kartECO
environmental and energy engineering consultancy

GET IN TOUCH

with us

www.karteco.gr

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P.C. 57001, Thessaloniki, PO.Box
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N. Moudania, nearby
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COMPANY PROFILE

kartECO
Environmental & Energy Engineering Consultancy

- Environment
- Energy
- Construction
- Cadastral surveys & Mapping
- Research & Development
- Environmental IT tools
- Green Roof Distributor (BAUDER)

kartECO
CONTACT DETAILS

Legal name: Karteris Apostolos - Karteris Marinos OE
Trade name: kartECO - Environmental & Energy Engineering Consultancy

Registered Company Name: kartECO - Environmental & Energy Engineering Consultancy
Hellenic Commercial Registration Code: GEMI.124131704000
Vat: EL998359389
Register: Thessaloniki

Address: Philippos Business Center, Ag. Anastasias & Laertou, Pylaia, P.C. 57001, Thessaloniki, P.O.Box 60824,
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Website: www.karteco.gr

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Learn about us

The team of kartECO has been especially organized and staffed since 2007 as an environmental and energy engineering consultancy in order to provide high quality services on national and international level.

WHO WE ARE

Founding members of kartECO are Karteris Apostolos, Dr. Environmental Engineer and Karteris Marinos, Dr. Mechanical Engineer. Permanent external partner of the company is Karteris Michael, Emeritus Professor of Forestry at Aristotle University of Thessaloniki. The team of kartECO consists of qualified engineers, environmentalists and foresters, with diversified experience and background, specialized on public and private work studies as well as research and development co-funded activities and initiatives.

What is our aim?

The company is a multi-expertise engineering consulting firm, constantly engaged in a wide range of activities related to:

- environmental protection and management,
- natural resources management (terrestrial and marine),
- energy saving in building and industrial sector,
- renewable energy sources implementation,
- GIS and Remote Sensing utilization,
- IT tool design and development for environmental applications, and
- international research programs and development projects

Main target of our company is to combine the above topics with sustainable development and wellbeing. To this aim, our team provides advanced consulting services both to private and public sector, by continuously seeking efficient key solutions, designing innovative tools and implementing state of the art environmental practices.

Our company history

2007
Our foundation

2010
Participating in our first international project regarding energy saving

2011
Initiating our first research project on intelligent monitoring of air quality

2015
Succeeding -for first time- an annual turnover over 1M€, by completing our 1st Forest National Cadastral project in Greece

2016
Being certified according to ISO 9001:2015

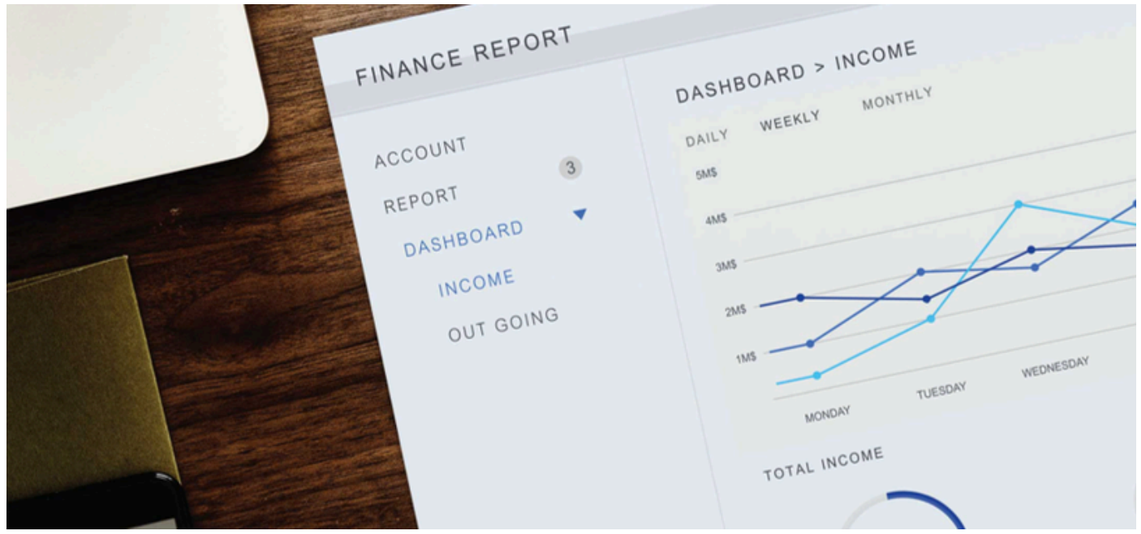
2017
Awarded for our innovative air quality monitoring tool (AID) by NBG - Business Seeds

