



LDK – Experience in Project Management activities – RES sector

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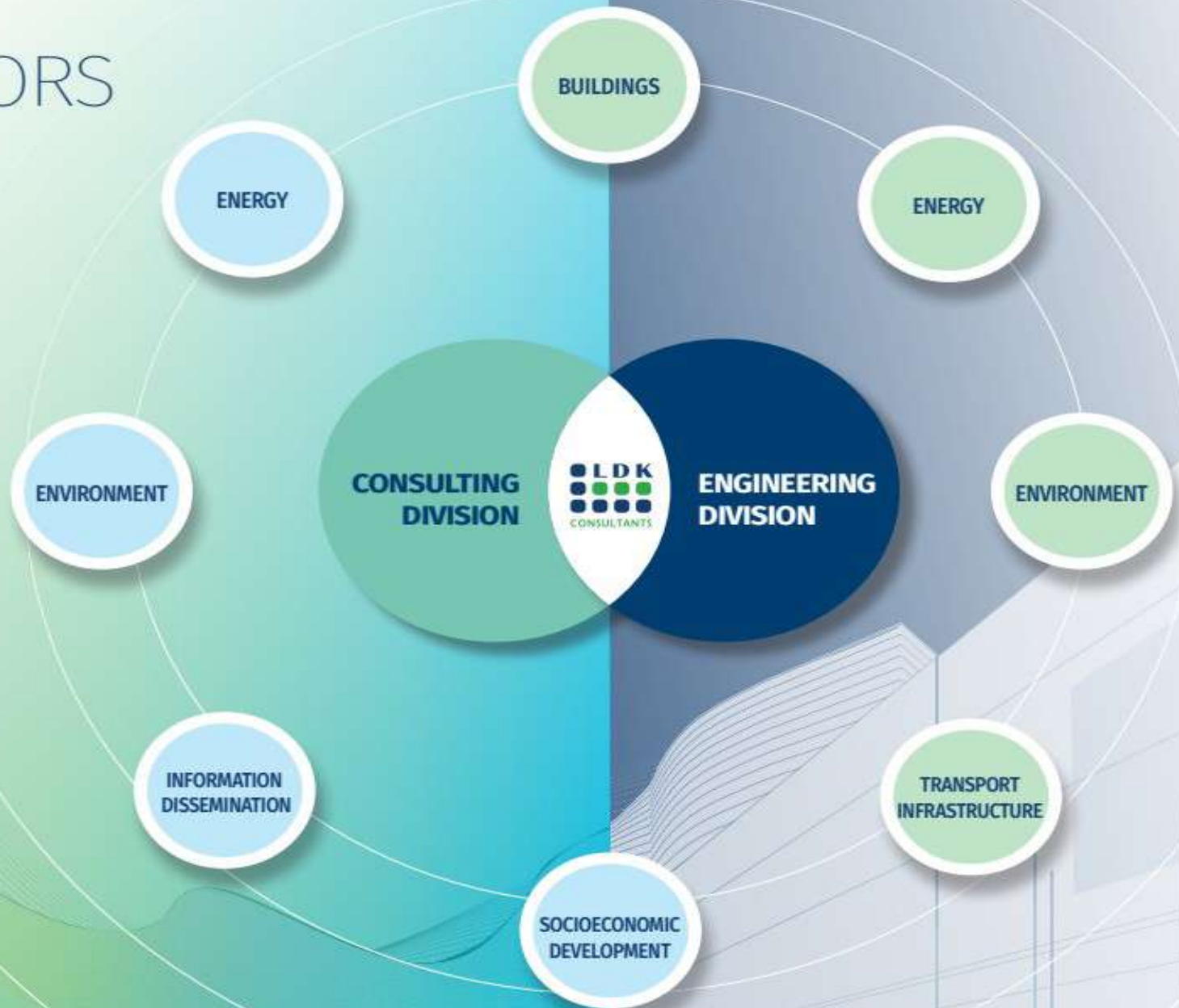


