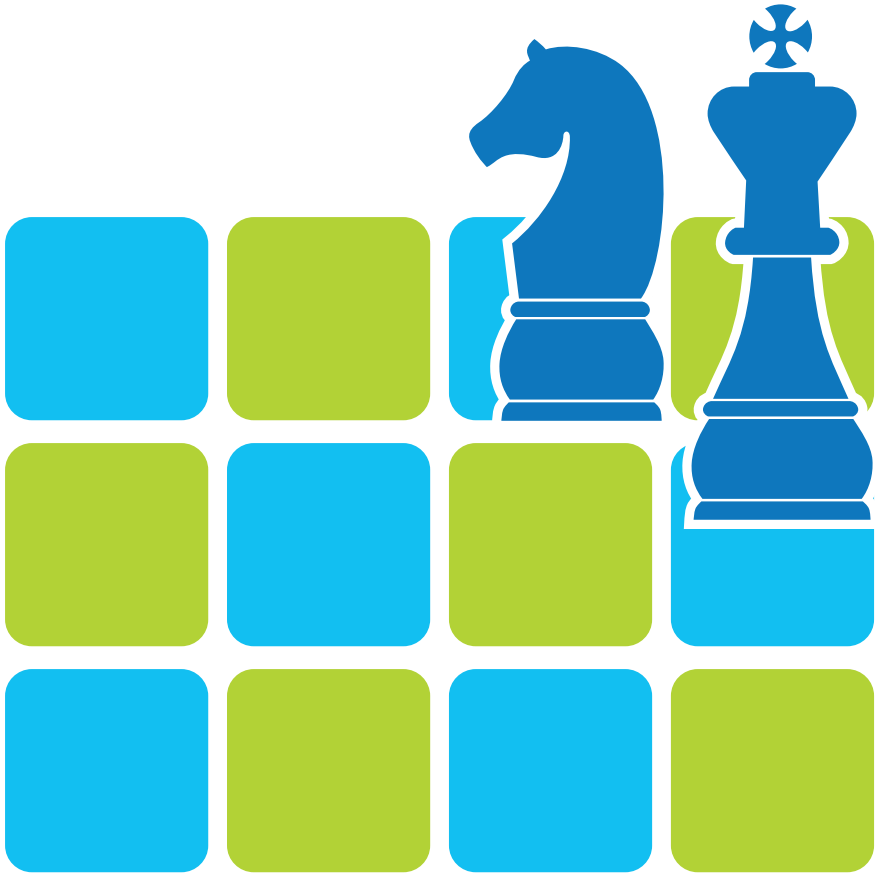


Strategic Projects

HEDNO

Development and modernization through Strategic Projects

HEDNO's operational plan is based on 12+1 Strategic Projects that serve as catalysts towards its modernization and shape the company's direction in the near future. These Projects are the building blocks of HEDNO's Transformation Program towards a modern Distribution System Operator that utilizes digitized operations and new network planning and development tools in the mainland distribution networks and in the Non-Interconnected Islands Systems. The strategic projects pave the way towards the Smart Grids era in Greece, thus enabling the development of new market services and products within an ever-changing electricity market. While the electricity sector worldwide undergoes radical transformation, both technological and organizational, HEDNO advances towards the development of the necessary infrastructure for maximizing the benefits for the economy, the society and the environment.

The Strategic Projects cover a wide range of modernization activities, such as Smart Grids, Smart Meters, Remote Customer Service Systems and the upgrade of back-office systems, adopting the new trends in the electricity sector.

The benefits accrued by implementing the Strategic Projects, result from the Company's established objectives for improved power quality and customer services, while reducing the Company's operational costs, improving working conditions for the employees, facilitating efficient operation of the electricity market and contributing to environmental protection by allowing increased penetration of Renewable Energy Sources (RES).

The (12+1) Strategic Projects

Modernization of Attica Distribution Control Center

Implementation of Distribution Control Center for the Non-Interconnected Islands

Reorganization and Modernization of regional Distribution Control Centers (in the rest of the country)

Upgrade of network remote control equipment

Implementation of Geographical Information System (GIS)

Modernization of IT System for Customer Service

Implementation of Remote Customer Service Systems

Upgrade of Network Planning

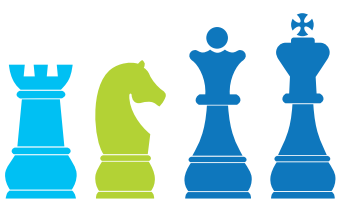
Infrastructure Development of Non-Interconnected Islands

