

**Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Assam
Power Distribution Company Limited (APDCL) collaboration
Under
Indo – German Energy Program, Energy Transition with DISCOMs**

Executive Summary Report For The Activities

**EV charging
infrastructure planning**

**Development of
IT Policy**

**Development
of Digital
Asset register**

**Disaster
Resilience
infrastructure
planning**

**Planning and
Designing of BESS**



Introduction

About GIZ

As a service provider in the field of international cooperation for sustainable development and international education work, we are dedicated to shaping a future worth living around the world. We have over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and environment, and peace and security. We work with businesses, civil society actors and research institutions, fostering successful interaction between development policy and other policy fields and areas of activity. Our main commissioning party is the German Federal Ministry for Economic Cooperation and Development (BMZ).

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has been operating in India for over 60 years. It has offices in Delhi, Bengaluru and Mumbai, in addition to other locations in the country. In India, GIZ supports communities as well as public and private institutions in conserving natural resources and biodiversity, minimizing climate-related risks and restructuring agrifood systems to make them sustainable. To protect the environment, GIZ also provides support to restructure India's energy sector and reduce emissions. It promotes the expansion of renewable energy and is committed to increasing energy efficiency.

About the project “Indo – German Energy Program, Energy Transition with DISCOMs”

"Energy transition in India with distribution companies (DISCOMs)" is a project under the umbrella of the Indo – German Energy Program being implemented in India in partnership with the Ministry of Power, Govt. of India on behalf of the Federal Ministry of Economic Cooperation and Development (BMZ) in Germany. The program supports Indian DISCOMs in building up a broad-based, technically and economically efficient, socially and ecologically sustainable energy supply.

The objective is to improve the operational performance of power distribution sector in India. The major focus areas are improvement in distribution network planning, operation and maintenance (O&M) process and practices, usage of data analytics tools for improved operations, training of DISCOMs professionals.

The project is also implementing activities with other state power distribution companies like Kerala state electricity board (KSEB), Tripura state electricity corporation Ltd. (TSECL), Ladakh power development department (L PDD), Delhi (BRPL & BYPL), Andhra Pradesh eastern power distribution company Ltd. (APEPDCL).

The project has conducted four activities under CEA like IT-OT integration roadmap for DISCOMs, Asset management guidelines, smart metering interoperability for India, DER technical standards study. The project also conducting training programs with PFC for all state DISCOMs and GETRI on topics like digitalization, operation & maintenance best practices, EV / RE impact study and others.

About APDCL

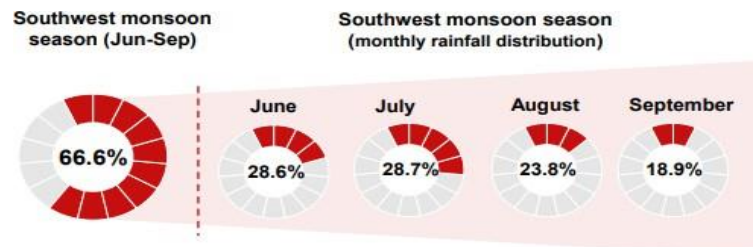
Assam Power Distribution Company Limited (APDCL) is a public limited company wholly owned by the Government of Assam. The main purpose of forming the Company was to take over, manage and operate the electricity distribution system, assets, liabilities, undertaking of the erstwhile Assam State Electricity Board (ASEB) pursuant to a notified transfer scheme in terms of Part XIII of the Electricity Act, 2003.

The primary purpose of the Company is to undertake distribution, trading and supply of electricity in the state of Assam or outside in accordance with provisions of Applicable Law and all activities ancillary or appurtenant thereto. It has also the mandate to develop, maintain and operate the power distribution system in the state of Assam. In carrying out the work of supplying power, APDCL reaches every part of the state.

Disaster Resilience Infrastructure for APDCL

Assam a north-eastern state of India lies between 89° 46' - 96° 01' E longitude & 24° 03' - 27° 58' N latitude, falls under the humid sub-tropical climatic region characterized by warm humid climate with heavy rainfall in summer and a relatively cool during winter. And due to its unique physiographic and climatic conditions, it is one of the most flood-prone regions in the country during the monsoon. The flood affects the state livelihood, infrastructure, transportation and else every year whereas power distribution system is the most vulnerable critical infrastructure system that got effected due to perennial flood hazards across the state.

The recurrent floods in the state adversely affect the electricity distribution infrastructure causing cascading financial implications.



Objective: GIZ in collaboration with APDCL has conducted the project titled “Disaster Resilience Infrastructure”. The project aims to develop a blueprint for flood decision support and monitoring tools for different phases of disaster (preparedness, response and recovery) and a set of recommendations for strengthening the flood resiliency of APDCL. GIZ appointed PricewaterhouseCoopers Private Limited, India as a consulting partner to carry out the comprehensive assessment.

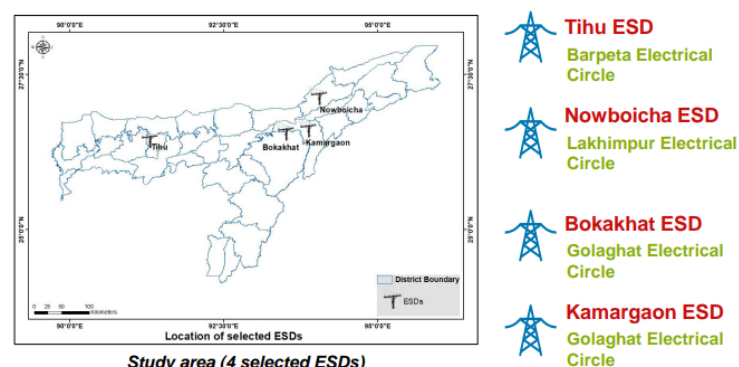
To achieve the desired objective, several studies and technical assessments have been conducted as part of the project. Based on the analytics-orientation and evaluation in compliance with the policy, regulation, and standards of the Govt. of India and the state of Assam, the project delivers the following:

1. As-is analysis of existing flood management frameworks with asset vulnerability assessment
2. Survey of flood prone electrical sub-division with GIS mapping of assets
3. Disaster response action plan document with measures on disaster resilience planning
4. Blueprint for IT based decision support system and forecasting methodology
5. Training of trainer for management

The implementation of this project happened under the guidance of Distribution & Safety department APDCL. The project team collaborated with other related departments like Water Resource Department, Assam State Disaster Management Authority (ASDMA) etc. for data collection and perspective understanding.

