# Clenergize

**CONSULTANCY SERVICES** 

# **COMPANY PROFILE**

SOLAR ENERGY ESG & SUSTAINABILITY ENERGY EFFICIENCY



www.clenergize.com info@clenergize.com

A leading Sustainability & Solar Energy consultancy firm in the **Middle East** with operations extending in **Africa**, **India** and **Europe** 

Expertise in Solar Energy, Sustainability & ESG Process, Energy Efficiency.

Consulted on some of the **Most high-profile and prominent projects** running in the region



**About Us** 

**Our Services** 

**Area of Operations** 

References

**Awards & Recommendations** 

What is Sustainability & ESG

Why You Need a Consultant - Solar

# **SOLAR ENERGY**

**Process** 

Scope of Work

# SUSTAINABILITY & ESG

**Process** 

Scope of Work

# **ENERGY EFFICIENCY**

**Process** 

Scope of Work



# ABOUT US

- We are a team of consultants, engineers, lawyers and designers with a competency in Solar Energy, Sustainability and Energy Efficiency Projects.
- The team has worked on several projects consulted, designed and delivered in Middle East, Europe, India and Africa.
- Our team has worked in government utilities, EPCs, manufacturers and with developers and financiers.
- We have handled a range of projects from commercial and industrial solutions to large government projects.
- We have a good understanding of the local regulations and ESG specifications and international standards for sustainability projects.



Shyam Yadav Managing Director



Paolo Mastrogiacomo Director Technical



Srivatsa Bhargava Associate Director



Purab Bhatia Senior Consultant



Sara H ESG Consultant



Ralph G Associate Consultant



Jay Bhutani Associate Consultant



Loujain A Associate Consultant



#### **OUR SERVICES**

Our core business and scope of work is split in 3 categories:

Solar Energy Consultancy, Sustainability and ESG Advisory and Energy Efficiency Consultancy.

With subject matter experts in all of the above, we arrive as perfect SUSTAINABILITY & ENERGY ADVISORS for organizations in the region.

Be it ESG Reporting, Solar Energy Projects, Net Zero Action Plans, Energy Efficiency – we help the clients through a practical, low cost and measurable process.

# **SOLAR ENERGY**

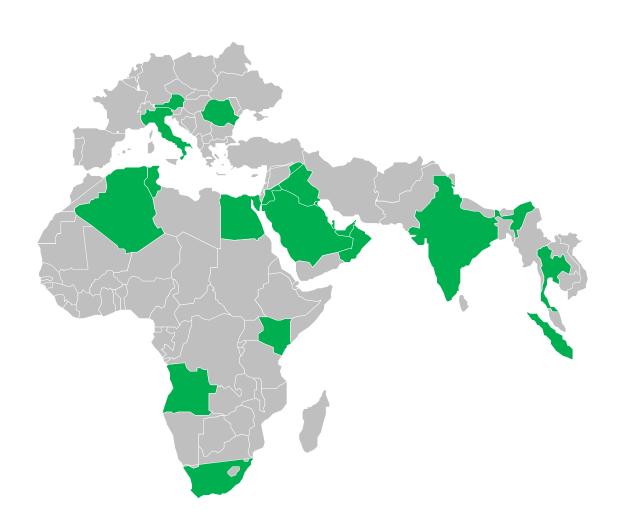
# **ESG / SUSTAINABILITY**

# **ENERGY EFFICIENCY**









Countries with our projects and offices			
MIDDLE EAST	AFRICA	EUROPE	SE ASIA
UAE	EGYPT	ITALY	INDIA
KSA	ALGERIA	AUSTRIA	THAILAND
BAHRAIN	TUNISIA	ROMANIA	INDONESIA
OMAN	KENYA		
JORDAN	ANGOLA		
IRAQ	SOUTH AFRICA		OFFICE LOCATIONS
KUWAIT	MAURITIUS		OFFICE LOCATIONS