To date
Participating successfully in over 15 international projects in countries like Albania, Armenia, Azerbaijan, Bulgaria, Cyprus, Lebanon, N. Macedonia, Moldavia, Turkey, Rwanda, Vietnam.

2024
Being certified according to ISO 14001:2015

2021
SenSPA tool: Winning the Information and Knowledge thematic category of the Disruptive Tech Challenge 2021 of the World Bank

What we have achieved



Over 230
SATISFIED CUSTOMERS

Over 250
ENVIRONMENTAL PROJECTS

CERTIFIED
ACCORDING TO ISO 9001:2015 & 14001:2015

2
INNOVATION AWARDS

80,000 m²
ENERGY STUDIES

46,000 m²
ENERGY AUDITS

35,000 m²
GREEN ROOFS

2
REGIONAL FOREST CADASTRE PROJECTS IN GREECE

Over 20
INTERNATIONAL PROJECTS UNDER EU, WB, UNDP, ESA, FAO, KFW, ENABEL, EBRD

7
RESEARCH PROJECTS WITH CO-FUNDING IN GREECE AND EU

Our certifications / awards

ISO 9001:2015

Based on the main principles of high competency, know-how and specialized quality services, kartECO has achieved to be established as one of the most rapidly evolving and acknowledged companies in the field. It is not a coincidence that over 150 firms till today, among them many Greek and multinational groups, have trusted kartECO as their technical consultant both in environmental and energy topics. As an expected outcome, there has been a continuous development and improvement of the company's organization structure and quality of its services. In July 2025 the company completed successfully the renewal of the certification of its Quality Management System (QMS) according to EN ISO 9001/2015. Upon inspection by the certification body QMS CERT, it was verified that the company's organization is fully complied with the requirements of the standard.

CERTIFICATE
Q-CERT

QMSCERT, an accredited provider of third-party system certification attests that:

Karteris A. – Karteris M. O.E.
kartECO

PHILIPPOS BUSINESS CENTER, AGIAS ANASTASIAS & LAERTOU, PYLAIA GR-57001, P.O. BOX 60824, THESSALONIKI, GREECE

with a scope of:

Provision of Services and Activities at National and International Level in the Sectors of Natural (Terrestrial and Marine) Environment - Environmental Licensing - Energy Saving in Buildings and RES - GIS - Mapping and Remote Sensing - Environmental Databases and Geoinformatics - R&D projects and Particularly on Subjects such as Environmental and Social Impact Assessments and Stakeholder Engagement Plans, Biodiversity Studies and Ecological Assessments, Environmental Monitoring, Energy Studies and Energy Audits, Forest and Cadastral Studies, Due Diligence Reports for Large-Scale Investments, Photointerpretation Studies, Design and Development of Environmental IT Tools and Databases

has established a
QUALITY MANAGEMENT SYSTEM
that is in conformance with the requirements of the International Standard

EN ISO 9001:2015

July 14, 2028 — Certification Period Ending
July 15, 2016 — Initial Certification Date
July 15, 2025 — Certification Date
IAF/EA Subsector: 33, 34.1, 35.1
For the QMSCERT Board

This certification is subject to Annual Surveillance Audits. The certification is valid (for three years) only if it is followed by the annual surveillance audits approval.
For information concerning the validity of the certificate, you can visit the site www.qmscert.com