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LDK GROUP SNAPSHOT



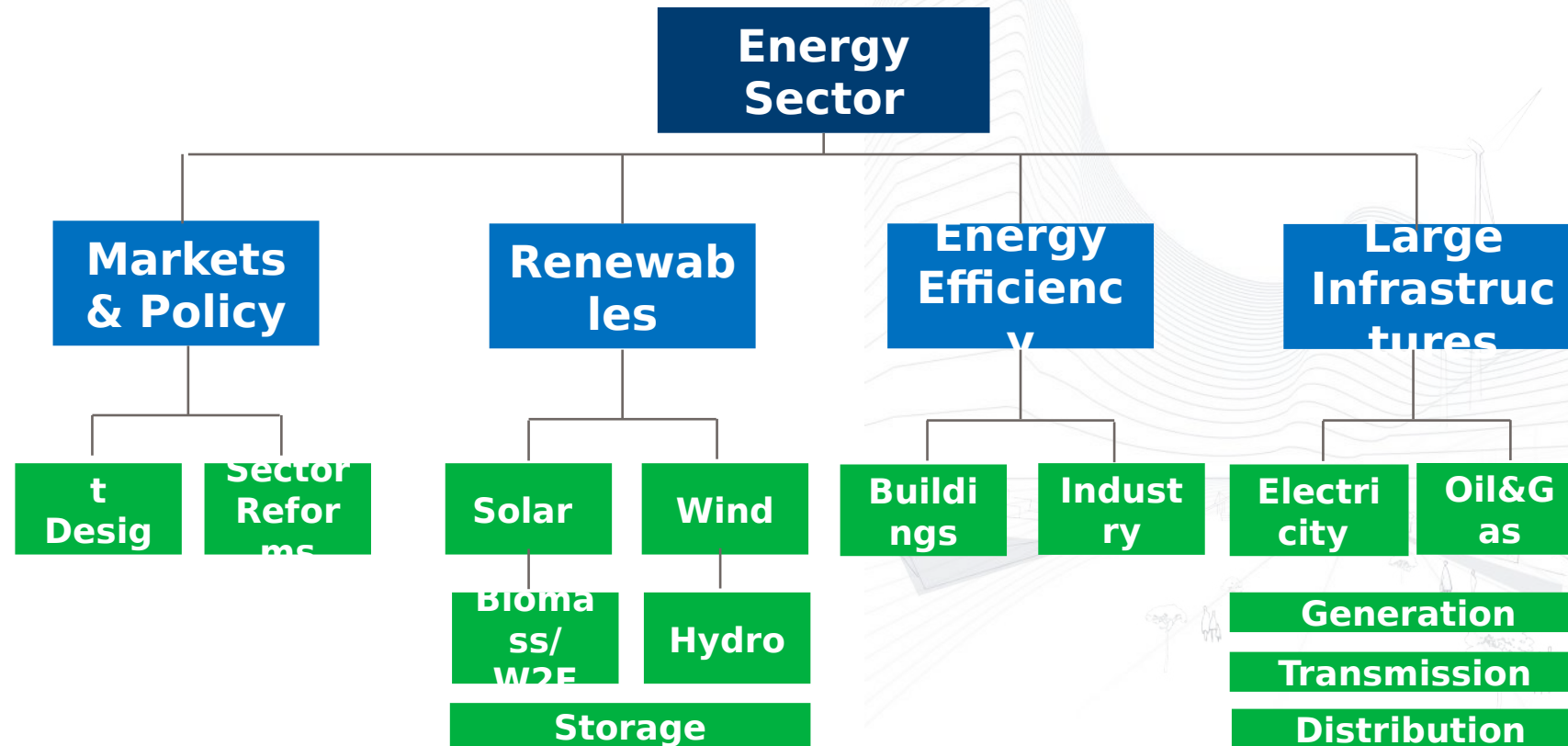
SECTORS



LDK – Activity on Energy

Energy Sector- Fields of expertise

We provide services in 4 subdomains of the Energy Sector.

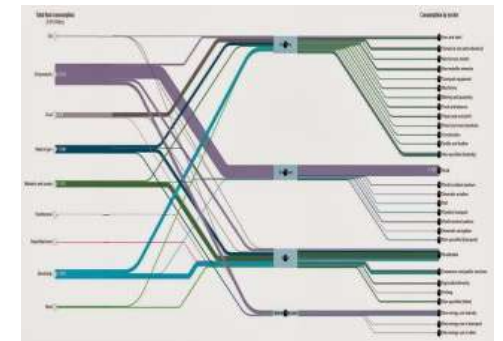


Market Design

- Liberalisation of energy markets
- Regulation and restructuring for electricity and natural gas utilities
- Design of energy markets and development of market rules
- Regional development planning
- Sectorial studies
- Socio-economic analysis
- Feasibility studies
- Financial analysis
- Tariff policy
- Training on planning & investment evaluation