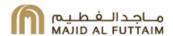


































































700+ MW

of solar projects across 150 projects

# **20** ORGANIZATIONS

are working with us for their ESG Process & Reporting





# **35** FACILITIES

In GCC are benefitting from Shared Savings Models



# REFERENCES – SOME KEY ACCOUNTS

	_				
PROJECT NAME	TYPE	COUNTRY	SIZE (KW)	SCOPE	STATUS
Montalto Castro Palliano	Ground Mount Ground Mount	ITALY	66,000 52,000	Design Design	Completed Completed
Latina 3 Solar Farm Dubai	Ground Mount Ground Mount	UAE UAE	42,000 39,000	Design Full Consultancy with Tendering	Completed Approval Stage
Desalination Plant	Ground Mount	KSA	35,000	Full Consultancy with Tendering	Approval Stage
Government Project Oil and Gas Client Sharjah	Ground Mount Ground Mount	UAE UAE	25,000 25,000	Full Consultancy with Tendering Study	Approval Stage Partially Completed
ADSSC Microgrids Angola	Ground Mount Ground Mount	UAE Africa	25,000 25,000	Engineering Study, Concept Design Design	Completed Design Stage
Government Buildings (16 Sites)	Rooftop	UAE	23,000	Full Consultancy with Tendering	Approval Stage
Desalination Plant Oil and Gas Client Study	Ground Mount Ground Mount	OMAN UAE	20,000 18,000	Full Consultancy with Tendering Engineering Study, Concept Design	Construction Stage Completed
Landmark Group (3 Sites)	Rooftop	UAE KSA	17,000 17,000	Full Consultancy with Tendering Design	Completed Completed
Shipping Client KSA Airport Grid Impact Study	Rooftop Rooftop	UAE	15,000	Study	Completed
Cellere 1 Seef Malls	Ground Mount Rooftop+Carpark	ITALY Bahrain	14,000 13,000	Design Full Consultancy with Tendering	Completed Approval Stage
IFFCO Group	Rooftop	Multiple	12,000	Full Consultancy with Tendering	Approval Stage
Cellere 2 Montenero	Ground Mount Ground Mount	ITALY	12,000 12,000	Design Design	Completed Completed
Agility Logistics (3 Sites)	Rooftop	UAE	10,000	Full Consultancy with Tendering	Completed
Ceccano Ground Mounted 10 Sites	Ground Mount Ground Mount	ITALY ITALY	10,000 10,000	Design Design	Completed Completed
Ardea Emirates Printing Press - 4 sites	Ground Mount Rooftop	UAE UAE	8,000 7,200	Design Full Consultancy with Tendering	Completed Completed
PDO - Oman	Carpark	OMAN	5,000	Design	Completed
Agility Bahrain Al Baddad	Rooftop Rooftop	Bahrain UAE	5,000 5,000	Design Full Consultancy with Tendering	Feasibility Stage Approval Stage
IFFCO Multiple Sites	Rooftop	Global	5,000	Full Consultancy with Tendering	Tendering Stage
Emarat 60 stations Ground Mounted Farm Romania	Rooftop Ground Mount	UAE Romania	5,000 5,000	Full Consultancy with Tendering  Design	Tendering Stage Design Stage
Desalination Plant	Rooftop	OMAN	4,000	Consultancy	Approval Stage
Pepsi (Dubai Refreshments) Indu Logistics / GII	Rooftop Rooftop	UAE UAE	4,000 4,000	Full Consultancy with Tendering Full Consultancy with Tendering	Completed Completed
AL Tayer Group Aramex Logistics – Ph 2	Rooftop Rooftop	UAE UAE	3,500 3,200	Full Consultancy with Tendering Full Consultancy with Tendering	Approval Stage Completed
Aramex Warehouse DIC	Rooftop	UAE	3,200	Full Consultancy with Tendering	Completed
Baker Hughes KSA Emirates Flight Catering (7 Sites)	Rooftop Rooftop	KSA UAE	3,000 3,000	Full Consultancy with Tendering Full Consultancy with Tendering	Approval Stage Completed
NESTO And GEEPAS	Rooftop	UAE	3,000	Full Consultancy with Tendering	Completed
Almaya Technopark GSL Logistics DIP	Rooftop Rooftop	UAE UAE	3,000 3,000	Full Consultancy with Tendering Full Consultancy with Tendering	Approval Stage Completed
Dates Factory	Rooftop	UAE	3,000	Full Consultancy with Tendering	Approval Stage
Mall Al Habtoor Motors DIC	Rooftop Rooftop	KSA UAE	2,800 2,800	Design Full Consultancy with Tendering	Completed Construction Stage
Emerson Dubai Festival City AFP	Rooftop Rooftop	UAE UAE	2,600 2,600	Full Consultancy with Tendering Full Consultancy with Tendering	Completed Construction Stage
Agility Abu Dhabi	Rooftop	UAE	2,500	Full Consultancy with Tendering	Approval Stage
Baker Hughes KSA Mall Riyadh	Rooftop Rooftop	UAE KSA	2,500 2,200	Full Consultancy with Tendering Design	Tendering Stage Completed
Mall Of Emirates	Carpark	UAE	2,000	Full Consultancy with Tendering	Completed
Cable Factory Industrial Roof	Ground Mount Rooftop	UAE KSA	2,000 2,000	Full Consultancy with Tendering Study	Completed Completed
Supermarket Rooftop	Rooftop	UAE	2,000	Design	Completed
Factory Ksa Al Shirawi DIC	Rooftop Rooftop	KSA UAE	2,000 1,850	Design Design	Completed Completed
Mirdiff City Center Precision Plastics	Carpark Rooftop	UAE UAE	1,800 1,800	Full Consultancy with Tendering Full Consultancy with Tendering	Completed Approval Stage
Al Shirawi MPI	Rooftop	UAE	1,800	Design	Completed
Brands for Less Universal Tubes and Pipes	Rooftop Rooftop	UAE UAE	1,800 1,800	Full Consultancy with Tendering Design	Completed Completed
THL Tubes and Pipes	Rooftop	UAE	1,755	Design	Completed
Agility Turkey Mersin Galadari Engineering	Rooftop Rooftop	Turkey UAE	1,500 1,500	Full Consultancy with Tendering Full Consultancy with Tendering	Completed Construction Stage
DIP Warehouse Al Shirawi AOI DIP	Rooftop Rooftop	UAE UAE	1,500 1,300	Full Consultancy with Tendering Design	Construction Stage Completed
Al Shirawi Aswan Engineering	Rooftop	UAE	1,300	Design	Completed
Al Shirawi ASECO Al Quoz Hotel at Palm Dubai	Rooftop Rooftop	UAE	1,300 1,200	Design Study	Completed Completed
BMW And ROLLS ROYCE - AGMC	Rooftop	UAE	1,200	Design	Completed
Marina Home American School of Dubai	Rooftop Carpark	UAE	1200 1,200	Full Consultancy with Tendering Full Consultancy with Tendering	Approval Stage Approval Stage
Ferrentino	Ground Mount	ITALY	1,000	Design	Completed Completed
Al Shirawi OCC Al Quoz Agility Logistics Jordan Aqaba	Rooftop Rooftop	JORDAN JORDAN	1,000 1,000	Design Full Consultancy with Tendering	Completed
Fujairah City Center Lesaily Farm	Rooftop Ground Mount	UAE UAE	1,000 1,000	Full Consultancy with Tendering Design	Completed Completed
Brands for Less Motor City	Rooftop	UAE	1000	Full Consultancy with Tendering	Construction Stage
Voltas SAFCO	Rooftop Rooftop	UAE UAE	1,000 1,000	Design Full Consultancy with Tendering	Completed Tendering Stage
Deira Market	Rooftop	UAE	900	Design	Approval Stage
Spinneys Warehouses (3 Sites) Abra VMSD	Rooftop Rooftop	UAE UAE	855 750	Full Consultancy with Tendering Full Consultancy with Tendering	Completed Approval Stage
Pixcom IMPZ Al Shirawi Leminar DIC	Rooftop	UAE UAE	730 700	Design Design	Completed Completed
Al Islami Foods	Rooftop Rooftop	UAE	700	Full Consultancy with Tendering	Approval Stage
Jashanmal Ohana Industries	Rooftop Rooftop	UAE UAE	700 700	Full Consultancy with Tendering Design	Completed Completed
Alucor	Rooftop	UAE	680	Design	Construction Stage
Al Tayer Motors Warehousing Client Dubai	Carpark Rooftop	UAE UAE	660 644	Full Consultancy with Tendering Design	Completed Design Stage
Technopark Industry	Rooftop	UAE	635	Design	Completed
Formoplast Ikea Jabal Ali	Rooftop Rooftop	UAE UAE	590 530	Full Consultancy with Tendering Design	Tendering Stage Completed
Al Shirawi Automotive Scania Sohar City Center	Rooftop Carpark	Dubai OMAN	530 520	Full Consultancy with Tendering Third Party Inspection	Completed Completed
Farzana	Rooftop	UAE	500	Full Consultancy with Tendering	Tendering Stage
Castolin Mixed Use Development Abu Dhabi	Rooftop Rooftop	UAE UAE	500 500	Full Consultancy with Tendering Full Consultancy with Tendering	Completed Completed
Bowyer Wick	Rooftop	UAE	500	Full Consultancy with Tendering	Completed
Transworld Abu Dhabi Residential	Rooftop Rooftop	UAE UAE	500 450	Full Consultancy with Tendering Design	Approval Stage Approval Stage
Arcellor Mittal Dubai	Rooftop	UAE	400	Full Consultancy with Tendering	Tendering Stage
Spinneys Layyan Surti Technopark	Rooftop Rooftop	Dubai UAE	400 350	Design Design	Completed Approval Stage
Hilti Expo 2020 Building	Rooftop Rooftop	UAE UAE	300 300	Full Consultancy with Tendering Full Consultancy with Tendering	Tendering Stage Completed
Government Building Kuwait	Rooftop	UAE	250	Full Consultancy with Tendering	Completed
Metito Spring Valley	Rooftop Rooftop	UAE UAE	250 230	Design Full Consultancy with Tendering	Approval Stage Tendering Stage
Farm Rooftop	Rooftop	Austria	200	Design	Completed
Emarat Petroleum Dubai Euro Camp	Rooftop Rooftop	UAE	150 120	Full Consultancy with Tendering Design	Completed Completed
Americana Foods	Rooftop	UAE	50	Full Consultancy with Tendering	Tendering Stage
TOTAL	I	I	700,679	I	