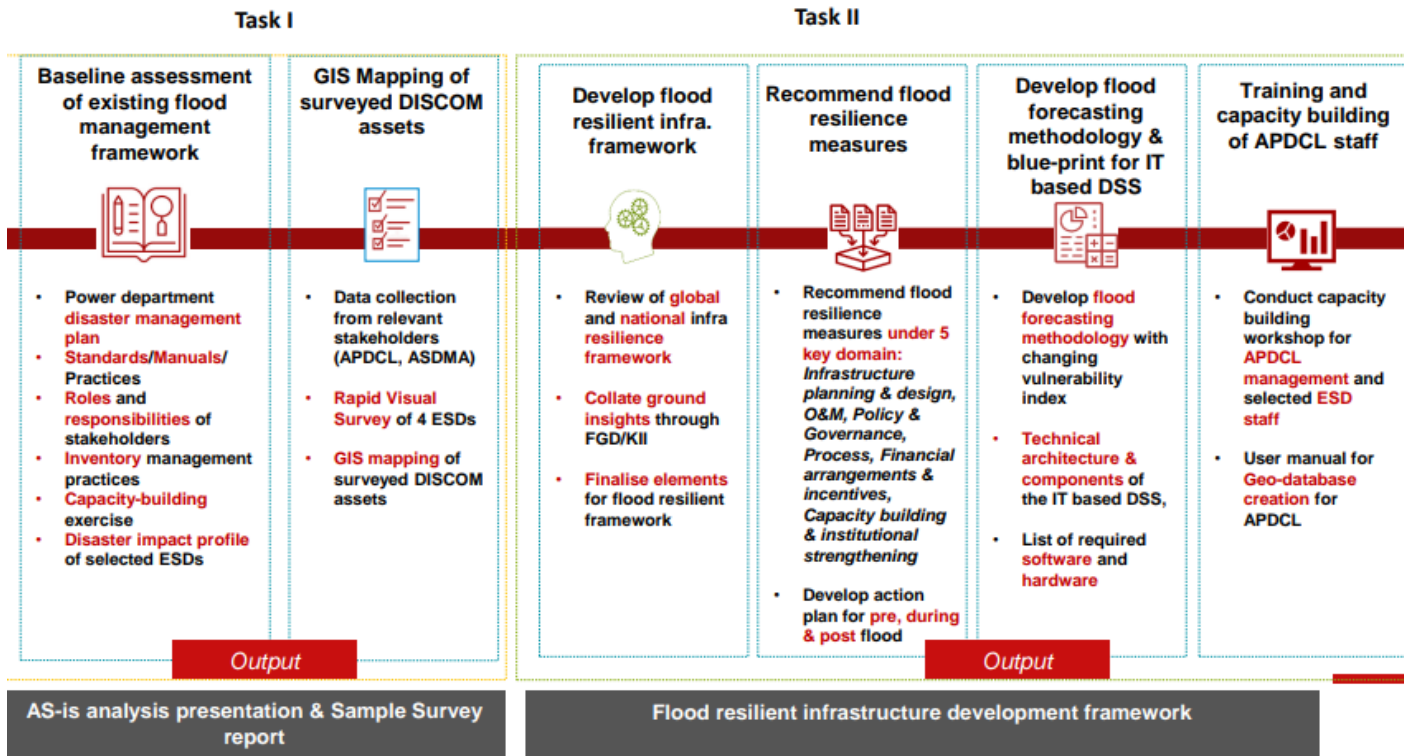
The pilot project areas of work selected by the Distribution & Safety dept. are Tihu, Nowboicha, Bokakhat, and Kamargaon electrical sub-divisions.

The data collected from the different departments, officials, and site visits was utilized for assessing the existing scenarios, GIS mapping of flood prone areas, asset vulnerability assessment, drafting the recommendations for APDCL and others.



The as-is assessment highlights the need to strengthen the existing APDCL flood risk management framework including change in infrastructure standards, build institutional capacity, allocate dedicated financing for restoration, retrofitting and reconstruction works, upgrade asset/inventory management practices, initiate wider citizen engagements, & build technology platforms for monitoring & management of flood risk. It also recommends the methodology for strengthening the APDCL infrastructure resilience planning, disaster management framework, institutional framework for roles etc.

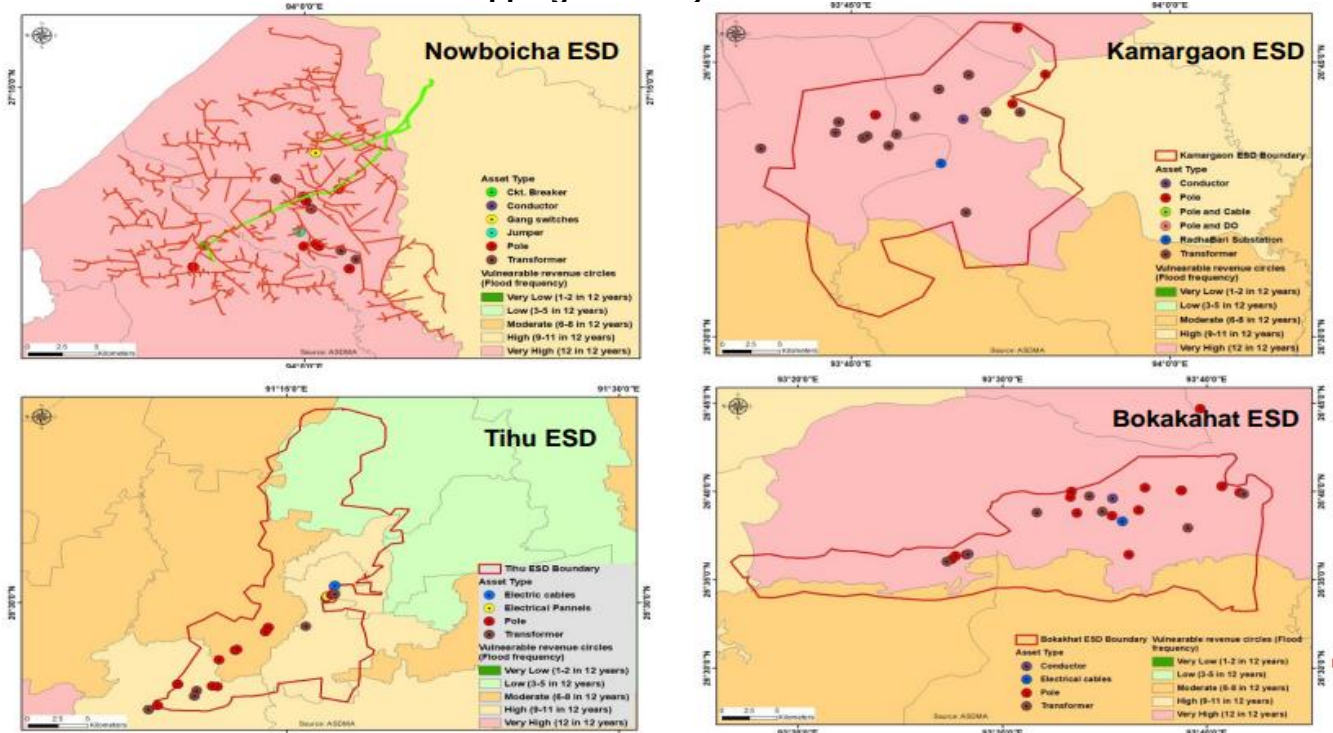
Overview of tasks performed



The parameters of the survey for gathering data from sub-divisional officers are:

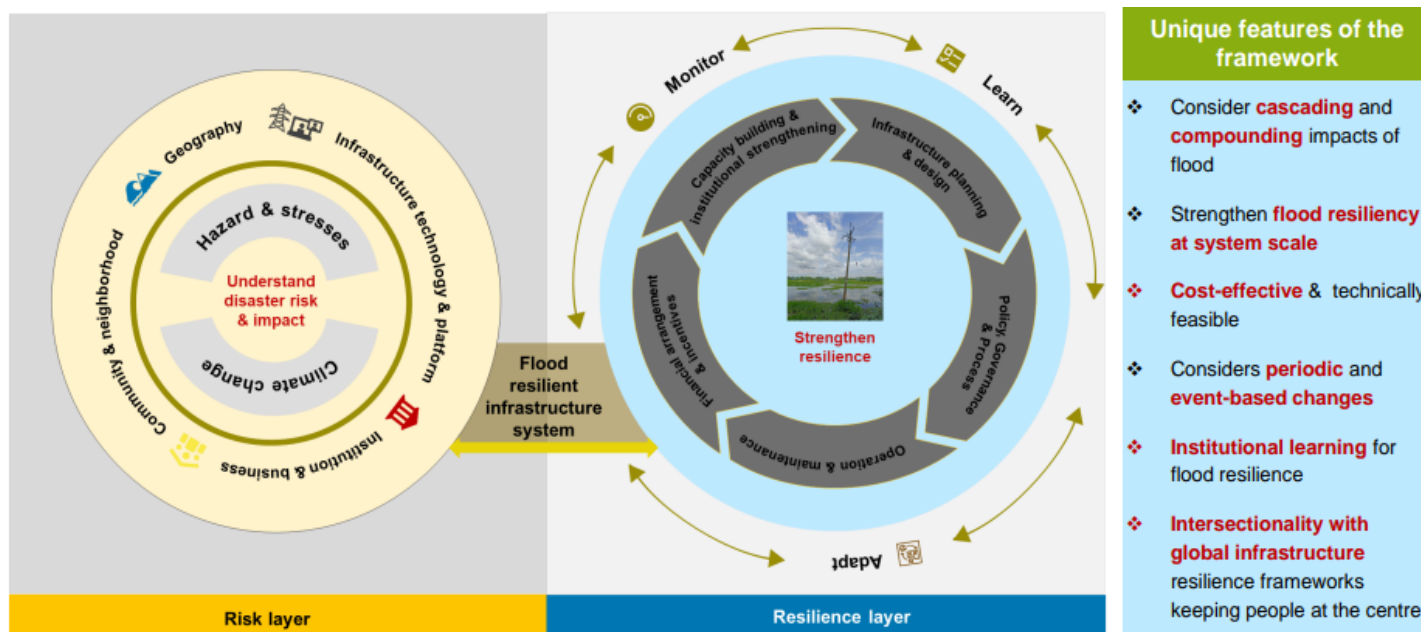
Flood Impact	Preparedness	Response	Disaster related Information
<ul style="list-style-type: none"> Damage incurred Damage Assessment Vulnerable Infra/ Site Power outage Challenges 	<ul style="list-style-type: none"> Existing arrangement Preventive maintenance Safety DTR Fencing / lifting Training Technical design std. 	<ul style="list-style-type: none"> Coordination Expedient restoration of power supply to essential services during floods Contingency Contract & manpower for restoration Emergency funds 	<ul style="list-style-type: none"> Inventory/ Critical asset storage Basis of cost estimate for damage assessment Guidelines/ SOP for charging equipment post shutdowns Citizen Engagement Mechanism

GIS mapping of surveyed ESDs



The project has given the following measures to strengthen the overall resiliency of APDCL against the flood:

1. Application of digital technology for effective flood management planning
 - Blueprint for IT based Decision Support System for disaster preparedness, and response by APDCL
 - GIS based flood risk forecasting & management
2. Detailed SoP for disaster preparedness, response and restoration activities
3. Recommendations on adapting the O&M manual of pre-monsoon asset maintenance activities. The potential mitigation solutions can be categorized as follows:
 - Asset management, vegetation maintenance and inspections
 - Situational awareness vis-à-vis weather forecasting, emergency planning and preparedness
 - Risk assessment and mapping, resource allocation methodology
4. Based on the assessment, the following elementary roadmaps for future infrastructure planning and development are proposed:
 - Provision of redundant branched/network line for power supply in high flood prone region.
 - Modification of sub-station and transformer foundation based on probabilistic flood risk assessment
 - Provision of dewatering through pumps and drains, based on the hydrology of the local area
 - Flood intensity & depth-based material and design selection for erection of distribution infrastructure
5. Principle and methodology for planning and estimation of resources for quick power restoration:
 - Principle: Risk assessment and prioritization, resource allocation, collaboration and coordination, technological integration and trainings.
 - Methodologies: Data analysis for flood risk mapping and critical inventory identification, scenario planning, inventory management.
6. Organizational mapping of personnel responsibility, coordination, and reporting chart at head office, at zonal, divisional and sub-divisional level



EV charging infrastructure planning for APDCL

India's National Electric Mobility Mission Plan (NEMMP) aims to accelerate the adoption of electric vehicles (EVs) for promoting cleaner transportation solutions. The government of Assam is also taking proactive steps to mitigate its carbon footprint and transition towards a more sustainable future by promoting the adoption of electric vehicles across the region by its forward-thinking EV policy. The policy encourages the incentive on the purchase of EVs, infrastructure development, charging network expansion, re-use of EV batteries and research and development in the electric vehicle sector.

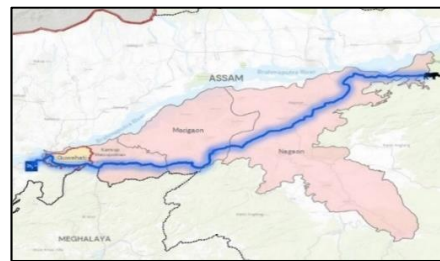
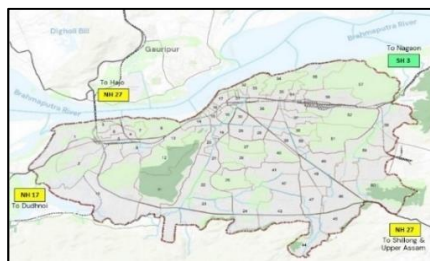
Objective: GIZ in collaboration with APDCL has conducted a project titled “EV charging infrastructure planning”. This project supports the APDCL, in facilitating transition towards clean transportation in the state through enhanced rooftop solar generation in conjunction with the development of charging infrastructure for electric vehicles. GIZ has appointed ICF Consulting India Private Limited as a consulting agency for this project and is responsible for conducting the required study for this project.

To achieve the desired objective, several studies and technical assessments have been conducted as part of the project. Based on the analytics-orientation and evaluation in compliance with the policy, regulation, and standards of the Govt. of India and the state of Assam, the project delivers the following:

- EV Charging Demand Forecasts and EV Charger siting / sizing
- Solar PV Feasibility and Grid Integration Assessment for EV Charging
- Detailed Project Report for EV Charger Installations
- Detailed Review of EV Charger Installation Process in Assam
- Social, Environmental, and Economic Impacts of the Project

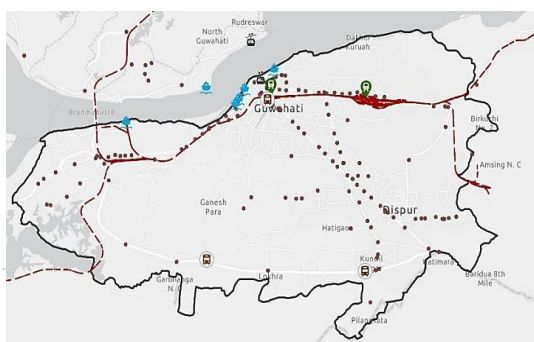
The implementation of this project happened under the guidance of Project, Planning & Design (PPD) Department of APDCL. The project team also collaborated with other connected departments like Guwahati Municipal Corporation (GMC), Guwahati Metropolitan Development Authority (GMDA), Assam State Transport Corporation (ASTC), Regional transport office (RTO), and others for data collection and effective understanding the existing scenarios.

The areas of work selected by APDCL are: Guwahati municipal corporation area and the Highway between Guwahati and Kaziranga National Park.