Implementation of "Smart Islands" Pilot Project and its large-scale promotion

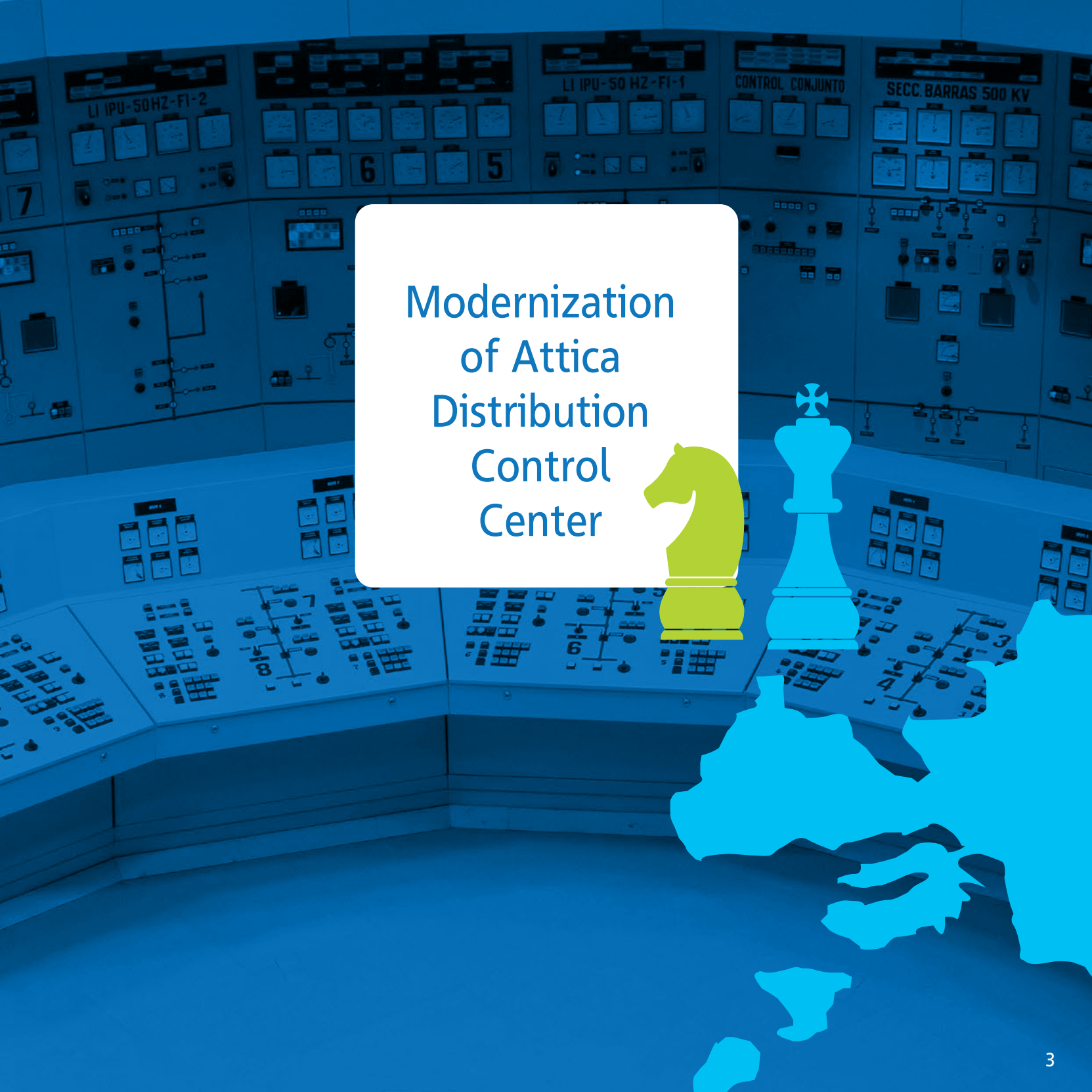
Automatic Meter Reading (AMR) of Low Voltage (LV) Consumptions: Pilot Project and roll-out

Reorganization of supply chain

Development of a Unified Information Management System



Modernization of Attica Distribution Control Center



Project Overview

The Project aims at upgrading the Distribution Network Control Center (DNCC) in Attica through provision and installation of Supervisory Control and Data Acquisition - Dstribution Management System (SCADA-DMS), Remote Terminal Units (RTUs) at High Voltage/Medium Voltage (HV/MV) substations and reorganization of its components.

New Systems and Services

- Servers (Database – SCADA – DMS)
- SCADA software
- DMS software
- 107 RTUs
- 115 Inverters and 645 Converters

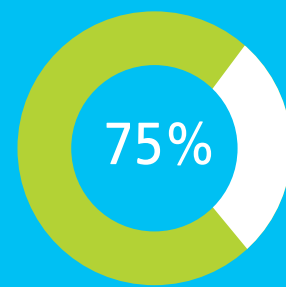
Benefits

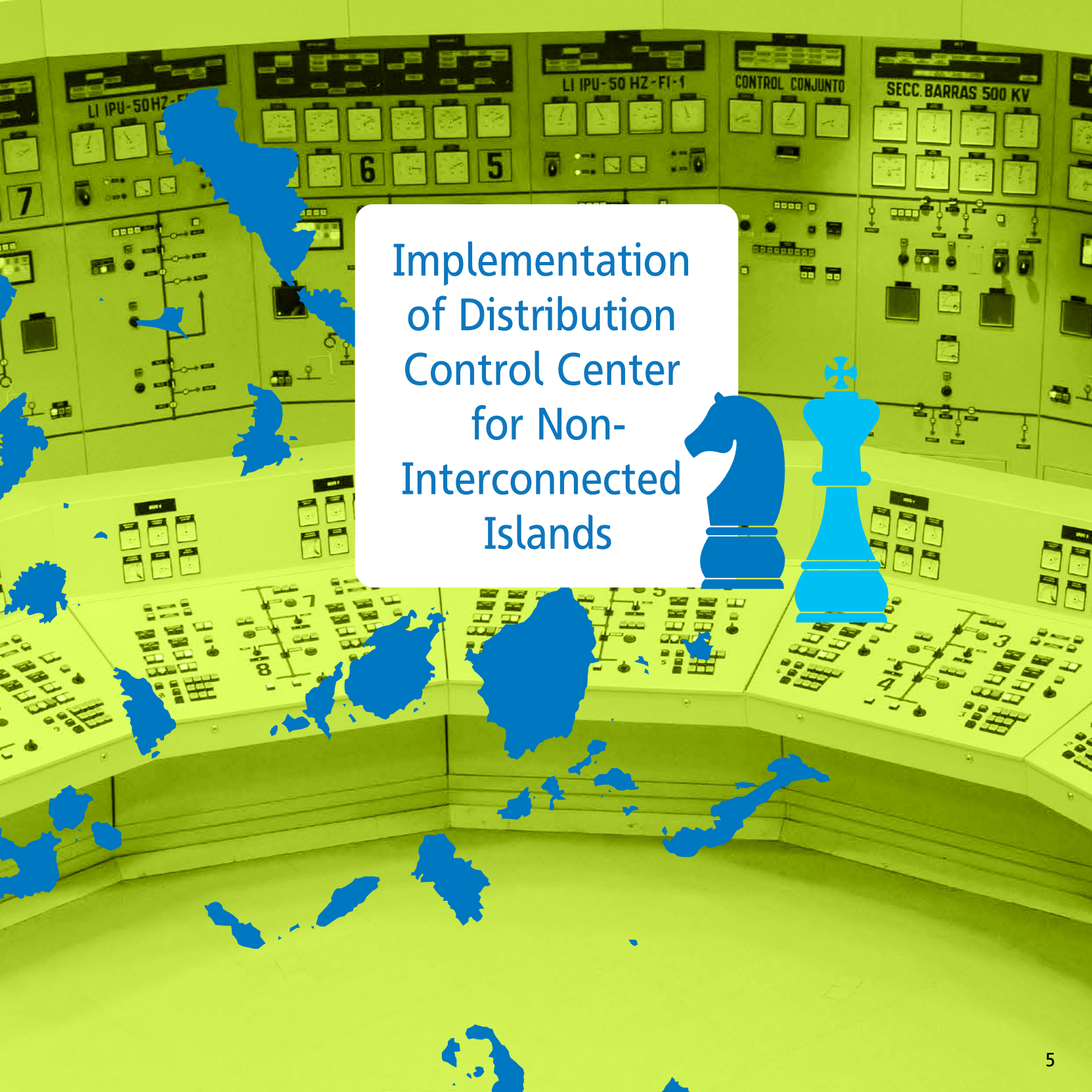
Implementation of the Project is expected to provide the following benefits:

- improved reliability of operation of Attica's network, improved power quality and timely detection of the weak spots of the network
- resource pooling and savings, efficient management of human resources during failures and better and faster recovery of interruptions
- reduced loading of electricity network components during peak load hours and reduced power and energy grid losses
- improved capabilities for Network management, studies and training of the responsible personnel
- integration and homogenization of remote controlled systems.

Project Progress

The Project is expected to be completed at the end of 2019. Up to December 2017 the project was 75% complete. More specifically, the new SCADA of Attica CCDN was installed and is now in operation while the installation of new RTUs at the High Voltage/ Medium Voltage Substations has been completed at a percentage of 72%. The updating of the SCADA electronic diagram of the 6.6kV Network has been completed and the staff is now in training in the operation of the system. The updating of the SCADA electronic diagrams of the 20 kV Network continues at intensive paces. In the framework of reorganizing and modernizing the old CCDNs, N. Ionia CCDN was transferred to the central building of the Network Development and Operation Sector (NDOS) and the under preparation transfer of Pallini CCDN.





Implementation of Distribution Control Center for Non-Interconnected Islands

Project Overview

The Project aims at the establishment of a new Distribution Network Control Center (DNCC) for Non-Interconnected Islands through provision and installation of new Supervisory Control and Data Acquisition - Distribution Management System (SCADA-DMS), the necessary Remote Terminal Units (RTUs) at High Voltage/Medium Voltage (HV/MV) substations and the development of the necessary infrastructure for supporting the operation of the new DNCC.

New Systems and Services

- Servers (Database – SCADA – DMS)
- SCADA software
- DMS software
- 58 RTUs

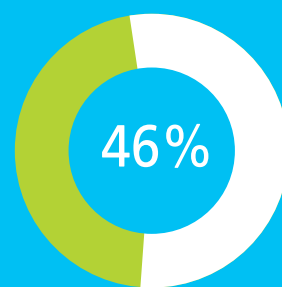
Benefits

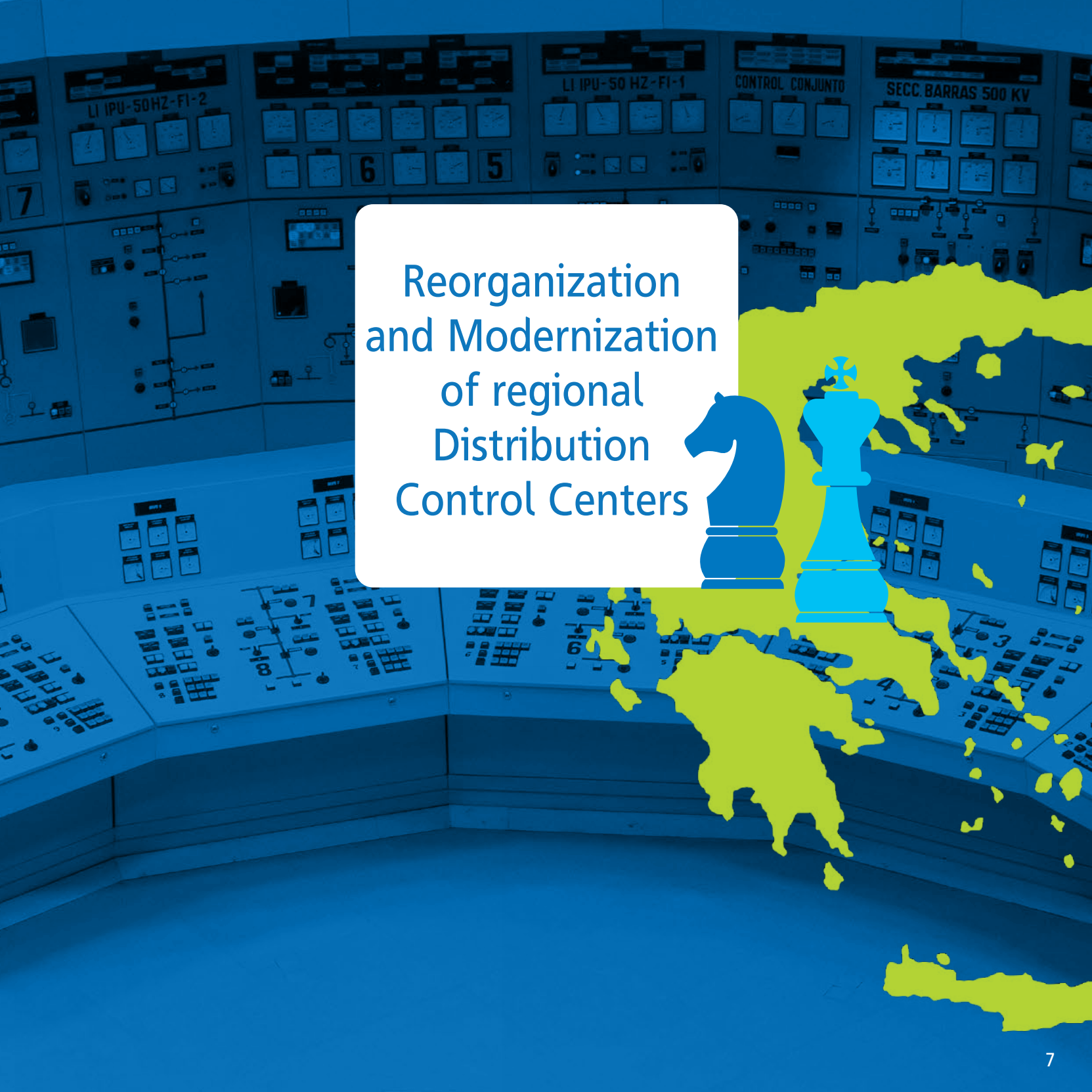
Implementation of the Project is expected to provide the following benefits:

- improved system reliability (measured by the System Average Interruption Duration Index –SAIDI– and the System Average Interruption Frequency Index –SAIFI) by remote control of switchgear installed on Medium Voltage (MV) lines
- improved network operation at lower operational cost (reduced needs for personnel dealing with failure restoration and scheduled interruptions)
- continuous supervision of the state of the remotely controlled elements, for rational management of the infrastructure and timely failure detection in order to take corrective actions, etc.
- reduced loading of the electricity network components and reduced energy grid losses.

Project Progress

The Project is expected to be completed in the 3rd quarter of 2020. Up to December 2017, 46% of the Project had been completed. More specifically, the new SCADA of the Department of Islands Region was installed and is in operation while the installation of the new RTUs at the High/ Medium Voltage Substations has been completed at a percentage of 87%.





Reorganization and Modernization of regional Distribution Control Centers

Project Overview

The Project aims at the reorganization of the Distribution Network Control Centers (DNCCs) in the rest of the country and the concentration of their functions in three Regions(*), through installation of new Supervisory Control and Data Acquisition - Distribution Management Systems (SCADA-DMS) and communication with Remote Terminal Units (RTUs) at High Voltage/Medium Voltage (HV/MV) substations and the installation of the necessary infrastructure for supporting the three integrated DNCCs.

(*) M-TR: Macedonia-Thrace Region, CGR: Central Greece Region, P-ER: Peloponnese-Epirus Region

New Systems and Services

- Servers (Database – SCADA)
- SCADA software
- DMS (hardware – software)

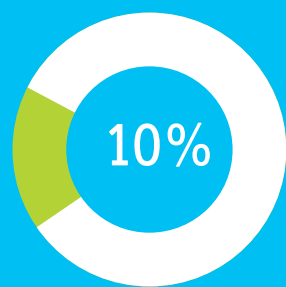
Benefits

Implementation of the Project is expected to provide the following benefits:

- improved reliability of operation of the mainland network (besides Attica), improved power quality and timely detection of the vulnerable parts of the system
- resource pooling and savings, efficient management of the human resources during failures and better and faster recovery of interruptions
- reduced loading of the electricity network components during peak load hours and reduced power and energy grid losses
- improved capabilities for network management, studies and training of the responsible personnel.

Project Progress

The Project is expected to be completed in the 1st semester of 2020 when the three Regional CCDNs start operating. Up to December 2017, 10% of the Project had been completed. More specifically, the studies for the upgrading of the CCDN for the Region of Macedonia -Thrace and the establishment of the new CCDNs for the Divisions of the Regions of Continental Greece and Peloponnese and Epirus were completed, while the upgrading of Thessaloniki CCDN to CCDN for the Division of Macedonia-Thrace region by integrating the area of Katerini, and the commencement of the pilot operation of CCDN for the Division of Central Greece Region by integrating the area of Lamia, are in progress.



Upgrade of network remote control equipment

Project Overview

The Project deals with the supply and installation of modern remote control equipment in overhead Medium Voltage (MV) networks and in Medium Voltage/Low Voltage (MV/LV) Substations (S/Ss), to be managed by the Distribution Control Centers.

New Systems and Services

- 2.000 remote controlled overhead Load Switches (LS)
- 1.500 Remote Terminal Units - RTUs for remote control of MV switches
- 820 remote controlled autoreclosers
- 3.000 Fault Detection Devices (FDD) with remote reading features for indoor S/Ss.

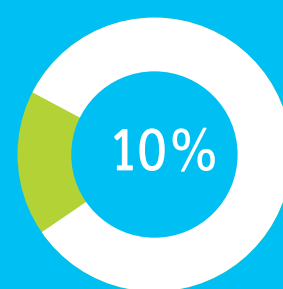
Benefits

Implementation of the Project is expected to provide the following benefits:

- improved system reliability {measured by the System Average Interruption Duration Index (SAIDI)}, through remote control of the relevant components of the MV network
- reduced operating cost due to reduced needs for on-site operation actions, crew dispatch, etc.
- improved network reliability due to capabilities of immediate intervention in critical elements of the grid for addressing contingencies
- reduced power and energy grid losses.