BEST PROJECT 2019

BEST CONSULTANT 2020

BEST CONSULTANT 2021





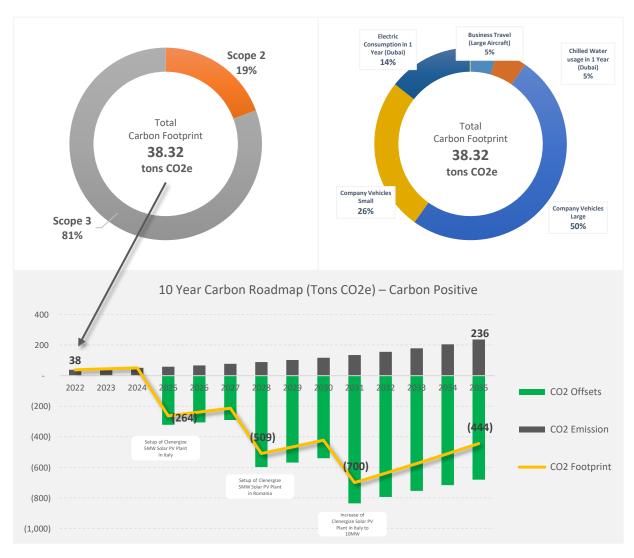
- Awarded best consultant of the year 2021
- Awarded best consultant of the year 2020
- Awarded best industrial project of the year 2019
- Nominated for best consultant 2019
- Nominated for best financial advisor / consultant 2018, 2019
- Nominated for solar entrepreneur of the year 2018, 2019, 2020
- Published in regional newspapers, editorials and magazines

At Clenergize, we are conscious of our own Carbon Footprint and do our best to track and report our emissions. We regularly assess our Scope 1,2,3 Emissions and have set clear standards to be Carbon Positive by 2025.

The proceeds from our profits are allocated to Solar PV Plants owned by Clenergize, with long term (25 Year) contracts to offset our own emissions. The Carbon offsets generated from these plants are authentic and verifiable. We even calculate our Carbon Intensity, per headcount, per project.

# **OUR GOAL**

Client Engagement With Clenergize = Carbon Positive









We are pleased with our partnership with Clenergize. This project comes shortly after the launch of our Solar Farm project in Amman, Jordan. We are determined to continue building and developing a greener business, in line with our long-term sustainability strategy, as well as Dubai plans to establish itself as a smart and sustainable city."

- Raji Hattar, Chief Sustainability Office, Aramex

#### Aramex 3200KW Solar Project in Dubai

As part of its commitment to cut its operational carbon emissions by 20%, Aramex has recently commenced building a 3200 KW rooftop solar PV plant in Dubai, which will be installed on one of its warehouses located at Dubai Logistics City. The plant is aimed to generate over 40% of the electricity needs of the warehouse. It is one of the largest rooftop PV projects of its kind in the private sector in the region.

To that end, Clenergize Solar Consultants has been appointed to this project. The appointment comes following a competitive selection process. Clenergize took on this role and launched a professional tender and specifications package. Within a short span, the EPC contractors underwent techno-commercial due diligence with an apple-to-apple comparison. Clenergize also drafted the solar contract and mediated the negotiations between Aramex and the nominated EPC.

#### **Project Stats**



#### Services Provided by Clenergize

- Prepare the project specifications and tender to invite bidders
- Review the offers of the bidders techno-commercial negotiations
- Draft the solar EPC contract between Aramex and the Contractor Setup minimum acceptance criteria, performance guarantees, bond etc.
- Review the design package to be sent to Utility for approvals Supervise the project up to commissioning and setup O&M criteria



Date 5th October 5, 2017

To whom it may concern

In the short period that we have been working with them, Clenergize have consistently demonstrated diligence and dedication towards exceeding the allotted timeframes despite the challenges of the projects that they are involved in.

Their familiarity with solar efficient installations & sophistication in adopting the local and regional regulations has been exemplary

Their continuous proactive guidance is highly appreciated & indispensable and the transparency of providing data and updates is comforting and it assures us that we have appointed the right associa

Director, Technical Operations

Shopping Malls



04th July 2019 Ref: PJ\_LTR\_L840\_19\_SOLAR

Project: Rooftop Solar PV at Dubai Refreshment (P.J.S.C.), DIP 2

Subject: Recommendation Letter for Clenergize Solar Consultants

Clenergize Solar Consultants have been working with Dubai Refreshment (P.J.S.C.) in order to develop a 3.68MW solar PV plant on the premises. At the time of commencement, it was one of the largest roof top solar projects in UAE.

Clenergize were appointed following tender organized by Dubai Refreshment (P.J.S.C.) for the main solar consultancy scope and were best in their technical and commercial offering.

We recommend the work of Clenergize, as they have successfully demonstrated their technical and project management know-how regarding the solar industry.

They aided in achieving significant savings in the selection of the solar contractor, supported in timely approvals from the utilities – going beyond their mandate to support the project.

Their knowledge on solar projects and experience of the team considering several other running sites helped with the execution of the Dubai Refreshment Solar Project as well.

We wish them all the best with their work

Sincerely,

For and on behalf of Dubai Refreshment (PJSC)





















Monday, 17th August 2020

To whomsoever it may concern

Project:

EKFC Rooftop PV Solar System Installation - 2.78 MWp

Subject:

Recommendation Letter for Clenergize Solar Consultants

This letter is issued in behalf of Emirates Flight Catering Co. LLC to appreciate the efforts of Clenergies in implementing the rooftop solar PV system in eight different LREF (scalities.

Emirates Flight Catering appointed Clenergire Solar Consultants via a rigorous tendering process - to leed 4 monage the first solar FV project of Emirates group in Dubel, U.A. E. They took on this task with professionalism and provided the correct advisory and guidance to us through the course of the project including preparation of operation and maintenance contract.

Through their knowledge and subject matter expertise, we were able to develop and successfully install a state-of-the-art solar FV systems for our facilities in the appropriate timelines. The engineering was challenging — especially considering 24x7 operational industrial facilities, shading issues, multiple rooftops, ct... The usage of high efficiency panels, centralized monitoring system have shown their results.

We are happy with their efforts and will be considering them for our future projects as well. In addition, we recommend their Consultancy service for solar projects.

Thank you and Best regards,

Muhammad Tariq
Assistant Vice President - Engineering
Emirates Flight Catering
Phono: +971 4208 6444
Email: tariqm@ekfc.ae

**Emirates Flight Catering Muhammad Tariq** AVP - Engineering



## <u>Cost Reduction 15-18% via design and tendering</u> – compared to in-house STRONG sourcing by clients. **FINANCIAL** Strong improvement in PPA / Lease Tariff **ADVANTAGE** Lease vs Own Financial Models Multiple Bidder Review (10-15 at times) <u>Uniform Specifications that cover all aspects</u> – techno commercial, legal – **EFFECTIVE** apple to apple comparison **TENDERING** Negotiation via our network for best rates, discounts and products Auditable process to nominate top bidders We provide templates and review EPC Contracts, Lease Agreements, PPAs CONTRACTS & that are well used by most large projects in the region PERFORMANCE Performance and Energy Guarantees, Bonds, Insurances, Liabilities require **GUARANTEES** solar knowledge and default scenarios Over 60 drawings, reports, documents prepared or reviewed in technical submittal Shadow Analysis and grid studies to prevent irreversible losses We go beyond local utilities submissions and check the core design and **DESIGN & REVIEW** construction documents related to panel, inverter, structure, cables, grid connection, combiners, containers, civil work, SLDs, HSE, walkways, staircase, monitoring system, water points, yield optimization, sensors, spare parts, Lightning protection system, civil defense etc. Ensure no variations of cost and time BOQ changes occur often in the industry and its important to assess what **SUPERVISION** is coming on site compared to the contract You are building something for 20+ years – requires several tests as per standards and lessons learnt from other projects. Centralized system to monitor all plants from single access Different views for investors, contractors, maintenance teams, with dataaccess that you can migrate anytime **MONITORING** Comparison with other neighboring sites or in the region to benchmark performance and optimize further. Very detailed diagnostics and alarms – especially for this region as

weather impacts are high.