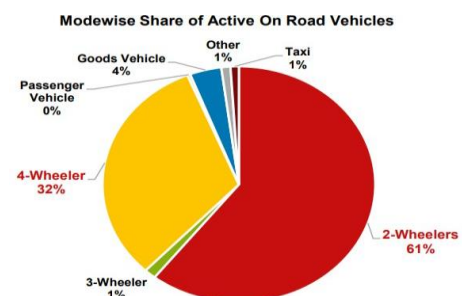


Historical data collected from various nodal points, and survey were utilized for technical feasibility studies like grid impact analysis, siting and sizing of RE based EVCS, detailed engineering plans, carbon emission reduction and others. The analysis from the existing scenario on mode of transportation, vehicle projection, impact on grid, availability of parking space and others from the project highlights are as follows:

Existing Road Network and Transportation Systems



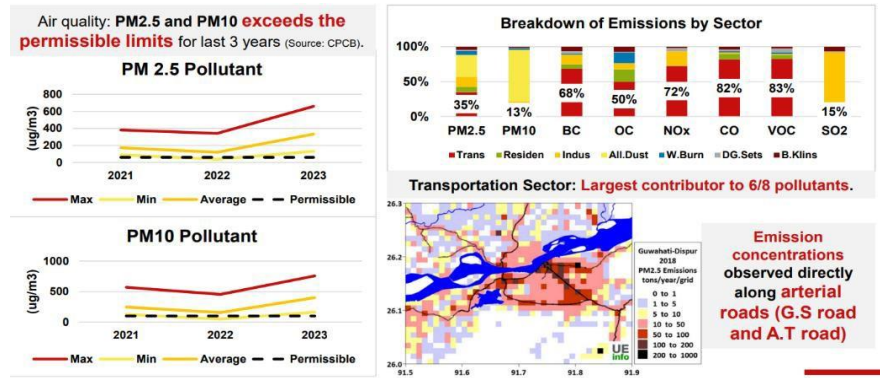
- Rail
- Railway Station
- Ferry Terminal
- Ropeway Terminal
- Bus Terminal
- Bus Stops
- Guwahati Municipal Boundary



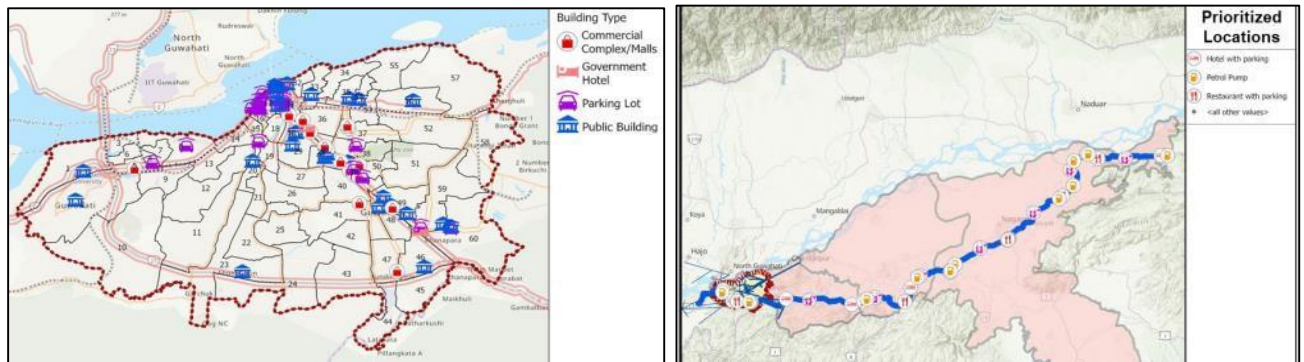
Existing Power Network and Load Characteristics: Considering the two study areas, the following 5 electrical areas encompass the two study areas - Guwahati Electrical Circle (GEC) I and II, Morigaon, Nagaon and Golaghat.

Existing Environmental Scenario:

The transportation sector is the largest contributor to emissions for 6 pollutants, which include PM2.5, black carbon (BC), organic carbon (OC), nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs). The highest PM2.5 emissions arise from the most congested corridors in Guwahati, namely G.S road and A.T road.



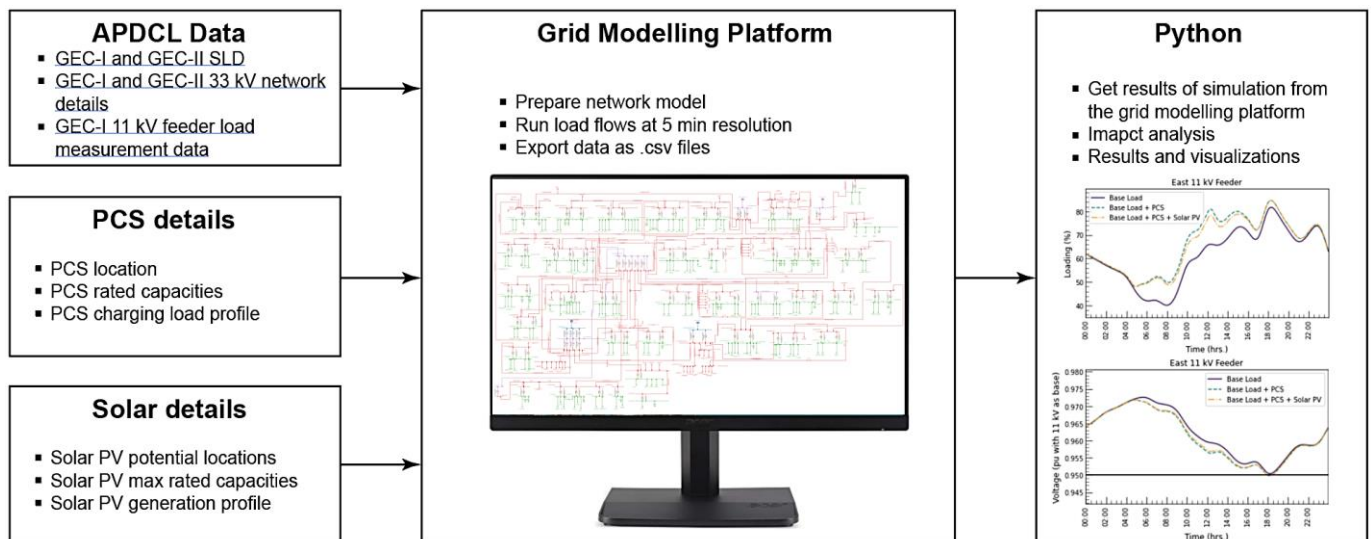
EV Charging Demand and Location Assessment: The project has estimated the EV traffic, public EV charging stations demand, and optimal location of EVCS for Guwahati city and Kaziranga Highway.