Project Progress

The Project is expected to be completed in 2022. Up to December 2017, 10% of the Project had been completed. More specifically, tenders for the supply of remote controlled Load Break Switches and remote controlled Automatic Circuit Reclosers for overhead MV grids have been published. Tenders requesting Remote Terminal Units (RTUS) and power failure indicators for the indoor Medium/Low Voltage Substations are being prepared.



Implementation of Geographic Information System (GIS)

Project Overview

The Project involves network mapping on geographical background through spatial data coordinates. Medium Voltage (MV) and Low Voltage (LV) Networks data will be digitized and imported into the Geographic Information System (GIS). Pilot installations are in operation in two regions. The country wide implementation involves procurement and installation of all necessary equipment, licenses and basemap layers for covering the nationwide needs and import of all necessary network and component data.

New Systems and Services

- PC workstations and peripheral equipment
- GIS licenses
- Geographical Basemap layers for the entire country
- Network mapping, network data digitization and import

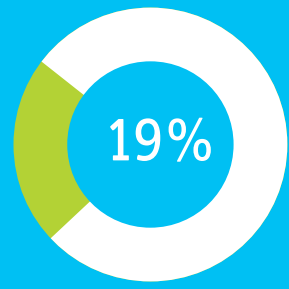
Benefits

Implementation of the Project is expected to provide the following benefits:

- Systematic treatment (collection, updating and processing) of geographical and technical network data
- unified support and upgrade of the Company's technical activities (development, planning, building, operation, maintenance)
- improved Project monitoring
- improved customer services
- increased staff productivity
- improved management, monitoring and maintenance of network assets
- better crisis management
- facilitation of information exchange between various Enterprise Systems, such as the Distribution Network Control Centers (DNCC), the Customer Service System, etc.
- supporting integration of prospective functionalities (e.g. support of fault monitoring centers, "Smart Grid" applications, etc.).

Project Progress

The Project is expected to be completed in 2021. Up to December 2017, 19% of the project had been completed. More specifically, the Geographic Basis (Open Street Map -OSM) has been supplied and installed for the entire country and the documents for the Digitalization of the Medium and Low Voltage tenders are completed together with the supply of the necessary equipment.




Modernization
of IT System
for Customer
Service

Project Overview

The Project deals with upgrading the Customer Service System through installation of suitable modern information technology systems and reorganization of the relevant structures, processes and work methods.

New Systems and Services

- Servers (Database, Application, Web)
- Customer service/management software suitable for Distribution Network Companies and the associated software licenses
- Development of web portal for online customer support via internet

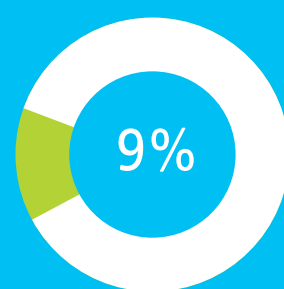
Benefits

Implementation of the Project is expected to provide the following benefits:

- improved customer services in terms of quality and speed
- modernization of the business processes regarding electricity customer, producer and supplier interactions
- reduced service operational cost

Project Progress

The Project is expected to be completed in 2021. Up to December 2017, 9% of the Project has been completed. Furthermore, the studies and preparation for the tender for the supply, implementation and operation of the New Users' Service Information System have been completed.



Implementation of Remote Customer Service Systems

Project Overview

The Project deals with the installation of Call Centers providing new communication channels for easy and prompt delivery of customer services. Implementation will commence with a Pilot installation in Athens, followed by deployment throughout the country.

New Systems and Services

- Call Center implementation study
- Supporting equipment
- Staffing and operation services

Benefits

Implementation of the Project is expected to provide the following benefits:

- improved services in terms of quality and speed of processing customer requests, with minimal engagement and physical presence at local service offices
- upgrade of services and communication channels
- reduced service operational cost
- provision of central collection of power interruption announcements combined with failure management systems
- improved and faster notification of customers regarding power interruptions and the necessary restoration time.

Project Progress

The project is expected to be completed in 2021 along with the New Customer Service Information System. The sub-project of developing and operating a Call Center for the announcement of outages by the customers is in progress. Up to December 2017, 22 out of the 59 regions of HEDNO have been included in the Center. This sub-project is expected to be completed at the end of 2018.

Upgrade of Network Planning

Project Overview

The Project deals with reorganization of procedures, redefinition of responsibilities and technoeconomic criteria and supply of advanced software tools for assessment and optimal planning of Distribution Network development projects (grid reinforcement, renovation, etc.).

New Systems and Services

- Network Planning software
- Distribution Network operational data monitoring equipment with remote metering features

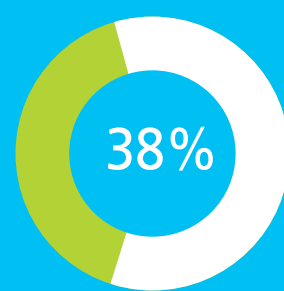
Benefits

Implementation of the Project is expected to provide the following benefits:

- optimal utilization of available resources through objective prioritization of the most essential and cost-effective investment projects
- economic and operational benefits due to better planning and timely implementation of priority projects with obvious economic and operational benefits
- better scheduling of materials procurement
- integrated documentation of projects for fulfillment of stakeholders' requirements (RAE, PPC, banks, etc.)
- integrated planning of the overall Distribution System at all levels and coordinated direction within the Company for the Network development strategies followed
- easier and coherent project appraisal based on unified processes and criteria promoted by modern planning and evaluation tools
- improvement of validity and accuracy of data necessary for project appraisal and planning
- systematic treatment of new conditions in the Network and the Market imposed by current technological advancements and widespread penetration of distributed generation.