Sector Reform

- Planning and design of energy policy framework and sector based programmes for energy
- Development of National Energy Strategies
- Development of National Energy Models and Planning of Infrastructures
- Development of Efficiency and RES Action Plans
- Energy demand and supply forecasts
- Electricity and gas networks analysis, planning and development strategies
- Analysis and recommendations on electricity and gas tariffs



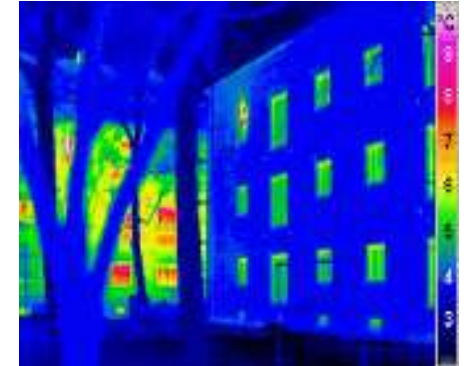
Energy efficiency in buildings and industry

Buildings

- Energy efficiency assessment - energy auditing and monitoring schemes
- Feasibility studies for bankable projects
- Technical design of energy installations including BMS
- Integration of CHP and RES in buildings
- Energy efficiency in district heated housing
- Building Regulations and Standards
- Acquisition of funding and project appraisal

Industry

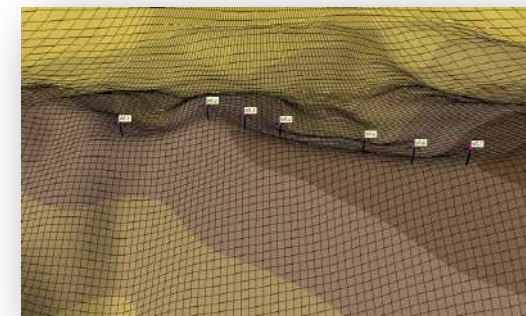
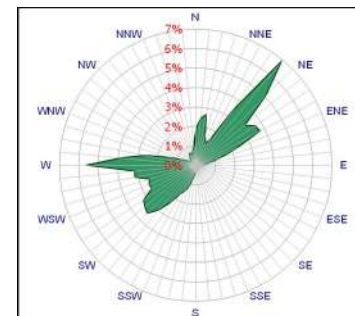
- Short and detailed energy audits with the use of state-of-the-art metering equipment
- Technical and financial evaluation of energy and water saving measures - benchmarking
- Assessment of GHG emissions reduction
- Feasibility studies for bankable projects - projects design
- Energy management and monitoring and targeting systems
- Specialised training for engineers and industrial managers
- Experience with IFI relevant support schemes such as Credit Lines



Renewable Energy Sources

Renewable Energy Sources

- RES resource assessment
- Conceptual Design, Feasibility Studies
- Management of licensing procedures
- Project financing – application for funding
- Environmental Impacts Assessment
- Technical Due diligence – asset valuation
- Financial Evaluation of RES Projects
- Assessment of EPC and O&M Contracts
- Preliminary and detailed design
- Tendering / Selection of suppliers
- Suppliers contracts management
- Construction supervision
- Project Management



Construction Supervision and Technical Assistance

- Liaison with the Client and coordination of the team of experts
- Review and opine on the existing technical designs (access roads, WTG foundations, MV/HV substation, etc.)
- Review and opine on the existing QA/QC documentation regarding the procedures to be followed during construction
- Supervision of the construction works and the relevant tests to be carried out during construction including all engineering disciplines of the Wind Farm Environmental Impacts Assessment
- Respond to Contractors' Requests for Information (RFIs) regarding the engineering matters of the project Financial Evaluation of RES Projects
- Supervision of the Commissioning and the Acceptance Tests procedures Preliminary and detailed design
- Review and opine on contractors' requests for variations Suppliers contracts management
- Review and opine on contractors' requests for intermediate and final works completions and issuance of relevant certifications Project Management
- Review and opine on any other requests concerning technical matters issued by the contractors
- Performance of measurements/quantities of work units done and compare them with measurements made by the Construction Contractor
- Supervision of FATs of major equipment in the premises of manufacturers