EV Scenario	BAU Scenario			EV Policy Scenario		
Public Charging Scenario	Low	Medium	High	Low	Medium	High
Daily Energy [MWh]	27.70	40.53	59.41	51.84	78.26	122.50
Total Charging Infra [MW]	3.60	5.27	7.72	6.74	10.17	15.92

Scenario selected for grid integration

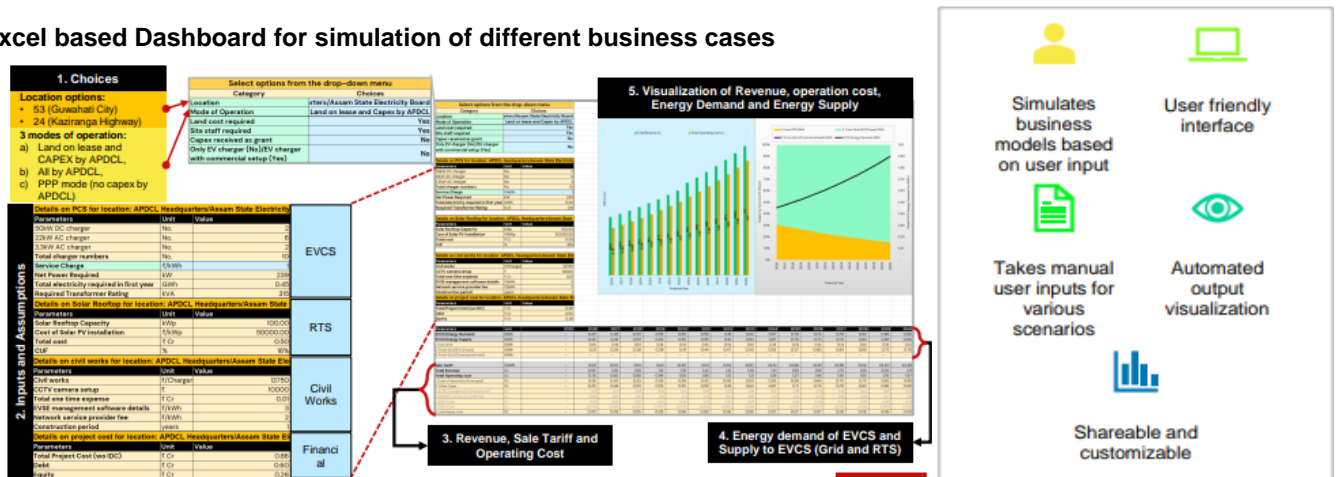
Grid Integration Assessment: The project has carried out the grid integration analysis to assess the impact of installing EV chargers at the shortlisted locations. Based on the geographic distribution and estimated total demand by EVCS, the report also gives recommendations on EVCS sizing and RE based EVCS feasibility studies.



Detailed Engineering Plans: DEPs have been developed for selected locations to showcase the basic requirement for setting up the EVCS which includes engineering details and cost estimation. Assessments of viable business models and revenue projections as well as rate of return for installation and operations of the EV chargers have been estimated using a comprehensive cost model.

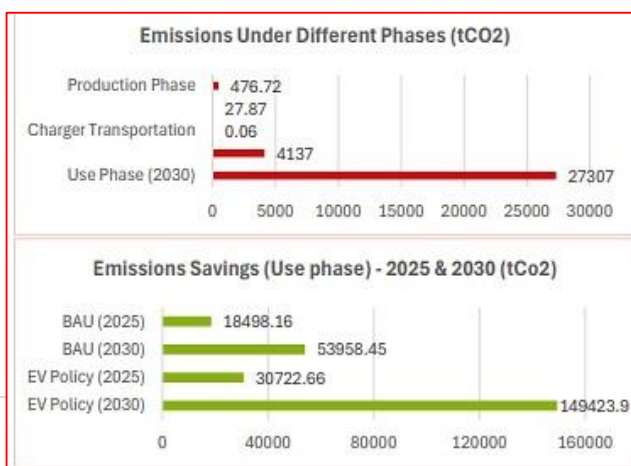


Excel based Dashboard for simulation of different business cases



Streamlining Public Charging Installation Processes in Assam: Based on a review of existing processes as well as global best practices, improvements such as a Single Window Clearance, centralized publicly accessible dashboard showing the headroom available in the substations, standardized on-site testing requirements, detailed proposed site map and timeline transparency have been detailed out

Project Impacts: The project also includes an estimation of environmental, social economic impacts of installing EVCS, as well as an impact assessment through the Sustainable Development Goals (SDG) framework



Contribution of EV charging infrastructure towards achievement of SDG goals in Guwahati



Development of IT policy for APDCL according to regulatory requirements

APDCL has successfully implemented a number of IT-OT applications to digitalize metering, billing, collection, enterprise operation, asset management, customer engagement etc. and is in the process of a large-scale implementation of an AMI system, GIS application, SCADA and others. At APDCL, the IT department core functions include design, development and implementation of IT based solutions for betterment of APDCL functions in matters of both Revenue and Operations. In the same context, an overarching IT-OT policy will help to govern the overall enterprise ecosystem at APDCL and make the systems align with regulatory requirements to support efficient operations, optimize resource utilization, and enhance customer services.

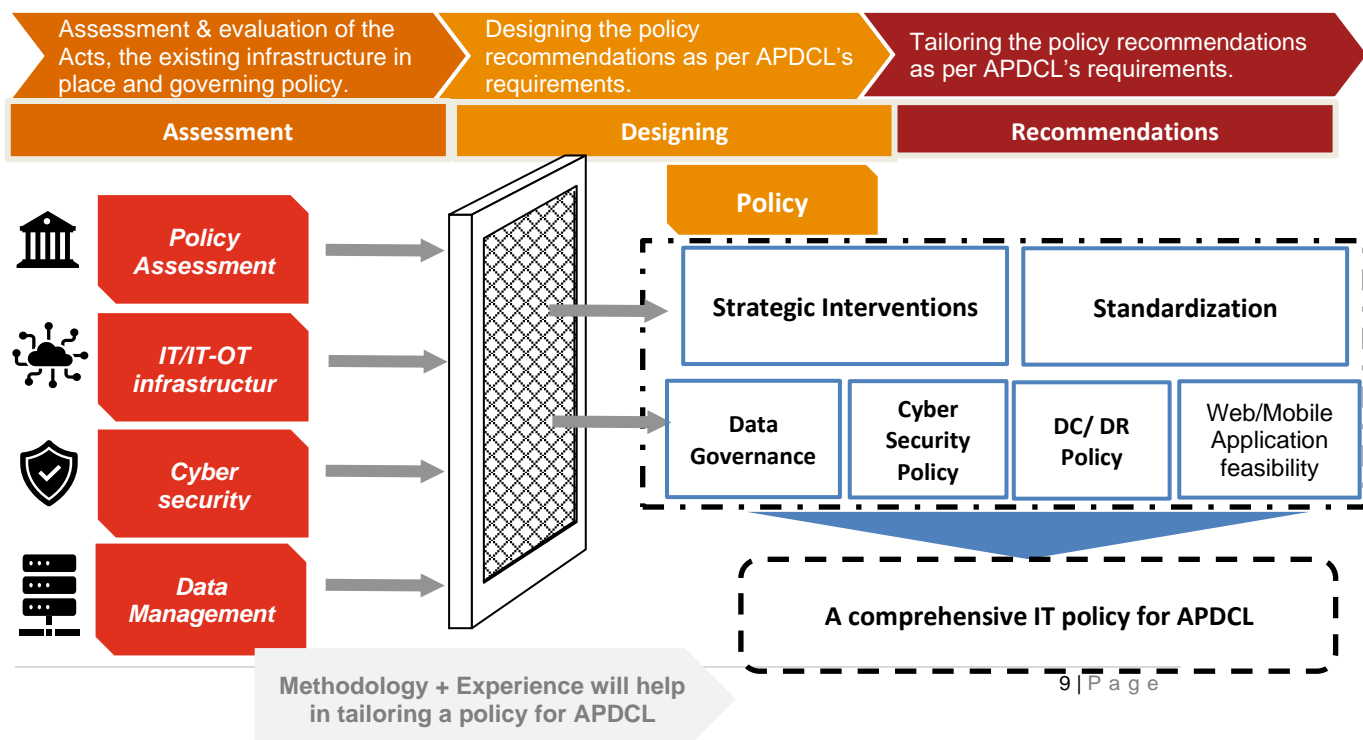
Objective: GIZ in collaboration with APDCL has conducted the project titled “Development of IT policy for APDCL according to regulatory requirements”. The aim of this activity is to develop an IT policy that will help in designing APDCL IT system applications in compliance with the Electricity (Rights of Consumers) Rules 2020 and time to time amendments thereof, Power Quality for Distribution System draft regulation CEA Guidelines on Cyber Security, Data Protection Bill 2023 and others. GIZ has appointed PricewaterhouseCoopers Pvt. Ltd as a consulting agency for this project and is responsible for conducting the required study for this project.