Project Progress

The Project is expected to be completed in 2019. Up to December 2017, 38% of the Project has been completed. The studies for the selection of the evaluation criteria for the investments and the preparation for the tender for the supply of software for the development and Network investment evaluation studies are in progress.



Infrastructure Development of Non-Interconnected Islands

Project Overview

The Project deals with the development of infrastructure on Non-Interconnected Islands (NIIs) in order to satisfy the regulatory obligations imposed by the full implementation of the NIIs Code.
The Project involves the following Subprojects:

- Metering Equipment
- Methodological Infrastructure
- NIIs Information System
- Energy Control Centers (ECC) in Athens, Crete and Rhodes
- Energy Control Centers (ECC) on the remaining NIIs.

New Systems and Services

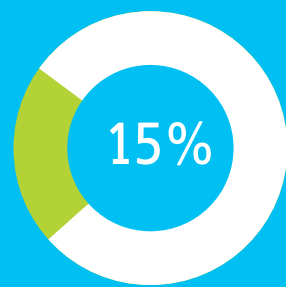
- Electronic energy meters
- Telemetering communication equipment
- Energy Management Systems/Supervisory Control and Data Acquisition (EMS/SCADA)
- Market Management System (servers and software)
- Software for forecasting and management of Renewable Energy Sources (RES) production)
- Data warehouse
- Servers located in Athens and locally in each of the 27 NIIs
- Telecommunication equipment
- Fiber optic network

Benefits

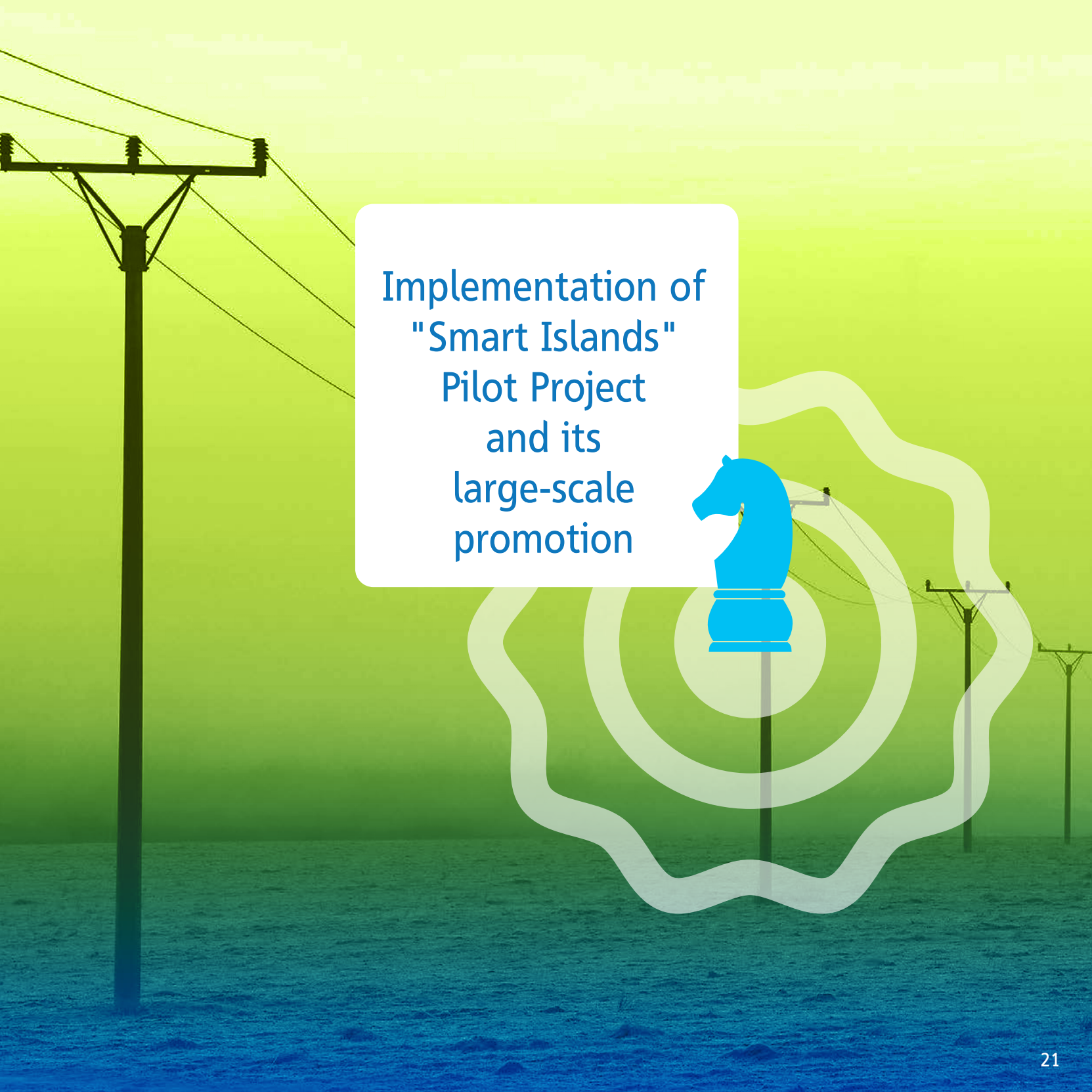
Implementation of the Project will provide accurate measurements of the production cost in NIIs and allow cost-effective operation of the conventional production units, in order to minimize Public Service Obligations (PSO) charges and maximize RES penetration in the island, while ensuring reliable and secure electricity supply.