Large Infrastructure

Transmission & distribution networks

- Pre-feasibility, Feasibility studies, Risk Assessment
- Economic and Financial Studies
- Concept design studies
- Power systems analysis, Cost estimating, Project scheduling
- Detailed Engineering design, Equipment specification
- Construction supervision
- Development of grid codes

CHP and District Heating, Power Generation

- Planning and Initiation: pre-feasibility-feasibility studies, risk assessment, economic and financial studies.
- Design: concept design, power systems analysis, cost estimating, project scheduling, detailed design, equipment specification
- Construction supervision: inspections, financial control, quality assurance, commissioning and start up.
- Project management: contract management, procurement services, tender preparation and evaluation, contract administration



LDK has been a sustainability consultancy since 1973, when it adapted its services, as a response to the oil crisis. Its first action was to integrate engineering with renewable energy practices. LDK initiated the development of a solar village in Greece, a pioneering project worldwide. The second initiative was the energy planning of the Cyclades island taking into consideration low carbon energy sources.

We approach sustainability through a holistic lens, keeping in mind the priorities of the COPs (UN Climate Change Conferences), SDGs (Sustainable Development Goals) and foremost the EU Sustainable Development Strategy and the recent Green Deal. Our engineers and scientists are originating from different specializations - mechanical, electrical, civil, transportation and environmental engineers, biologists, Social and economic scientists, geologists, coupled with draftsmen focusing on GIS applications.

Experience in sustainable development

- Development of strategies, policies, institutional and regulatory frameworks, roadmaps on regional and municipal level
- Promotion of sustainable measures on regional and municipal level focusing on EE and RES deployment
- Establishment of municipal facilities and credit lines for the development of project pipelines
- Establishment of institutional entities, mechanisms, funds, units within public and municipal authorities.
- Stakeholder consultation and awareness actions
- Capacity building and knowledge transfer activities



European directions – Energy

REPowerEU plan

EU recently introduced the REPowerEU plan in order to rapidly reduce the EU's over-dependence on Russian gas, oil and coal imports and strengthen its strategic autonomy in the energy sector.

REPowerEU focuses on supporting the clean energy transition aiming at a more resilient energy system throughout the EU.

The REPowerEU plan builds on the full implementation of the Fit for 55 package. The package sets the goal of achieving at least -55% net greenhouse gas emissions by 2030 and climate neutrality by 2050 in line with the European Green Deal.

Indicative fields within the energy sector

- Renewable energy sources (RES) projects
- Energy markets
- Energy efficiency projects
- Oil and gas
- Nuclear energy projects (recently showing signs of recovery)



LDK's Project Management Activities

Wind Parks Project Management

45MW Wind Park in Fthiotida, Central Greece

- Construction Supervision
- Assistance on the management of the project's contracts
- Quality management/assurance
- Coordination of the team of experts employed in the project: electrical and civil engineers, surveyors, H&S officers
- Duration of the project: 18 months

Portfolio of 2 Wind Parks of 87MW total installed capacity, Western Macedonia

- Construction Supervision
- Assistance on the management of the project's contracts
- Quality management/assurance
- Coordination of the team of experts employed in the project: electrical and civil engineers, surveyors, H&S officers
- Duration of the project: 15 months



Shortfalls in LDK's services

- Different standards in the clients' documentation
- Delicate position between the developer and the construction company
- Delays due to Regulatory/Permitting issues
- Lack of staff to meet the demands in the RES sector
- Staff mobility in the sector
- No universal project management software that can meet the needs of the projects
- Each site manager carries a different experience and viewpoint making uniformity difficult to achieve

RES sector's shortfalls

RES sector's shortfalls

Greek energy sector's main challenges

- Lack of specialized staff (engineers and craftsmen) to meet the needs that arise out of growth in the sector
- Lack of professionalism and structure in the companies offering services in the sector
- Lack of expertise in the offshore wind industry



LDK's credentials

Wind Farms References

Construction Supervision Services
Client Confidential
34.2 MW WF
 Construction Supervision and Technical Assistance for the Construction of a 34.2 MW Wind Farm
2023

Construction Supervision Services
Client Confidential
33.6 MW WF
 Construction Supervision and Technical Assistance for the Construction of a 33.6 MW Wind Farm
2023