To achieve the objective as specified above, several studies and technical assessments have been conducted as part of the project. Based on the analytics-orientation and evaluation in compliance with the policy, regulation, and standards of the Govt. of India and the state of Assam, the project delivers the following:

1. Detailed report on the regulations and the requirements of APDCL
2. IT policy according to regulatory requirements

The implementation of this project happened under the guidance of the IT department of APDCL with support of other departments in data collection and understanding the existing scenarios. The departments selected by APDCL for work are ERP, SCADA & Communication, Smart Grid, GIS, Billing & Revenue management system (BRMS), AD & M.

The assignment focuses on the preparation of the IT policy which will guide the utility to take crucial steps in this integration journey of their business applications complying with the relevant standards and regulations. This will act as a roadmap which will facilitate the utilities to move from their current operational levels to the desired level while improving the efficiency and eliminating unnecessary manual involvements in transaction processing or complaint redressal mechanisms.



The project has done the in-depth analysis of the existing modules / IT-OT system in APDCL to understand the requirements in compliance with the Electricity (Rights of Consumers) Rules 2020, Draft AERC Power Quality of Distribution System, CEA Guideline on Cyber Security and Data Protection Bill 2023. It also highlights the possibility of the integration of multiple stand-alone applications, and infrastructure for data uniformity along with leveraging the capacity of the data analytics platform.

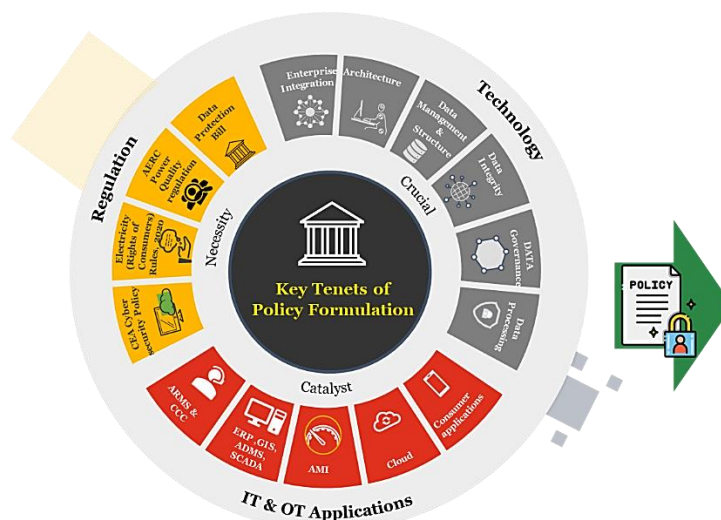
The key performance indicators (KPIs) that were considered related to the aforesaid regulations are represented below which serve as a benchmark for assessing APDCL's performance and adherence to regulations.

Consumer Rights	
KPI Name	
No. of New Connections Request Received	
No. of Temporary Connections Request Received	
No. of Shifting of Meter/Service Line Request Received	
No. of Change of Consumer Type/Category Request Received	
No. of Enhancement of Load Request Received	

Power Quality	
KPI Name	
SAIDI (System Average Interruption Duration Index)	
SAIFI (System Average Interruption Frequency Index)	
CAIDI (Customer Average Interruption Duration Index)	
CAIFI (Customer Average Interruption Frequency Index)	
No. of Complaints Received for Voltage Variation, Unbalanced Load, and Voltage Harmonics	

Cyber Security	
KPI Name	
No. of Security Incidents Detected and Resolved	
Percentage of Incidents Prevented	
No. of False Positives and Negatives	
Employee Security Awareness	
Frequency of Simulated Phishing Attacks	

Data Protection	
KPI Name	
Frequency of Data Backups and Testing	
Frequency of Disaster Recovery and Business Continuity Plan Testing	
Data Classification and Retention Policies	
Security Awareness Training	
Security Policies and Procedures Update	



Business Processes				
Business Continuity and Disaster Recovery	Communication	Monitoring and Enforcement	Vendor, equipment management	Personal Computer standards
Customer Engagement	Internal Communication	Monitoring and Reporting	Procurement Guidelines	Network Access
Business Impact Analysis	External Communication	Consequence of Violations	Vendor Assessment	Data Backup Procedure
Disaster Recovery Plan	Internet Usage policy	IT Operations and Support	Inventory management	Antivirus Software
Email & Chat Policy	Internet login guidelines	Helpdesk/Support	Phishing security	Information security Policy
Email security	Password guidelines	Backup and Recovery	IT Governance	Data Classification & Access control
Inappropriate use	Online content usage guidelines	Software Usage Policy	Roles and responsibilities of IT personnel	Virus prevention
Confidentiality	Inappropriate use	Software registration - Audit, updates	IT Steering Committee	Intrusion Detection
Regulations				
Metering Billing and Payment	Reliability of supply	Competition Mechanism	Grievance redressal mechanism	Disconnection/ Reconnection
Net metering/ Gross Metering	Reliability indices	Time taken for connection/disconnection	Establish Consumer Grievance Redressal Forum (CGRF)	Mobile and mobile apps for online processing
Meter replacement	Power Quality	Time taken for change in consumer category/line	Timelines for grievance Redressal	Determine demand charges
Billing cycle	Energy audit/ Loss Analysis	Time taken for change in consumer details	Time period within which bills are to be raised	Timelines for New Connection
Metering, billing complaints	Time taken for replacement of defective meters	Time taken for replacement of defective meters	Send quarterly report to the Ombudsman	Time period of resolving voltage related complaints
Applications & Infrastructure				
Integration	Database	Software standard	Cloud	Data Management and Analytics
Services - Microservices, SOA	Data migration lifecycle	Standards & Protocol	Metri Guidelines	Data Collection
Integration type - xml, web services, multi-ports	Cutover Approach	Design and Coding Standards	Security / Pen tests - installed and sublet levels	Data Integration
Integration model - pop, hub & spoke, ESB	Operational Management	Applications	Business Continuity Plan & Backup Service	Data Analytics
Middleware	Data modeling	Expansion, Scalability, Mobility	Network and Security Management	Data Classification
Messaging/Queueing, transfer	Data Modeling, Validation & mapping	Backup and Recovery	Data Management	Data Access Control
XML based file, Flatfile transfer	Database as an object & type	Programming Languages	Cloud Storage & Migration Service Requirements	Data Privacy

Planning and Designing of a Battery Energy Storage System project for APDCL

Government of Assam notified the Solar Policy in 2022 targeting a solar power capacity addition of 620 MW of utility scale and 300 MW of rooftop solar within five years. Also, RE shares in Assam are expected to increase significantly from the present c.a. 185 MW of installed VRE capacity. Additionally, plans for the development of 1 GW of floating solar and 1 GW of ground-mounted PV were announced in 2022. In this context, BESS will play a major role in supporting APDCL by providing grid services which can improve power availability during peak load hours, reduce short term power procurement, more VRE integration in the state, and others.

