2024 after securing the necessary government clearance.	The project outputs are being currently evaluated for its relevance and new outputs are likely to be finalized by September 2024. Once these are finalized, the project execution is expected to be in full swing. UNEP part of the project will still be implemented for a 4-year timeline.
Adoption of City Reports	Low	Moderate	The proposed city plan includes collaborative discussions/ decisions	The project team has consulted with city governments on adoption of recommendations of the report/ locations finalized for setting up

Risk and Description	Probability	Severeness	Current Status/ Parameters	Update on Countermeasures/Management response
			with key stakeholders (including Govt., Public & Private Sectors, OEMs, Service providers, Institutes, etc.) and the list of locations identified for setting up charging infrastructure in the city.	charging infrastructure. EA has also offered to provide support in tendering for any such requirements from the City authorities
Delay in City Finalization for city level assessment	High	Moderate	Workshop has been conducted in one city(Varanasi) and work is under progress in other two(Shimla, Shillong) cities. Response from the remaining two cities is awaited. The delay is affecting the project timelines.	The project team finalized few alternate cities and shared letters to the concerned department for initiating discussions. Both the cities are likely to finalized by September, 2024.
Higher upfront cost of Solar Carport with BESS and e-bicycles may pose a barrier to implementation and scale up of activities	High	High	Higher cost of Electric Bicycles and Batteries / BESS system is a concern	For solar carports, the global battery prices are on a fall and it is expected that Off grid RE integrated carport will be viable in years to come. EA has aggregated a demand of more than 1800 electric bicycles anticipating a price reduction of ~30% from the current market rate.
Low commitment from industry to technology changes	Medium	Moderate	Specifications of Electric Bicycles	In absence of prevailing standards, the project team has conducted multiple stakeholder consultations with electric bicycle OEMs, Industry Associations (AICMA) and finalized the technical specifications for electric bicycles.
Major results of the project may not be achieved before the end of the	Medium	Moderate	Deployment of electric bicycles and implementation of solar car ports	For finalizing sites of carport, EA has written to various Govt. departments and agreement signing is under process at some of the sites. Once done, the execution s expected to be

Risk and Description	Probability	Severeness	Current Status/ Parameters	Update on Countermeasures/Management response
project period				quick. EA has signed agreements with state agencies for deployment of electric bicycles defining roles and responsibilities and timelines. The distribution of bicycles may not take much time. Impact assessment studies would be conducted once deployment starts.
Lack of interest or participation from market players/ private sector	Low	Low	OEMs, Players, Battery Players, Industry Associations etc have shown great intent towards participation in the pilot activities	EA conducted multiple stakeholder meetings/ seminars to ensure participation from relevant stakeholders and how the market will be benefited from the pilot results/ activities through their active participation.
Coordination between EA and State agencies for deployment of e-bicycles	Medium	Moderate	Distribution of 1800 electric bicycles at district level may pose communication issue among the stakeholders including OEMs, state agencies and the EA	Project team has signed agreements with State agencies clearly defining their roles and responsibilities during execution of the pilot activities.

E. Overall Rating of the Project:
Overall Rating: Moderately Satisfactory

F. Good Practices And Lessons Learned:

Some of the good practices and lessons learned are listed below:
Securing the commitment of city governments' to kickstart the project proved to be a lengthy process, as extensive negotiations and deliberations were required to align with their priorities and regulatory frameworks. This substantial effort caused delays in finalizing the selection of the five cities for the initiative. Despite the challenges, these discussions were crucial to ensuring strong local support and successful project implementation.

During location assessment for setting up charging infrastructure at the selected cities, it was found that some of the locations have been randomly selected by city departments without proper assessment. The project team along with city department officials conducted thorough assessment and proposed alternate/ new locations.

Retrofitting three-wheelers (auto-rickshaws) with electric drivetrains is a promising way to reduce emissions and modernize transportation. As part of initial assessment for potential pilot on 3W retrofit, the project team faced several issues such as technical specification challenges, limited OEMs/ startups and lack of regulatory and policy guidelines for retrofit in India. Even the financial institutions (FIs) were not aware of such technology and were reluctant to fund the startups/ vehicle owners. Through extensive stakeholder meetings, the project team briefed the FIs and other stakeholders on the technology and its benefits. However, the market is still in a nascent stage and may mature over the next few years.