Project Progress

The project is expected to be completed in the 2nd semester of 2020. Up to December 2017, 15% of the Project had been completed. More specifically, tenders for the supply of meter reading equipment have been announced and the pilot implementation of the respective infrastructure in two (2) NII systems has been completed.The finalization of the methodologies for the application of the NII Code with the cooperation of the competent authorities (RAE and Ministry of Environment and Energy) and PPC and the development of the software (in-house) are in progress based on the specifications set up by the Islands Network Operation Department. The sub-project of setting-up a Central ECC in Athens and local ones in Crete and Rhodes in view of the pending interconnection of Crete with the Interconnected System has been modified and the preparation of the tender for the implementation of the Central ECC in Athens and Local ECC in Rhodes is in progress.



Implementation of "Smart Islands" Pilot Project and its large-scale promotion



Project Overview

The pilot project deals with the design of the technical specifications and proposal for the necessary changes in the regulatory framework for the operation of a Non-Interconnected Island, with a very high penetration of Renewable Energy Resources maintaining the system operational security, while meeting demand in a reliable, secure and economical way.

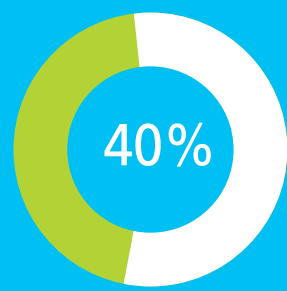
Benefits

The prospective benefits accrued by the Pilot Project are:

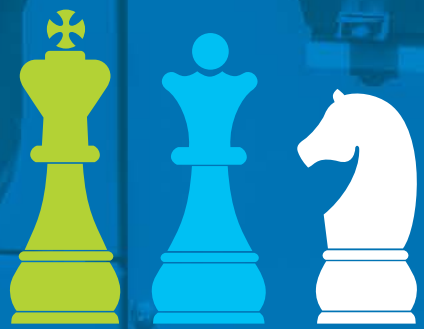
- ensuring system adequacy and power quality by the commitment of dispatchable (fully controllable) Hybrid Stations, comprising RES units (wind parks and photovoltaics) and storage units to provide guaranteed power and ancillary services
- exploitation of new production capacity through maximization of RES penetration in the energy mix of the Electric System of NIIs
- environmental benefits (reduced greenhouse gas emissions, reduced noise levels, reduced waste, etc.)
- reduction of reliance on imported fuels
- minimization of thermal production costs
- promotion of new technologies and innovative solutions in the operation and management of isolated island systems and microgrids
- Development of advanced expertise and experience building.

Project Progress

The development of the proper legislative franework is expected to be completed in December 2018. Up to December 2017, 40% of the Project had been completed.
A recommendation to RAE is in progress concerning the opinion and issuance of relevant Ministerial Decisions determining the appropriate implementation framework of three Special Pilot Projects (SPP - Smart Islands) in the context of the new relevant Law 4495.



Automatic Meter Reading (AMR) of Low Voltage (LV) Consumptions: Pilot Project and roll-out



Project Overview

The Project involves implementation of a Pilot remote-metering and management system for 200.000 electricity supply points at LV consumers. Existing conventional meters will be replaced by "smart" electronic meters supporting remote reading in specific regions of the country (Xanthi, Lefkada Lesvos, Limnos, Ag. Efstratios) and in representative places in Athens and Thessaloniki. It also involves planning of the nationwide implementation of smart metering (roll-out).

New Systems and Services

- Core equipment (Hardware – Software) for the Telemetering center (master and backup)

- Supply of approximately 200.000 smart meters along with the relevant telecommunication equipment and their incorporation in the central Telemetering system

- Hardware and Software for support of the web-based platform (portal)

- Hardware and Software) for support of communication with portable devices

- Security and uninterruptible operation infrastructure Training and support services

Benefits

The Project paves the way for nationwide implementation of Telemetering.

• Useful technical and organizational insights obtained during the planning and implementation of the pilot project will contribute in the preparation of the smart meters roll-out nationwide and the better quantification of the Cost Benefit Analysis of the major roll-out project.

• economical and operational benefits of Telemetering. Customer access to real-time information for motivating –through proper incentives– rational electricity consumption, facilitation of competition in the retail electricity market, new business opportunities for energy services companies, facilitation of meter reading and inhibition of energy theft, improved network operation, reduced operational cost, etc.

Project Progress

Up to December 2017, the tender procedure had been concluded and the award of the contractor undertaking the supply of the equipment and software of the Remote Reading center and the installation of the new meters is pending. The progress of the Project depends on the Council of State rulings following the tenderers' objections. Irrespective of the progress of the pilot project, studies for the preparation of Remote Reading for all over the country are developed.

Reorganization of supply chain

Project Overview

The Project deals with the reorganization of the supply chain by the introduction of improved and modern methods, practices and processes. It also involves the optimal utilization of the existing ERP/SAP system.

New Systems and Services

- Study for supply chain restructuring
- Upon concluding the study, specific actions will be defined.