Sustainability is the incorporation of environmental, social equity and maintaining governance standards in order to create thriving, healthy, diverse and resilient communities for our present generations and generations to come.

Sustainability integration within corporates involves monitoring and measuring corporate impacts on global, national, and local community aspects including; Environmental, Social and Governance (ESG) impacts.

#### **ENVIRONMENTAL**



# Impact on the Planet

- Greenhouse gas emissions
- Renewable Energy
- Air and water pollution
- Biodiversity
- Deforestation
- Recycling and waste
- management
- Natural resource use
- Water scarcity
- **Energy efficiency**
- Sustainability initiatives
- Relationships with regulators















#### SOCIAL



# Relationships with Surrounding Community

- Diversity and inclusion
- Company culture
- Data protection and privacy
- Customer satisfaction
- Relations with local communities
- Human rights
- Labor standards
- Product safety
- Employee training
- Ethical supply chain sourcing

## GOVERNANCE



# Corporate Leadership Standards

- **Board composition**
- Management diversity
  - Shareholder rights
- Lobbying
- Executive compensation
- Accounting transparency
- Tax Policy
- Relationships with regulators









































# SOLAR ENERGY



Feasibility Reports Shadow Analysis Site Surveys	Feasibility	Geotechnical Study Grid Impact Study Energy Assessment
Ownership with Equity Ownership with Debt Due Diligence for Lender	Financial model	Lease Co-Investment Financial Modelling
Turnkey EPC Contract Tendering and Specifications Legal Contracts	How to execute	In-House Execution Performance Guarantees Subcontractor Coordination
Detailed Design Submittal Review	Engineering	Electrical Approvals Civil and Structural Approvals
BOQ Preparation Price Negotiation	Procurement	Supplier Comparison In-House Development
Project Management Inspections Monitoring Platform	Installation	Testing and Commissioning As-Builts and Handover
Performance Tests Audits Training	Post project	Refinancing Support Dispute Resolution O&M Improvements



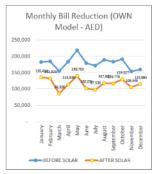
Feasibility	1	Feasibility Reports – Plant Size, Energy, Lease vs Own, Payback, IRR, NPV, LCOE, Carbon Savings, Shadow Analysis, Export Compensation, Financial Modelling
Owners & Lenders Engineer	2	Financial Modelling, PPA / Lease Setup, Bankability Assessment, Turnkey EPC Contract Management, Tendering, Specifications, Bidder Review, Solar Contracts, Design Review, Construction Supervision, Commissioning Review
Custom Reports	3	Grid Impact Study, Power Evacuation, Short Circuit, Load Flow, Power Quality, Geotechnical, LPS etc.
Detailed Engineering	4	Electrical, Mechanical, Civil, Structural, SLDs, CAD Drawings, 3D Models, Simulations, Shadow Analysis, Design Optimization, Surveys, On Site Surveys
Project Management	5	Construction Supervision, Inspections, PAC, FAC issue, Daily, Weekly Visits, Commissioning, Procurement Schedules, BOQ Negotiation, Vendor Selection
Training	6	Product Training, Software Training, Monitoring Platform Training, Installation Training, Financial Model Training, Solar Project Management Training
Operations & Maintenance, Audits	7	PV Plant audits, Performance Guarantee Reports, Snag Lists, Commissioning Reports, O&M Reports, Dispute Resolution



# The feasibility report of Clenergize is a very concise and information packed document. It covers the following points:

- 3D Model of the site with elevations and panel layout
- Shadow analysis with losses and optimization recommendations
- Size of the solar plant in KWP that can be installed on the available area
- Energy Yield from the PV plant per month, per year
- Performance Ratio, Losses, Degradation and other factors impacting the plant
- Energy Consumption vs Solar Production Monthly Comparison
- Bill Savings in Lease and Own Scenario
- Financial Dashboard
  - Ownership with Equity
  - Ownership with Debt
  - Leasing for 5,10,20 Years as applicable
- Comparison of Financial KPIs of above models Payback, IRR, LCOE, NPV
- Graphs of Cash Flow, Net Energy Expense, NPV
- Sensitivity Analysis to show impact on IRR by varying key parameters
- Carbon Savings
- PVSyst Report Rooftop, Carpark, Ground Mount, Custom Structure
- Electricity tariff escalators, O&M Costing and escalators, degradation, carbon credits, insurance, other costs, replacement costs, interest rate, other fee etc.
- Recommended Next Steps











Having worked on several key projects in the region that are running well for years, we have **developed a collection of certain best practices** that can be applied to mid-large-scale projects.

Ownership based projects require a significant capex investment and lease projects require financiers and lenders to deploy capital at the onset of the project.

Both owners and lenders look to have a bankable asset in the long run and try to have a well documented, risk free and auditable project. The technical, commercial and legal due diligence is best managed via specifications and tenders.







Get
Guaranteed Energy
Production



Protection of your Investment through Solar Tenders & Contracts

Our tenders are short, efficient and have a lean assessment process – taking into account all the relevant decision making points – cost, quality, timelines, guarantees, financial stability, technical compliance, manpower and capability, operations and maintenance and the general responsiveness of contractors and developers – as we have worked with most of the solar players in the region.









Once the contractor is awarded, the legal contract mediation is done, bonds, insurances, guarantees are setup.

The engineering design is reviewed for further detailed optimization and construction commences thereafter.

Regular on-site supervision ensures a timely delivery, snag rectification, preventing variations and a smooth permitting process with governmental agencies.



#### 1. Feasibility

- Detailed Feasibility Report with the following:
  - Multiple Panel Simulation Outputs Poly, Mono, Perc, CIGS, CdTe etc.
  - · Project Size, Energy Yield Assessment
  - Financial KPIs such as IRR, Payback, ROI, LCOE, NPV for owning, leasing
  - Assumptions of Tariff, O&M, Escalators, Discount Rate, Degradation etc.
  - Carbon Savings
- PVSyst Report
- 3-D Model with Panel Layout
- Shadow Analysis
- Bankable Financial Modelling and Risk Assessment, Technical Due Diligence

#### 2. Tendering and Specifications

- · Drafting Project Specifications and Tender/RFP
- Establishing Technical Benchmarks, Vendor Lists, Geo-Technical Parameters
- · Bidder Prequalification and Issuing the tender to bidders

#### 3. Offer Review

- · Review of submitted offers and recommendations to client
- Meeting with Bidder to discuss submitted proposals, site visits
- Techno-Commercial Negotiations to get best price per KW/ Lease rate
- Design Optimization, benchmarking to existing projects in region.
- Factory Level Procurement Rates from our network
- Preparation of EPC/Lease Comparison Report & Recommendations

#### 4. Solar Contract / Lease Agreement

- Creation of Solar Contract/ PPA to be signed between Client & Solar EPC
- Establishing Performance Criteria for Acceptance, Energy Guarantees etc.
- Establishing Performance Guarantee, Liabilities, Bonds, insurances etc.