The lack of defined standards for electric bicycles (e-bikes) in India presented several challenges, from safety and performance issues to market confusion. However, through extensive stakeholder consultations with OEMs and All India Cycle Manufacturers Association (AICMA), field surveys, adoption of global practices and use cases the project team was able to define the technical specifications of the electric bicycle. The women beneficiaries were initially not keen on participating in the pilot program, due to high upfront cost of the electric bicycle. Considering their low paying capacity, the electric bicycles were offered at subsidized rates for demonstration impact and government to assess its benefit and subsequently intervene through policy framework. Besides these impacts, the pilot is also expected to reduce the upfront cost of electric bicycles by ~30% through bulk procurement of around 1800 bicycles which itself is expected to spur more demand.

G. Knowledge activities / products:

Knowledge activities under component 1, 2 and 4 will be delivered once activities under these components are initiated. For component 3, as part of output 3.1, the report on infrastructure readiness to cater to EV demand in cities has been adopted in Varanasi City. The workshop was held in Varanasi with support from City Municipal commissioner. Similar reports are being developed for cities of Shimla and Shillong and the same are expected to be adopted by the respective city departments in the months of September and October 2024. Under output 3.2, the following knowledge products are envisaged post successful completion of the pilot activities:

(i) Report on integration of renewable energy for EV charging solutions and support required from government agencies in scaling up use of renewable energy for meeting charging needs
(ii) Report on impact assessment of e-bicycle in the country and subsequent support and policy intervention required from the Government for scale up and mass adoption

The objective through this pilot is to demonstrate a working model for mobility in rural context especially for women and accelerate adoption of e-bicycles. This will also raise awareness of electric bicycles as a clean, sustainable and affordable mobility option. The result of this pilot is likely to be good communication piece that can be disseminated across projects.

As part of Output 3.1, a report on potential business models on electric bicycles, 3W retrofitting, battery swapping, battery leasing, solar carport with BESS and EV charging as a service covering go to market strategy and business proposal for mass scale-up of e-2, e-3 and e-4 wheelers in India has also been developed.

Further, as part of Output 3.2, the project team in partnership with the Ministry of Rural Development, is planning a workshop with key focus on micromobility. The objective of the workshop is to facilitate interaction and brainstorming on strategies for scaling up the use of electric bicycles and making them more affordable through demand incentives and financing options. The event will see participation from Central and State government entities, including PSUs, financing institutes, original equipment manufacturers (OEMS), think tanks and other relevant stakeholders.

H. Location Data:

Cities were part of work will be undertaken under component 1, 2 and 4 are being revised and updated. For component 3, the key site locations are listed below:

Location Name	Latitude (WGS84 Format)	Longitude (WGS84 Format)	Location Description	Activity Description
Statue of Unity, Kevadia	N 21° 52′ 44.6'	E 73° 41′ 41.3''	Location for Solar Carport	Location for Solar Carport
Varanasi	N 25° 19′ 0'	E 83° 0′ 37''	Area under respective municipal city limits	City Level Assessment for EV demand and network plan for charging infrastructure
Shimla	N 31° 6′ 15''	E 77° 9′ 59''		
Shillong	N 25° 34′ 8''	E 91° 52′ 59''		
Vaishali	N 25° 45′ 0''	E 85° 25′ 0''	Districts in states such as Kerala, Madhya Pradesh, Andhra Pradesh and Bihar	Deployment of Electric Bicycles in various districts in India
Muzaffarpur	N 26° 7′ 21''	E 85° 23′ 26''		
Pallakad	N 10° 46′ 23''	E 76° 39′ 13''		
Kannur	N 11° 52′ 3''	E 75° 21′ 27''		
Vidisha	N 23° 31′ 33''	E 77° 48′ 39''		
Kuppam	N 12° 44′ 57''	E 78° 20′ 30''		