Benefits

Implementation of the Project is expected to bring the following benefits:

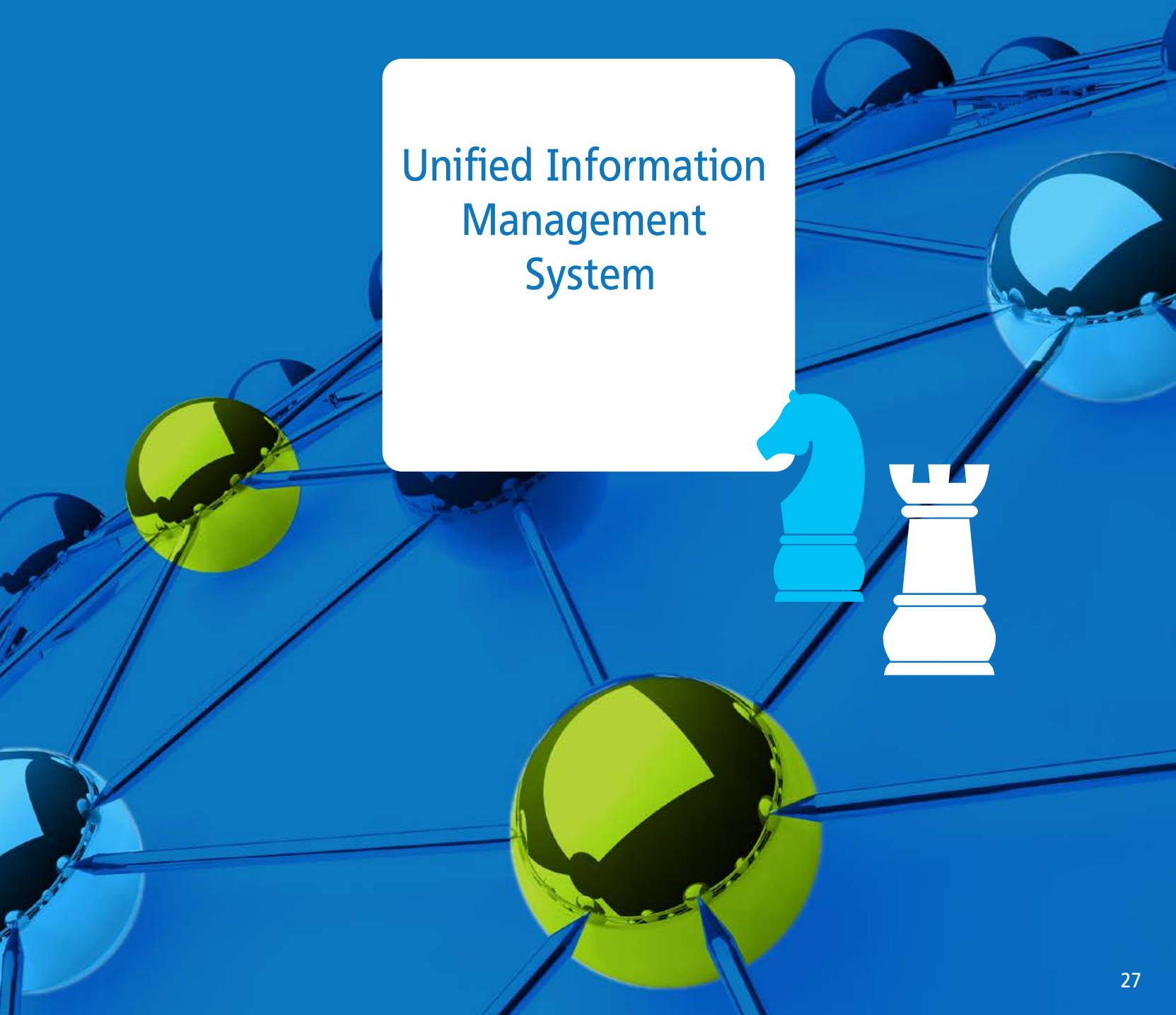
- the creation of a comprehensive proposal for actions for the organizational, administrative and operational reconstruction of the Company in every field of the supply cycle
- the reorganization of the Warehouses
- the optimum redistribution of the fleet of vehicles
- the central and uniform systemic management of the stock by using appropriate information systems
- the creation of procedures in the framework of national and international standards
- the decrease in the operational cost of the supply chain via system utilization, work concentration and more effective resource management.

Project Progress

The Project is expected to be completed by the end of 2021. Up to December 2017 the survey for restructuring the supply chain for the following areas has been completed: Supply Chain, Warehouses – Stock and Vehicle Fleet Management. A series of proposals have resulted from surveying each of the above areas. These are evaluated based on their complexity, the number of changes and their level of difficulty as well as the immediate benefits that they will bring about for the Company. The following actions are currently underway:

1. Preparation of Tender for appropriate spaces, in Athens and Thessaloniki to be used as HEDNO's Central Warehouses based on the reorganization study of the Supply Chain
2. Preparation of Tender for a relocation study and implemention of the transport to the areas of Action 1.
3. Preparation of Tender for the leasing of professional vehicles to replace existing outdated vehicles.

Unified Information Management System



Project Overview

The scope of the project concerns the development of an integrated Information Management System (IMS) of operational (Operational Technology - OT) and Information (Information Technology - IT) systems, (GIS, new customer service information system, SCADA-DMS, etc). Key objectives of the Information Management System are:

- a Unified Data Model for all OT/IT systems;
- common data input point for all OT/

IT systems;
- data validation;
- matters related to data cyber security;
- adoption of relevant industrial standards to integrate the systems by adopting CI standard, ICCP.

New Systems and Services

- Servers
- Enterprise Service Bus (ESB)
- Databases

Benefits

The benefits expected from the implementation of this Project are related to:

- the decrease in technological risks thanks to the development of complete operational and information systems
- the conclusion of operational and information systems and the adoption of common standards that will contribute towards accelerating digital transformation
- optimization of corporal procedures and taking decisions via improved information management
- decrease in the maintenance and operation cost of the operational systems by adopting common practices and integration with the information systems
- the decrease in the maintenance and operation cost of the information systems
- the activation of the possibilities for the management of assets, improvement of forecast and maintenance of operational systems
- the possibility of future application of Big Data Analytics in operational data

Project Progress

The Project is expected to be completed in the 1st semester of 2021. Up to December 2017, 5% of the Project has been completed. The High Level Blueprints have been concluded and the preparation of the documents for the tender to select a contractor for the supply and installation of the information management system is in progress.