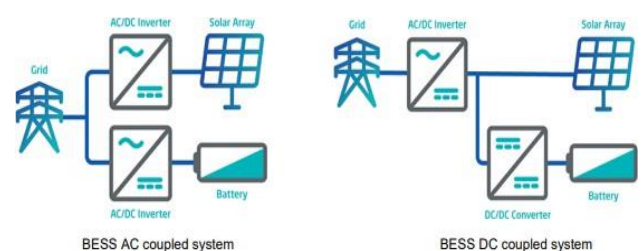
Objective: GIZ in collaboration with APDCL has conducted the project titled “Planning and Designing of Battery Energy Storage System project”. This project aims to support APDCL in planning and implementing BESS projects at the 33/11 kV distribution level while developing a detailed project report and addressing the overall challenges of technical, commercial, and regulatory aspects. The project also identifies the most effective use cases for BESS services whereas the energy stored is to be procured from renewable energy sources. GIZ has appointed Energynautics GmbH and Idam Infrastructure Advisory Pvt Ltd for this project and is responsible for conducting the required study.

To achieve the objective as specified above, several studies and technical assessments have been conducted as part of the project. Based on the analytics-orientation and evaluation in compliance with the policy, regulation, and standards of the Govt. of India and the state of Assam, the project delivers the following:

1. A detailed report on the technical and regulatory analysis of the BESS project
2. BESS sizing and placement analysis with some case studies for the BESS project in Assam
3. A detailed project report by understanding the business modalities and project budgeting

The implementation of this project happened under the guidance of the NRE department of APDCL. The project team also collaborated with other related departments and agencies like Assam Electricity Regulatory Commission (AERC) and Assam state load dispatch center for data collection and understanding the existing scenarios.

The area of work selected by the NRE dept are Paltan bazar, Six mile, Damra and Kukurmara sub-station. It was a mix of rural and urban areas for understanding the overall techno-economic effect on APDCL upon implementation of the BESS at 33 / 11 kV level.



The recommendations from the project on technology, application and design are as follows:

- Battery technology: Lithium iron phosphate (LFP) batteries are the recommended subtype for utility-scale BESS applications due to lower costs, higher safety and longer cycle of life.
- BESS applications: It includes energy arbitrage, load peak shaving, asset upgrade deferral, congestion relief, reduced RE curtailment, and backup power provision.
- BESS Design:

BMS	Balancing technique	Thermal management system	BESS integration	Auxiliary power	SCADA
Modular / primary	Active balancing	HVAC forced air cooling	AC-coupled system	Min 1.25% of battery's power	IEC60875-5-104 (IEC-104)

The report highlights the important policy and regulatory developments at central and state level. Based on analysis the report provides comprehensive recommendations on policy, tariff and regulatory aspects of BESS. It also highlights the legal status of Energy Storage Systems (ESS), suitable business models for APDCL, connectivity and open access for ESS, scheduling of ESS and tariff determination.

The report highlights the important policy and regulatory developments at central and state level.

Policy & regulatory developments at central level

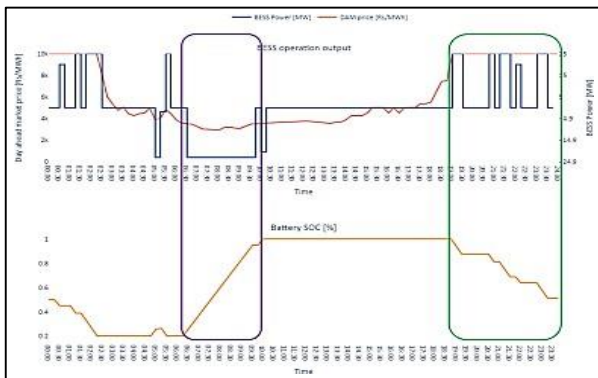
- Connectivity and Open Access for BESS as per CERC GNA Regulations
- Technical Standards for Connectivity to the Grid, 2019
- Technical standards for Connectivity of the Distributed Generation Sources, 2013
- Indian Electricity Grid Code, 2023
- Scheduling for BESS - Deviation Settlement Mechanism and related matters, 2022
- Analysis of tariff options for BESS

Policy & regulatory developments for Assam

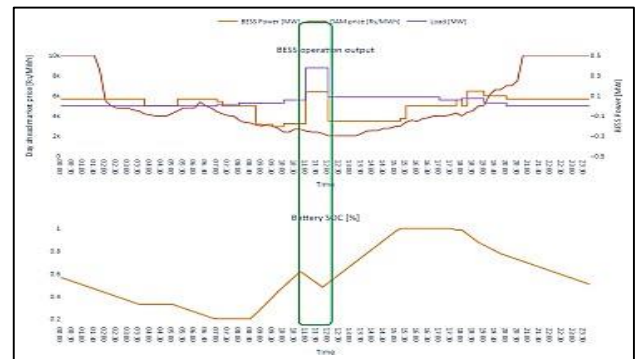
- Assam RE Policy, 2022
- Incentives from the State Government for Surplus power
 - For the solar power project without storage: 75% of latest available lowest bid carried out by APDCL.
 - For the solar power project with storage: 100% of latest available lowest bid carried out by APDCL.
- AERC (RPO and its compliance) Regulations
- AERC (Deviation Settlement Mechanism) Regulations
- AERC (Electricity Grid Code) Regulations, 2018

The project has conducted different case studies analysis, to verify the optimal BESS size and an economic analysis for selected locations. The case studies vary according as per the location of the BESS and the range of services provided, which are a combination of arbitrage, peak shaving for transformer capex deferral, load shedding prevention and PV peak shaving.

Energy Arbitrage

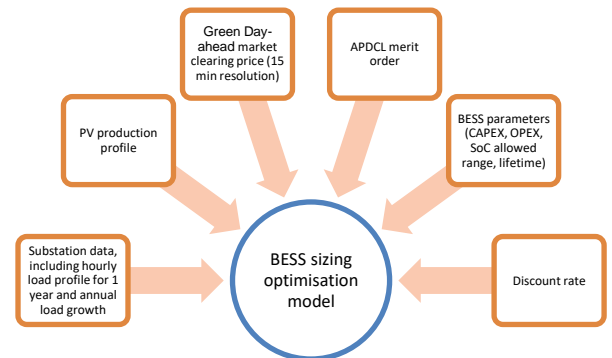


Peak Load Shaving (Capex Deferral)



1. BESS sizing optimization per case study

A model was developed using Pyomo (open-source Python based optimisation modelling language) to identify the optimal BESS size per case study, via a techno-economic analysis. Per use case, the revenues and costs are calculated for each year of the BESS lifetime and the optimal BESS size is selected corresponding to that with the highest profitability index.



2. Business model with ownership model, Cost benefit and financial viability analysis. Storage with Distribution, Standalone ESS, Storage for ancillary services/ balancing services/ flexible operations, Lease and sale of ESS

Development of a Digital Asset Register Tool for APDCL

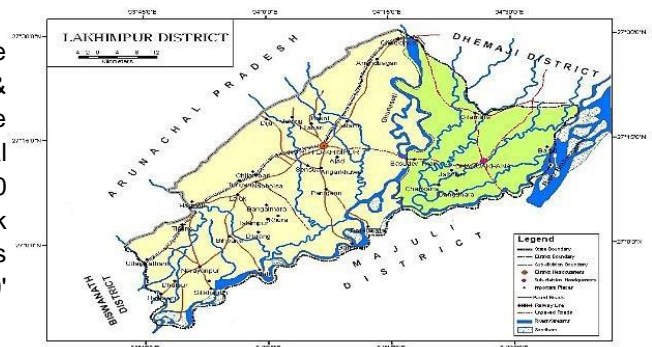
APDCL is the primary power distribution company and supplies power to major industrial-commercial centers and has a large consumer base which is growing year by year. The company has 19 electrical circles, further divided into 45 electrical revenue / O&M divisions and 158 electrical sub- divisions. Managing the assets across the state with verification through manual recording system is practically unviable. Digitalization of the assets with proper verification and validation is an optimal proposition to address the issue in a transparent and statutorily admissible manner.