#### 5. Design Review

- Support with Utility Approvals
- Review of the Technical Submittal and Design Drawings
- · Coordination with structural consultants of EPC, Client

#### 6. Construction Supervision

- Review of Safety, Quality, Mobilization, Construction, Mock Up Plan
- Periodic Supervision of construction
- Review of completed works for invoicing, Review of Daily and Monthly Reports
- Issue Non-Conformance Reports and review of closing of the report
- Review of Handing over Package

#### 7. Commissioning Review

- Ensure that the Commissioning is according to IEC, Local standards
- Review of the performance of the system
- Snag List Closure and Conditions for Plant Takeover
- Setup Monitoring Platform
- Setup Operations and Maintenance Schedule and Manual
- Issue the acceptance certificates (PAC, FAC)



Clenergize is first and foremost a technical firm with engineers who specialize in electrical, mechanical, civil and structural engineering. Most often in large projects or ground mount projects there is requirement of performing certain additional studies to check the viability of the grid and the proposed project.

We have in-house software and have created customized plug-ins and tools to generate low-cost studies and assessments as per the needs of the project.

The studies we provide are as follows – but not limited to:

- Geotechnical Study
- Environmental Impact Study
- Grid Impact Study
- Power Evacuation Study
- Short Circuit Contribution Study
- Discrimination Study
- Lightning Protection System Study
- PVSyst Reports



















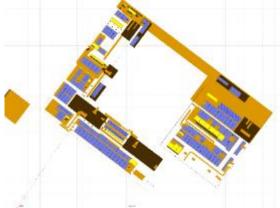






In solar PV projects, the shading on the system can have very negative impact on the productivity and the general life of the plant. A good plant design ensures that the effects of shading are minimized, considering the long term of operation. Our design has one of the most accurate calculations of the losses attributed to shading – as we prepare an accurate 3D model of the plant at the beginning of our design.





Our software is able to identify the loss due to shading for each panel. This is highly detailed considering the number of panels that are used in an average solar PV system. This helps in correctly sizing the strings and making accurate combinations of the panels.

A shadow sweep of the designated solar area is performed. This takes into account the shading effect from all nearby objects for the full year.



The Full Engineering Design can be used by EPCs, End Users, Developers for permitting and construction of their PV plant. These are mainly drawings, single line diagrams, schemes, BOQs and studies that will be used as the basis for installation and commissioning.

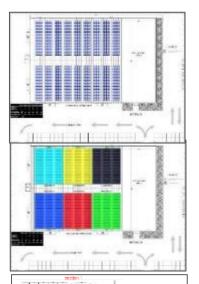
End users or Clients who have in-house execution capability or electromechanical manpower – can use our design packages and install PV projects. This results in some of the lowest cost EPC projects as the margins on procurement and execution by third party installers are removed. As solar projects become more mainstream – this concept is picking up – especially as the paybacks are very low.

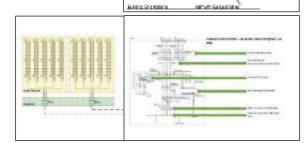
# **Contents of a Design Package:**

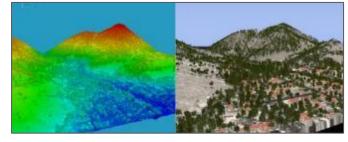
- PVSyst with Near Shading Assessment
- Panel Layout Rooftop, Carpark, Ground Mount
- Single Line Diagrams
- Inverter Zones, Layout
- String Layout
- Mounting System
- Switchgear Sizing and Design
- Transformer Sizing
- Earthing Layout
- Cable tray Layout
- AC and DC Cable Sizing
- Grid Connection and Metering Scheme
- · Container, Porta Cabin Layout
- Trenching and Containment Layout
- Civil Work
- BOQ with supplier names and benchmark prices

# **Other Drawings**

- LPS Layout
- Monitoring and SCADA Scheme
- Walkways and Staircase
- Robotic Cleaning
- HSE Items Harness, Skylight Protection
- Fencing and Roadworks
- CCTV, PAVA, Lighting
- Coordination for BMS
- Datasheets
- Simulation Reports

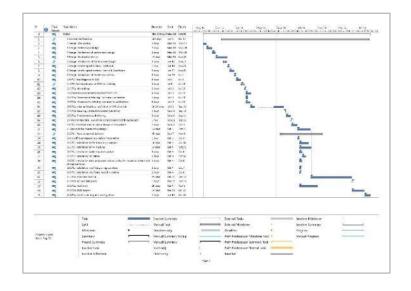








Clenergize has a team of site engineers and project management consultants that are deployed to project sites. With several MW of on-site project management experience – we are in a good position to understand the issues that arise in regional projects. Project management involves all the stages from initial feasibility to tendering, bidder reviews, contracts stage, engineering and permitting to on-site construction supervision, procurement support, material inspections, technical inspections during commissioning, tests for startup and handover.

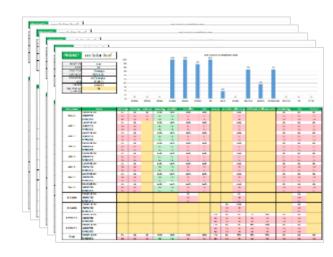


Having an experienced engineer and consulting team by your side through the whole process ensures significant cost savings, reduction of losses and on time delivery. Our consultants have worked on several different sites – industries, warehouses, solar farms, residential and mixed use complexes, malls, hospitals etc.

We understand the site limitations and have a good collection of LESSONS LEARNT on each of our projects – that we apply to the next upcoming project.

# **Project Management Services:**

- Feasibility, Tendering, Contracts, Approvals and Engineering
- · Weekly or Daily meetings
- Interface between Developer and Client
- BOQ and Procurement Support
- Material Inspections
- Technical Submittal Review
- On-site construction management
- · Commissioning Review and Tests for Startup
- Raise Non-Conformance Reports and ensure closure
- Issue Provisional and Final Acceptance Certificates
- · Review works for Invoicing
- Non-Solar Tasks Waterproofing, HSE, Staircase Fencing, Security, CCTV, PAVA, LPS etc.



We offer training packages for contractors, developers and even end users depending on the nature of the skill you want to develop for solar projects.

# **Training for Contractors and Developers**

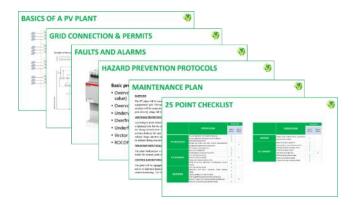
- Solar Plant Basics
- Solar Plant Detailed Engineering
- Solar Project Management
- PVSyst with Near Shading Assessment
- System Design Electrical
- System Design Structural and Mechanical
- Component Selection
- BOQ Preparation and Costing
- Financial Modelling
- Shadow Analysis
- 3D Model Development
- On-Site Installation
- Commissioning
- Operations and Maintenance
- PV Plant Troubleshooting





# **Training for End Users**

- Solar Plant Basics
- · Monitoring System Review
- · Operations and Maintenance
- Emergency Response and Hazard Prevention



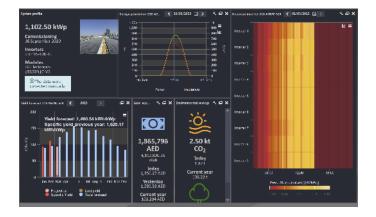


#### **OPERATIONS AND MAINTENANCE:**

After the handover of PV plants comes the most important stage of the project – the operations and maintenance. PV plants require a timely and periodically maintenance cycle – in order to perform as per their simulated design. They also require regular checks and monitoring – as there are several small elements that need to function correctly together.