Construction Supervision Services

37 MW WF
 Construction supervision of all engineering disciplines, for a 37MW wind farm in Greece
2022

Construction Supervision Services

50 MW WF
 Construction supervision of all engineering disciplines, for a 50MW wind farm in Greece
2022

Technical Advisor
Client Confidential
183MW WF
 Technical due diligence including grid connectivity assessment and licensing review on 3 Wind Farms in Greece.
2022

Technical Advisor
Client Confidential
397MW WF
 Technical due on 11 Wind Farms with a total capacity of 397MW in Greece.
2022

Owner's Engineering Services
Client Confidential
33.6 MW WF
 Engineering assistance for the preparation of tender documentation for the construction of a wind farm.
2021

Owner's Engineering Services
Client Confidential
34.2 MW WF
 Engineering assistance for the preparation of tender documentation for the construction of a wind farm in Central Greece.
2021

Technical Advisor

12 MW & 24 MW
 Technical consulting services for the interconnection of two wind power plants of 12 MW and 24 MW to the national power grid.
2021

Owner's Engineering Services
Client Confidential
45 MW WF
 Construction management and technical supervision of all engineering disciplines, for a 45MW wind farm in Greece
2021

Wind Farms References

Technical Advisor

Client Confidential

296.8 MW WF

Technical due diligence including site assessment, licensing roadmap, technical and financial feasibility assessment of 3 wind farms.

2021

Technical Advisor



158 MW WF

Technical consulting services for the production licenses and grid connection assessment of a wind farm's portfolio of 158 MW comprising of three clusters of seven wind farms in Greece.

2021

Owner's Engineering Services

Client Confidential

15 MW WF

Construction management and technical supervision of all engineering disciplines, for a 15MW wind farm in Greece

2021

Owner's Engineering Services

Client Confidential

45 & 14 MW WF

Engineering assistance for the preparation of tender documentation for the construction of 2 wind farms.

2020

Technical Advisor




42.9 MW WF

Moldova: Preparation of technical specifications for wind and PV projects as well as requirements for the EPC and O&M contracts, review on existing RES framework and advise the local authorities on RES.

2019

Technical Advisor




42.9 MW WF

Technical due diligence and monitoring of the construction of a 42.9MW wind farm in Greece.

2019

Technical Advisor



10 MW WF

Market study on wind energy in Greece including review of the laws, H&S compliance, grid compliance, environmental compliance and site conditions.

2016

Technical Advisor




10 MW WF

Technical due diligence and monitoring of the construction of a 10MW wind farm in Cyprus.

2016

Technical Advisor



21 MW WF

Technical due diligence including technical, financial, contractual and licensing assessment.

2013

Technical Advisor



21 MW WF

Technical due diligence including analysis and evaluation of wind resource measurements of a wind Farm in Greece.

2013

PV References

Technical Advisor



European Bank
for Reconstruction and Development

110MW PV

Lenders' Engineer Technical Due Diligence on a 110 MW solar PV project in North Macedonia

2023

Technical Advisor



European Bank
for Reconstruction and Development

Montenegro: On-site solar energy generation and resource efficiency feasibility study for MesoPromet

2022

Technical Advisor

Client Confidential

60MW PV

Technical due diligence including grid connectivity risks, licensing risks and site assessment regarding the installation of 2 PV parks

2022

Technical Advisor



European Bank
for Reconstruction and Development

Montenegro: On-site solar energy generation and resource efficiency feasibility study for Voli Trade

2022

Technical Advisor

Client Confidential

290MW PV

Technical due diligence including grid connectivity risks, estimation of losses and CAPEX and OPEX estimations regarding the installation of 4 PV parks

2022

Technical Advisor

Client Confidential

60MW PV

Technical due diligence for 3 separately licensed PV fields with a common grid connection in Central Macedonia.

2022

Technical Advisor

Client Confidential

50MW PV

Technical due diligence including grid connectivity and licensing review, estimation of CAPEX and OPEX regarding the installation of a PV park

2022

Technical Advisor


Client Confidential

460MW PV

Technical due diligence for 2 separately licensed PV fields with a common grid connection in Central Macedonia.

2022


Technical Advisor



Technical due diligence identifying technical and environmental risks for 9 potential floating PV parks

2021

Technical Advisor



507MW PV

Technical due diligence including grid connectivity risks, site assessment and inclination, licensing risks and environmental assessment regarding the installation of 6 PV parks

2021

PV References

Technical Advisor




250 MW PV

Techno-economic assessment of the viability for the installation of PV systems on buildings and land plots of the Aegean Motorway in order to reduce the cost of energy consumption.