Objective: GIZ in collaboration with APDCL has conducted the project titled “Development of Digital Asset Register Tool for APDCL”. The aim of the project is to increase the operational and financial efficiency by developing a digital tool with a dashboard for APDCL to provide complete transparency of all their asset static data, and to facilitate an accurate audit with the help of GIS in compliance with regulatory standards. GIZ has appointed Deloitte as a consulting agency for this project and is responsible for conducting the required study for this project.

To achieve the objective as specified above, several studies and technical assessments have been conducted as part of the project. Based on the analytics-orientation and evaluation in compliance with the policy, regulation, and standards of the Govt. of India and the state of Assam, the project delivers the following:

1. Development of a digital asset register tool and web-portal
2. Integrating with ERP
3. Data repository for electrical circle and training of staff

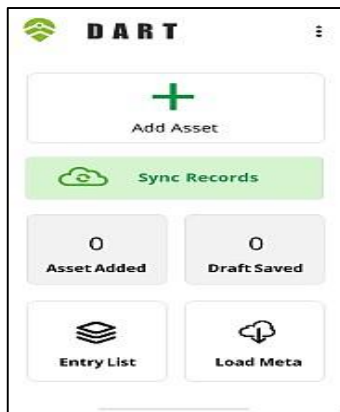
The implementation of this project happened under the guidance of the IT, Finance & Audit, and Project Planning & Designing Department APDCL. The area identified for the implementation of this project was North Lakhimpur Electrical circle which has sub-stations, 33 kV & 11 kV feeders and 10 other offices. The district of Lakhimpur lies on the North bank of the river Brahmaputra, and the location of the district is 26.48' and 27.53' Northern latitude and 93.42' and 94.20' East longitude.



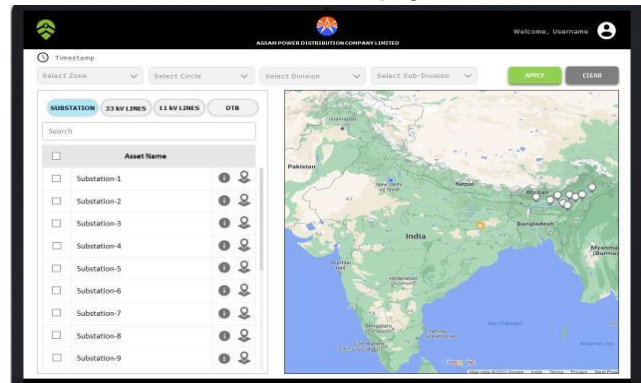
The digital asset register comprises of a mobile application with a web-based dashboard. The mobile application is used for asset data capture, with data synchronized onto a cloud server where, it is supported by a web portal and dashboard for verification and visualization of the asset data. The mobile application is based on Android, while the distribution network visualization is done using Mapstore, an open-source modular web GIS framework. The web-portal will be a centralized geodatabase with an integrated view which will be useful for planning, reporting, and decision-making. All asset data will be stored in the cloud with Postgres database server for spatial data management, QGIS desktop data model management, Windows IIS-Web and App cloud Server.

APDCL users from the front end can maintain and make changes to their organization geographical hierarchy (Circles / Divisions / Subdivisions etc.) where the assets are located. Similarly, a three-level asset classification structure that supports IND AS and MIS reporting is also available on the web portal that can be used to classify assets in the manner required by APDCL.

Mobile APP Home page

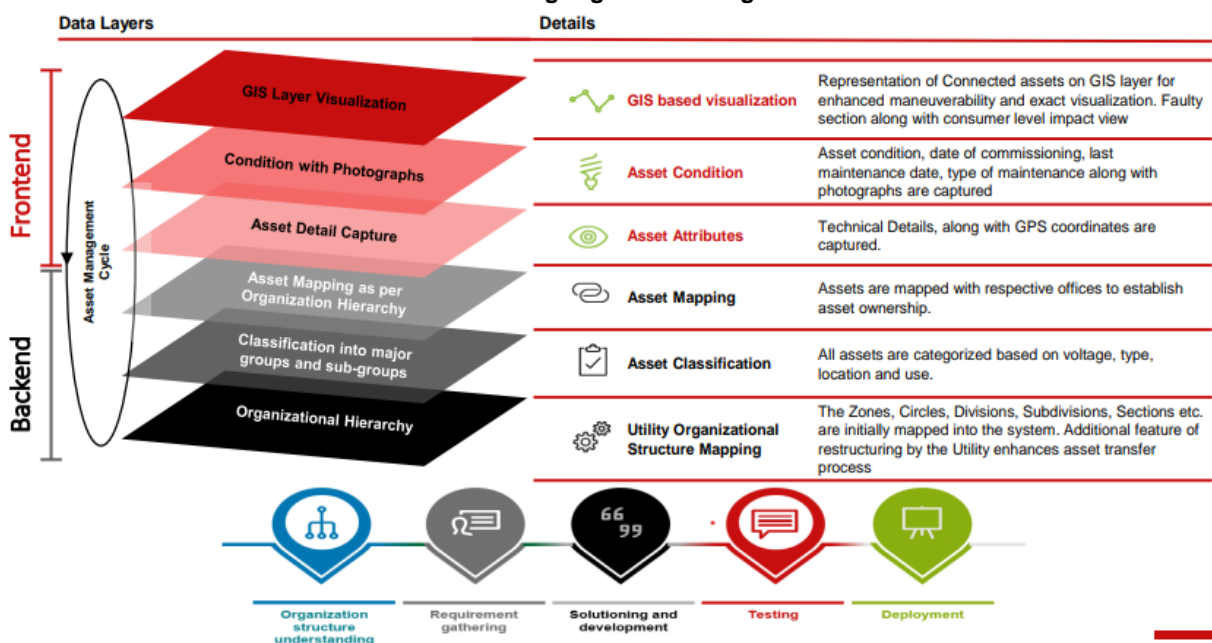


Web Portal Home page



The three-level review and approval mechanism provides a control mechanism whereby data captured by field users can be reviewed by a senior and expert team, which can review the entire asset data including photographs, asset categorization and other attributes, by logging in to the web-portal. This ensures that quality of data is maintained.

Solutioning Digital Asset register Tool



Capabilities of Digital Asset register Tool

- Photo Capture and Annotation
- Customizable Data Capture levels
- Offline Data Capture and Sync
- Editable Hierarchy and Network
- Real-Time Data Integration
- Able to Integrate with ERP, AM, OMS etc.
- GIS Based Asset Mapping
- Maintenance Schedule maintenance
- Role-Based Access Control
- Asset Flagging
- Approval Workflow
- Role based Access Privileges
- IND-AS compliant dataset
- Data Export

Training will also be provided by the project team to the APDCL staff, both classroom as well as on-field sessions, thereby making them fully conversant with the tool. To help new users to use the tool, user manuals will be provided. These manuals will provide details on the process, with simple instructions and illustrations, making it easier for end users to understand and start using the tool, without requiring much hand-holding support.

Imprint

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