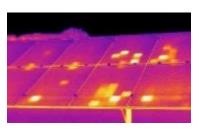
While there are no moving parts (other than trackers if installed), maintenance is mostly hassle free – but knowing what to check and how to interpret losses and alarms is important.

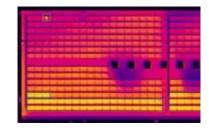
- Setting up O&M platform for the project with the integration of all sites in one access
- Checking O&M Manual, Spare Parts Stock, Best Practices,
- Setting Up Cleaning Method (Dry, wet), Frequency (bi-weekly, monthly) as per local weather
- Robotic vs Manual Cleaning types, warranties, extra requirements, rails comparison, costs
- Setting the Performance and Energy Guarantees, PR Ratio, P50,P90, Warranty Bonds
- Review performance of the plant and issue Take over Certificates, Final Acceptance
- Compare similar plants in the neighborhood and provide assessment report (via our extensive network of running PV plants we mostly find running assets to benchmark performance)
- Thermal Scanning of the PV plant drone based or manual. Identify hot spots, panel defects, overheating, shading, bypass failure etc.



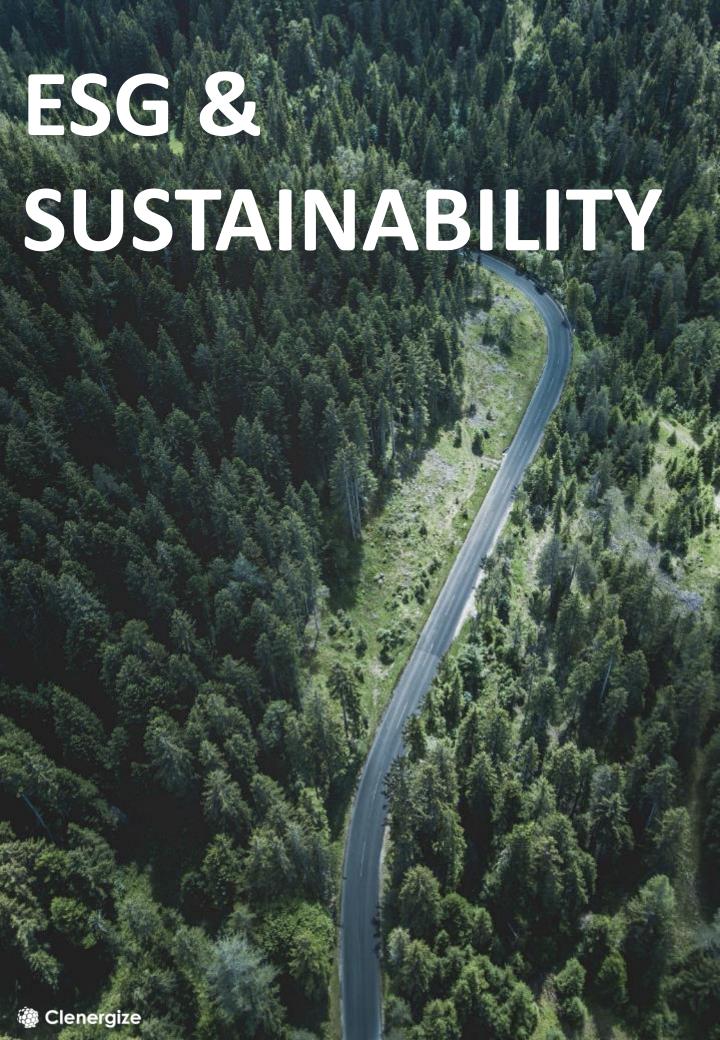
#### **PV PLANT AUDITS & INSPECTION:**

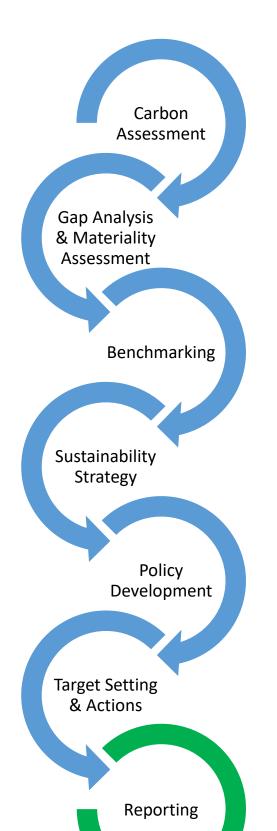
- Technical Due Diligence for running plants
- Dispute resolution warranty issues, performance issues, developer-client contractual defaults
- Full Plant Design and Performance Audits for lenders, banks, developers and end users
- Performance Ratio Tests
- Troubleshooting
- Third Party Inspections











Calculate Carbon Footprint GHG and IPCC Protocols

Stakeholder Engagement Questionnaires & Data Collection Gap Matrix

International, Regional Comparison Industry & Competitors Visibility on present Status

> Draft Strategy on Focus Topics Define Short- & Long-Term Plan Set Goals

Develop Policies Incorporate in Company Manuals

Targets for each Plan and Goal Action Plans for each Department Measurement KPIs for Actions

Company Sustainability Report Reporting to GRI Ecovadis, UNGC, ESG Rating

# NATIONAL AGENDAS AND REGULATIONS

Governments publishing different Policies and Regulations calling for robust involvement and actions from the private and public sectors



# MAJOR SUPPLIERS' REQUIREMENTS

Global supply chains and public organizations rely on EcoVadis and other rating platforms to monitor their sustainability impact through their trading partners



# RISE IN CONSUMER AWARENESS

Consumers are recognizing the positive potency of their buying power – whether by purchasing from sustainable brands, or considering their impact, based on environmental and social consciousness

83%

Adults in the UAE are more mindful of their impact on the environment

**15%** 

Adults have boycotted companies that have not adopted sustainable values after the pandemic

# COMPETITOR BEHAVIOUR

Sustainably run businesses have a clear competitive advantage in the current landscape of Environmentally and Socially conscious consumers and businesses.

28%

Adults state they are going to stop using or buying from brands that do not have a plan to help the environment or behave sustainably.



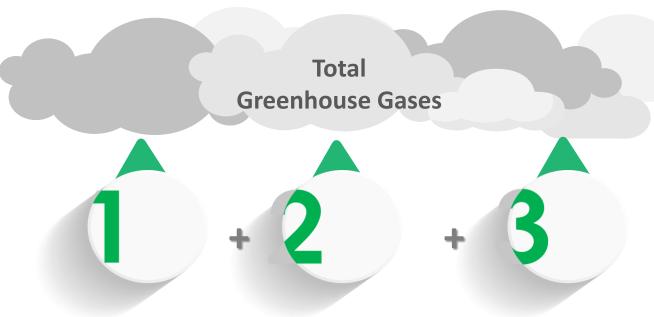


CARBON FOOTPRINT ASSESSMENT	1	Data Collection Scope 1,2,3 Carbon Emissions GHG & IPCC assessment, Mitigation Plan, Net Zero Roadmap
GAP ANALYSIS & MATERIALITY	2	Check ESG Gaps as per GRI Disclosures.  Department Wise Assessment.  Perform Materiality Assessments  Stakeholder Engagements.
BENCHMARKING	3	Compare the ESG performance vs Peers and Competitors. Regional and International Best Practices. ESG Rating and Scoring.
ESG STRATEGY AND POLICIES	4	Preparation of ESG Strategy & goals.  Net Zero, Circular Economy  Prepare ESG Policies & in existing Policies  Department Wise Integration
KPIS, TARGETS, ACTIONS	5	KPIs to measure ESG performance Prepare Actions Plans with Targets Department Wise Allocation Tools for Tracking and Reporting
ESG REPORT, ECOVADIS	6	Preparation of Annual Sustainability Reports Integrating ESG within Annual Reports Ecovadis Preparation and Submissions



Carbon Footprint is the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community. It includes direct emissions, such as those that result from fossil-fuel combustion in manufacturing, heating, and transportation, as well as emissions required to produce the electricity associated with goods and services consumed.