2021

Technical Advisor




250 MW PV

Preliminary design of the grid connection and licensing procedures until start of project construction for a 250 MW PV park in Central Greece.

2021

Technical Advisor




140 MW PV

Technical Due Diligence services for the development, completion and operation of Photovoltaic Park with a total capacity of 140 MW in Karavasta, Albania.

2021

Technical Advisor



3.8GW PV & 183MW WF

Technical due diligence for ten separately licensed PV fields located in mainland Greece and 11 PV and wind fields located in Crete.

2021

Technical Advisor

Masdar Taaleri Generation (MTG)

260 MW PV

Technical due diligence for 15 separately licensed PV fields with a common grid connection in Western Greece.

2021

Technical Advisor




200 MW PV

Technical due diligence regarding grid connectivity assessment of a 200MW PV park in Greece.

2020

Technical Advisor



47 MW PV

Technical due diligence of PV parks under construction or operation in Northern Greece.

2020

Lender's Technical Advisor Services



10 MW PV

Technical advice for the development, completion and operation of photovoltaic parks with total capacity of 10 MW in Cyprus

2019

Technical Advisor


Client Confidential

25MW PV

Technical due diligence identifying technical, licensing and environmental risks regarding the installation of PV parks, including CAPEX and OPEX estimations.

2019

Technical Advisor




2019

Technical and financial viability of a solar PV project at textile installations in Jordan comprising of 14 industrial plants and warehouses.

PV References

Technical Advisor



European Bank
for Reconstruction and Development

Montenegro: Feasibility Study of Energy Efficiency and Renewable Energy Solutions at Regional Water Supply Company (RWSC)

2019

Technical Advisor



European Bank
for Reconstruction and Development

Serbia: Assessment of Green Investments at Forma Ideale d.o.o.

2019

Technical Advisor



European Bank
for Reconstruction and Development

11.9 MW PV

Technical due diligence and project construction monitoring services for five solar PV parks in Cyprus of total capacity 11.9 MW

2018

Technical Advisor



European Bank
for Reconstruction and Development

Technical and financial viability of a solar PV project at textile installations in Jordan comprising of 14 industrial plants and warehouses.

2018

Lender's Technical Advisor Services



50 MW CSP

Technical due diligence prior to financial closing with a technical report to the Lender (EIB) and support during loan closure verifying that conditions are satisfied for a 50 MW CSP plant in Crete

2018

Technical Advisor

National and Kapodistrian University of Athens

8 MW PV

Feasibility study, licensing procedure, detailed design and preparation of tender documents for the implementation of a 7.99 MW PV Plant at the National and Kapodistrian University of Athens

2021

Lender's Technical Advisor Services



17.38MW PV

Lender's Technical Advisor for 17.38MW PV plants pipeline in Greece.

2016

Technical Advisor


Vidomet SA

150 kW PV

Detailed design and construction supervision of a 149.4 kWp PV plant on the rooftop of a factory in Euboea.

2013

Technical Advisor



27.5 MW PV

Technical Assistance for the licensing and installation of 9 PV plants with installed capacity 27.5MW

2013

Technical Advisor

FOTOVOLTAIKA PARKA LIVADIAS PALAIOPANAGIA SA

500 kW PV

Detailed design and construction supervision of a 499.8 kWp PV plant in Livadia.

2013

Specific experience on Energy Markets and BESS

Technical Advisor



Ministry of
Finance, Serbia,
CFCU

Serbia: Provide assistance in order to improve energy and climate policy through development of the Integrated National Energy and Climate Plan (INECP) for the period from 2021 to 2030 in order to implement Energy Union Strategy based on tools for advanced energy planning

2022

Technical Advisor



Ministry of Finance,
Serbia, CFCU

Serbia: Technical Assistance to the Energy Agency of the Republic of Serbia (AERS) in order to contribute to alignment of policy enforcement, monitoring and harmonisation of the Serbian legislation with the EU Energy Acquis.

2020

Technical Advisor



Ministry of Energy,
Ukraine, NEURC

Ukraine: Technical assistance in the Ukrainian public authorities in order to reform the electricity and gas markets in line with the provisions of the EU-Ukraine Association Agreement to the benefit of consumers.