ANNEX B. Project Contacts

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ANNEX C: DEFINITION OF RATINGS

Implementation Progress Ratings

Highly Satisfactory (HS): Implementation of **all** components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as "good practice".
Satisfactory (S): Implementation of **most** components is in substantial compliance with the original/formally revised plan except for only a few that is subject to remedial action.
Moderately Satisfactory (MS): Implementation of **some** components is in substantial compliance with the original/formally revised plan with **some** components requiring remedial action.
Moderately Unsatisfactory (MU): Implementation of **some** components is not in substantial compliance with the original/formally revised plan with **most** components requiring remedial action..
Unsatisfactory (U): Implementation of **most** components is not in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU): Implementation of **none** of the components is in substantial compliance with the original/formally revised plan.

Global Environment Objective/Development Objective Ratings

Highly Satisfactory (HS): Project is expected to achieve or exceed **all** its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as "good practice".
Satisfactory (S): Project is expected to achieve **most** of its major global environmental objectives, and yield satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS): Project is expected to achieve **most** of its major relevant objectives but with either significant shortcomings or modest overall relevance. Project is expected not to achieve **some** of its major global environmental objectives or yield some of the expected global environment benefits.
Moderately Unsatisfactory (MU): Project is expected to achieve of its major global environmental objectives with major shortcomings or is expected to achieve only **some** of its major global environmental objectives.
Unsatisfactory (U): Project is expected **not** to achieve **most** of its major global environment objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU): The project has failed to achieve, and is not expected to achieve, **any** of its major global environment objectives with no worthwhile benefits.

Risk Rating

Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risks of projects should be rated on the following scale:
High Risk (H): There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.

Substantial Risk (S): There is a probability of between 51% and 75% that assumptions may fail to hold and/or the project may face substantial risks.
Modest Risk (M): There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/ or the project may face only modest risks.
Low Risk (L): There is a probability of up to 25% that assumptions may fail to hold or materialize, and/ or the project may face only modest risks.

Annex D

A) Assumptions for Solar Carport

Solar Carport Capacity (kWp)	25	50
Average units generated per day by 1kWp solar panel (kWh/day)	4	4
Total power generation	100	200
Per day units required for charging 1 e-car (Assuming 80% charging)	24	24
Estimated No. of cars charging in a day	4	8
Battery Energy Storage system capacity (kWh)	100	200
Total No. of e-Cars charged per year	1200	2400
Reduction in Carbon Emission per carport (Kg)	41,28,000	82,56,000
Number of solar carports	4	1
Total esimated GHG reduction through solar Carport (Kg)	1,65,12,000	82,56,000
Asset life (Years)	10	10
Estimated GHG reduction (tCO2)	**2,47,680**	

B) Assumptions for Electric Bicycles

	Emission reduction calculations		
Electric 2W - Hero Winnx	Co2 emission from grid	0.81	kg/kWh
	Per day running KM	35	KM
	No. of days per annum	330	days
	Annual running KM	11550	KM
	Battery Capacity	0.52	kWh
	Range in Full charge	45	km
	Energy Consumption/km	0.01	kWh/km
	Annual Energy Consumption	133.98	kWh
	Annual Co2 emission	108.52	kg
	Co2 emission/KM	0.0094	kg/KM
	fuel consumption per KM in ICE scooty	50.00	KM/litre
	Co2 emission/Liter of fuel consumed	2.68	kg/litre
	Total running KM per year	11550	KM

	Co2 emission/KM	0.0536	kg
	Co2 reduction by e cargo bicycle/KM	0.0442	kg
	No. of bicycles	1800	no.
	Total Co2 reduction estimate pa	9,19,001	kg
	Asset life	5	years
	Total estimated Co2 reduction	4,595	tCO2

Note: This estimation is based on the premise that people adopting e-bicycle cargo are users of ICE engine 2W. There may also be users who will adopt e-bicycle cargo without any prior ownership of ICE engines or using other modes of transport