The Greenhouse Gas Protocol (GHG) is an organization that helps companies to reduce their greenhouse gas emissions by setting standards to help them manage their emissions. In other words, they provide "standards, guidance, tools and training for business and government to measure and manage climate-warming emissions." The GHG Protocol is most well known for its classification of <a href="Scope 1">Scope 1</a>, <a href="2">2</a>, and <a href="3">3</a> emissions.



Direct emissions from owned or controlled sources.

Indirect emissions from the generation of purchased utilities

All other indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions





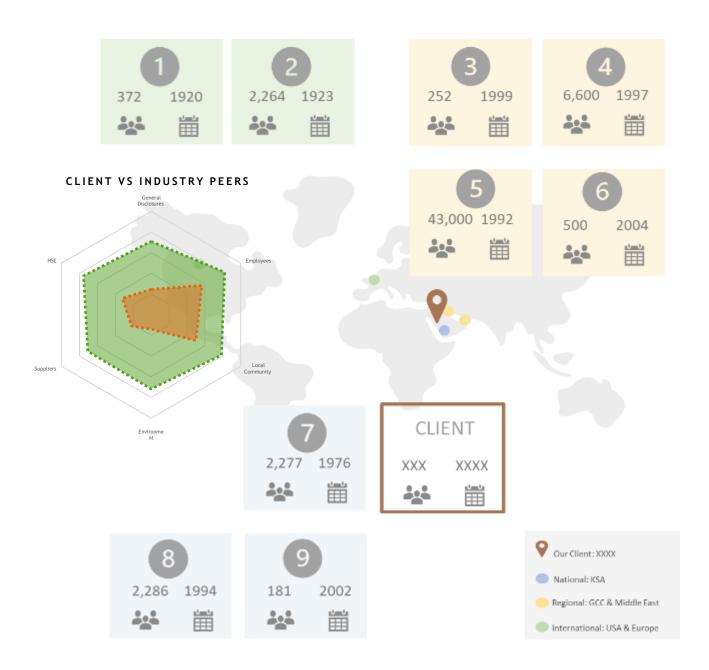
- We help the client identify the personnel needed per department for data collection
- Perform the Materiality Assessment with the clients team via interactive sessions
- Stakeholder engagement with top management.
- Data collection by both primary and secondary methods (previous studies, reports, audits done, data collection forms and questionnaires filled by client)
- Assess the current state of the client to ensure that all ESG aspects are covered within the operations, documentations, and departments of the client
- Identify all possible gaps against GRI standards and develop the desired state for the client
- Identify all corrective actions to cover the gaps identified.
- Classify all quick wins to be achieved from the corrective actions developed for the client
- Develop the Gap Analysis Report and matrix and share with all departments.







- Identify Competitors and Peers in the region and internationally to use for Benchmarking
- Collect the required data of all material topics for each competitor.
- Check the status of material topics of and highlighting Industry Best Practices.
- Compare the results of the final assessment of all competitors against the client's current state in relevant disclosures and aspects.
- Rate all competitors against the client from both an average performance point of view and specific material topics.
- Develop the Benchmarking Report to interpret all results of the assessments and comparisons.





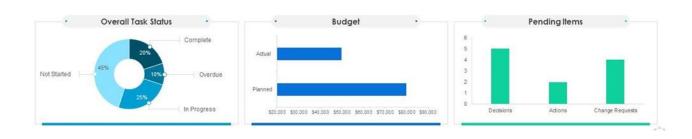
- Define the key aspects in the Gap Analysis that will become a focus area for the sustainability Strategy including all material topics.
- Determine objectives that will help achieve client goals and align with their corporate identity.
- Prepare and Draft the main sustainability strategy to achieve sustainability goals.
- Develop or update All Relevant Core ESG policies (Environment, Social, Governance) as per the strategy.
- Policy formation applies to these standard departments Procurement, HR, Finance, Legal,
   Compliance, Facilities, Marketing, IT, Corporate etc.
- Review the policies with the Clients Team and plan the Roll Out in the Company.
- Samples of some policies are listed below:





- Identify All Relevant Targets and KPIs in accordance to material topics.
- Collect data for each KPI to measure the impact and generate the Baseline
- Set **Science-Based Targets (SBTs)** for each KPI according to thorough evaluations of the client's priorities, budgets and capabilities.
- This exercise is done per department
- Prepare a set of Action Plans to address each Target and KPI as derived in the previous process and highlighting the Quick Wins and 2-Year Action Plan Initiatives.
- Conduct a Analysis to evaluate different actions and implementations that will help achieve the sustainability goals.
- Identify and elaborate Priority Actions to maximize benefits and minimize risks in the short, medium and long terms.







Organizations improve their sustainability performance by measuring, monitoring and reporting on their sustainability efforts, helping them have a positive impact on society, the economy, and a sustainable future. The key drivers for the quality of sustainability reports are the different standards, guidelines, award schemes and rankings. We support with the following ratings and standards after generating the reports.

# ecovadis

# **ECOVADIS RATING**



GLOBAL REPORTING INITIATIVE (GRI)



INTEGRATED REPORTING



UN GLOBAL COMPACT



**UN GLOBAL COMPACT** 



**ESG REPORTING** 



Sustainable impact assessment (SIA) evaluates economic, social and environmental impacts of any project/proposal and also keeps the perspective on sustainable development during evaluation. SIA offers many advantages like long-term benefits, better governance, improved decision-making processes and stakeholder involvement. The methodology to conduct SIA and indicators of sustainability may vary from project to project.

Impact Assessment Advisory	Help organizations measure their initiatives and activities' social, environmental and economical impact
Impact Assessment Al Solution	Help organizations aggregate and analyse data enabling strategic planning and reporting for evidence-based decision making through an Al-software
Impact Assessment Reporting	Partnering up with organizations to help report and present their measures of effectiveness of organisational activities and judging the significance of changes brought about by those activities





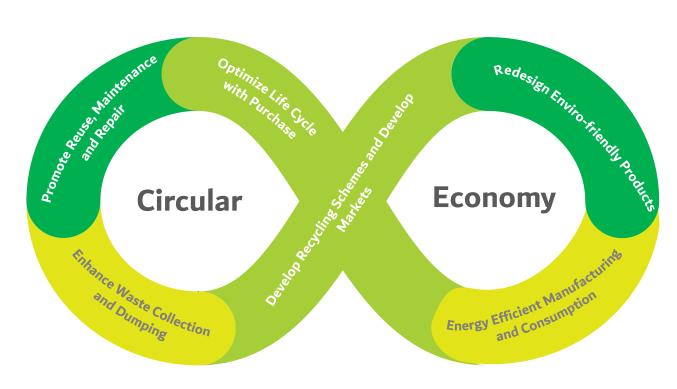






A circular economy, refers to an economy that uses a systems-focused approach and involves industrial processes and economic activities that are restorative or regenerative by design, enable resources used in such processes and activities to maintain their highest value for as long as possible, and aim for the elimination of waste through the superior design of materials, products, and systems (including business models). It is a change to the model in which resources are mined, made into products, and then become waste. A circular economy reduces material use, redesigns materials to be less resource intensive, and recaptures "waste" as a resource to manufacture new materials and products.