2022

Technical Advisor



Lebanon: Feasibility Study of PV systems combined with BESS in 3 Green Industrial Zones as per GET framework of EBRD

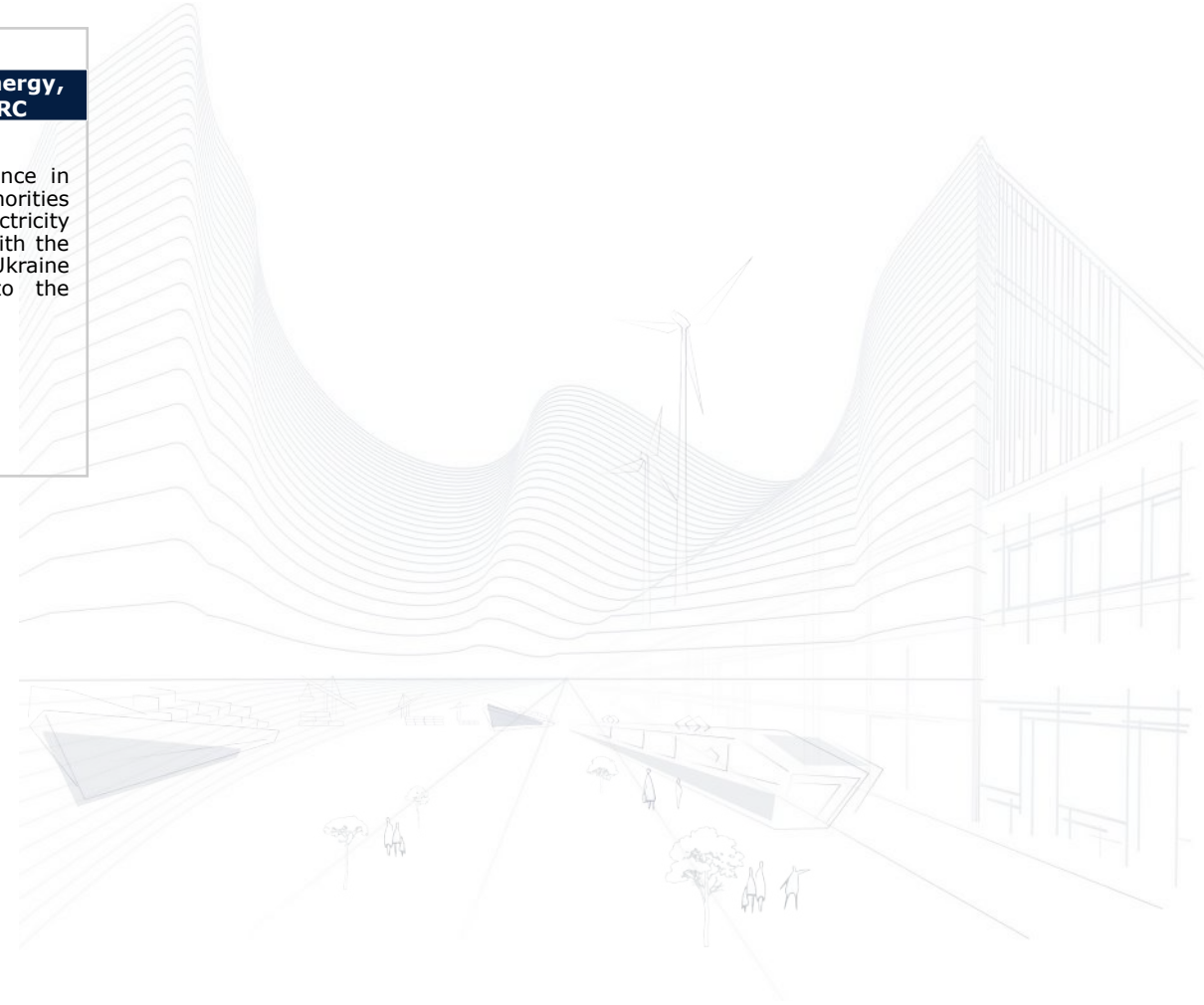
2019

Technical Advisor



Pre-feasibility study of 83MW PV plant combined with a 42MW Lithium-Ion Battery System in a land plot. The analysis included the calculation of key financial factors in order to assess the viability of the investment

2020



Thank you for your attention

Contact details

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