Circular Economy Strategy and Framework	Evaluating all the relevant interactions in the supply chain associated with a good, service, activity or entity to include environmental, social and economic impacts of a product over its entire life cycle
Waste Management Strategy Formation	Support teams to develop a strategy to manage the resources and potential economic and environmental benefits derived from household, commercial and industrial waste from private sector sources and in municipalities
Waste Minimization, Recycle and Reuse	Planning and implementing initiatives that help the organization reduce raw material consumption and focuses on using and reusing existing materials







Energy Audit Site Visit	Level 1 and 2 Audits Walkthrough and Site Visit As Built Assessment
Data Collection and Analysis	HVAC, Temp, Humidity Lighting, Sensors, BMS Air Quality, Noise
Report Preparation	Energy Conservation ECM Energy Saving ESM Cost and Budget Capex vs Lease Priority
Implementation	Tendering, Design, Bidder Selection Contracts, ESCO Management Supervision, Commissioning Testing and Approvals
Monitoring	Live Monitoring Verification of Savings Dashboards and Alarms Overall, Before-After Assessment



LEVEL 1 AUDIT	1	Site Walkthrough, HVAC, Electrical, Water, Sample Data Collection, As Built Check, Cable Management, BMS, O&M Review, Reporting
LEVEL 2 AUDIT	2	All activities in Level 1 Audit, Detailed Review of Data, Deployment of Measurement Devices on Client Site, Recommendation and Mitigation Plan, Upgrades, Replacements, Improvements, Financial Implications, dashboards and reporting.
IMPLEMENTATION	3	Tendering, Design Review, Financial Comparison, Negotiations, Supervision, Commissioning – of all aspects noted in the L1/L2 audits as per priority List
MONITORING	4	Live Monitoring Platforms to track and report the Energy Efficiency Activities. Before-After assessment, Savings estimation, Linking with Carbon Assessment

Energy Efficiency is a very important part of the ESG process as it directly helps in reducing the consumption of utilities and usually has a very short payback period. Most common improvements and optimizations can be seen in HVAC, Electrical, Lighting and Water technologies - as over time degradation in systems does develop. While starting an Energy Efficiency project the first step is a site audit.

The audits can be various types – but in general can be classified as level 1 and 2 audits – depending on the depth of the parameters verified and assessed.

## A Level 1 audit consists of the following steps:

- · Site walk through to record and verify all the equipment
- Collecting the data of the installations like
  - HVAC Equipment: Chillers, Pumps, VFD's, FAHU, AHU, FCU, Extract Fans, Ventilation Fans, Fresh Air Fans etc
  - Elevators, Travellators, Lifts and other machinery
  - Building conditions, Accessibility (entries and exit doors).
  - Electrical distribution network
  - Main Incomers & Main Distribution boards
  - Sub-mains and DB's etc
  - Capacitor Banks & their conditions
  - Control Panels, MCC panels, CPM (Chiller Plant Manager) etc
  - Busbar Risers (heating, deformations etc)
  - Cable Management systems
  - Building Management Systems
  - Lighting Control Panels etc
  - Sample CO2 Levels
  - Sample Lux Levels
  - Random Water flow rate of bathroom fixtures
  - As-built drawings & List of Equipment
  - O&M manuals
  - Maintenance Reports
  - Energy Bills
- Data analysis and report preparation
- The Report will identify the areas where the ECM / ESM (Energy Conservations / Saving Measures) needs to be applied
- Measurements that will be carried out are:
  - Building Power Measurement at MDB Incomer Level
  - Temperature and Power Consumption of HVAC Equipment
  - Air Flow, temperature, relative humidity, Power of AHUs



The Level 2 Energy Audit is a step above the first phase – where detailed calculations are performed on all the equipment – after attaching measuring devices which record the parameters over a specified duration. This on-site data helps to identify finer issues with the present status of the building – enabling decision making.

The financial assessments derived from a Level 2 audit help the client make an Implementation plan — so as to put the results of the audit in terms of Sub-Projects to execute.

## A Level 2 audit consists of the following steps:

- All aspects of Level 1 Audit as stated above
- The focus will be on the ECM / ESM areas identified in Level-1 above
- The audit comprises of detailed measurements using various measurement instruments at building level and main end users of electricity and water
- Measurements shall be done on HVAC Building cooling demand and HVAC equipment
- Power consumption of HVAC equipment
- Temperatures & Relative Humidity
- · Air flow
- Noisy equipment
- Building power measurements at MDBs / incomer
- Harmonic levels in the power quality etc
- Duration of measurements shall range from one to two months depending on the LEVEL-1 report.
- Upon completion of study of the measurements a report shall be furnished as below:
  - Condition of existing equipment etc.
  - Repairs of equipment needed with relevant cost.
  - Upgrade of equipment needed with relevant cost.
  - Replacement of equipment needed with relevant cost.
  - Improvement needed in maintenance & scheduling etc.
  - Recommending fixing of continuous monitoring of the equipment with relevant cost.
  - A Dashboard for a continuous monitoring of all the running equipment shall be developed.
  - Parameters shall be set for the monitoring of the same which can give alarms for operators to attend.
  - Total duration for implementation, financial implications, Forecasted energy savings and their recovery period upon the above improvements.



The implementation plan for Energy Efficiency tasks are performed as subprojects — as each of them require sourcing of good contractors, price reviews, design reviews, contracts and supervision. Subject matter experts from our team prepare and run this process for each subproject.

#### 1. Prioritization

Preparing List of Priority for Energy Efficiency tasks based on results of the L2 Audit

#### 2. Tendering and Specifications

- Drafting Project Specifications and Tender/RFP
- Establishing Technical Benchmarks, Vendor Lists, Geo-Technical Parameters
- Bidder Prequalification and Issuing the tender to bidders

#### 3. Offer Review

- Review of submitted offers and recommendations to client
- Meeting with Bidder to discuss submitted proposals, site visits
- Techno-Commercial Negotiations to get best price
- Design Optimization, benchmarking to existing projects in region.
- Factory Level Procurement Rates from our network
- Preparation of EPC/Lease Comparison Report & Recommendations

#### 4. Contract / Lease Agreement

- Creation of Contract to be signed between Client & Contractor/ESCO
- Establishing Performance Criteria for Acceptance, Savings Guarantees etc.
- Establishing Performance Guarantee, Liabilities, Bonds, insurances etc.

#### 5. Design Review

- Support with Utility Approvals if any
- · Review of the Technical Submittal and Design Drawings

#### 6. Construction Supervision

- Review of Safety, Quality, Mobilization, Construction, Mock Up Plan
- Periodic Supervision of construction
- Review of completed works for invoicing, Review of Daily and Monthly Reports
- Issue Non-Conformance Reports and review of closing of the report
- Review of Handing over Package

#### 7. Commissioning Review

- · Ensure that the Commissioning is according to IEC, Local standards
- Review of the performance of the system
- Snag List Closure
- Setup Monitoring Platform
- Setup Operations and Maintenance Schedule and Manual
- Issue the acceptance certificates (PAC, FAC)







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