Certificate No: 150716-3

MS Certification Cert. No. 110

Q-CERT

QMSCERT VLASIOU GAVRIELIDI Str. 28 – GR 546 55 – THESSALONIKI - HELLAS

ISO 14001:2015

In December 2024 the company was certified according to EN ISO 14001:2015 standard for Environmental Management System (EMAS) by the Certification Body QMS CERT. By following this standard, kartECO demonstrates its commitment to actively reduce the company's environmental impact - such as minimizing waste, conserving resources, and lowering pollutant emissions - while also ensuring compliance with applicable legal requirements and monitoring its environmental performance to achieve set objectives.

CERTIFICATE
Q-CERT

QMSCERT, an accredited provider of third-party system certification attests that:

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kartECO

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has established an
ENVIRONMENTAL MANAGEMENT SYSTEM
that is in conformance with the requirements of the International Standard

EN ISO 14001:2015

December 02, 2027 — Certification Period Ending
December 03, 2024 — Initial Certification Date
December 03, 2024 — Certification Date
NACE Code(s): 62, 70.22, 71.12
For the QMSCERT Board

This certification is subject to Annual Surveillance Audits. The certification is valid (for three years) only if it is followed by the annual surveillance audits approval.
For information concerning the validity of the certificate, you can visit the site www.qmscert.com

Certificate No: 031224-1

MS Certification Cert. No. 110

Q-CERT

Our certifications / awards

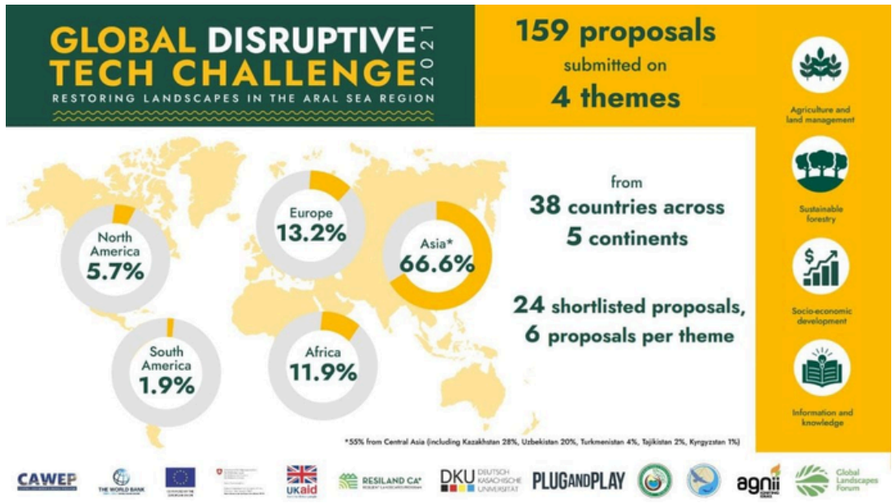
Innovation and entrepreneurship awards

AID

Air pollution Intelligent Defense (http://aid.karteco.gr/en/index) in 2017 was awarded with the 5th place in the 7th "*Innovation and Technology*" National Competition organized by the National Bank of Greece (NBG Business Seeds).

SenSPa

We are proud and honored for WINNING the Information and Knowledge thematic category of the Disruptive Tech Challenge 2021: Restoring Landscapes in the Aral Sea Region, with the disruptive project proposal "*SenSPa App–Sentinels for Sustainable Pasture Management: Application in the Aral Sea region and Central Asia*".
The challenge was administered by the World Bank and informed the Resilient Landscape Program in Central Asia RESI - LAND CA. It was implemented by the Kazakh - German University (DKU), the Global Landscapes Forum (GLF) and Plug and Play (PandP).



Our services

ENVIRONMENT
Environmental licensing
Management of natural environment
Water supply / Wastewater
Solid waste
Monitoring / Measurements / Analyses
Expertise reports

ENERGY
Energy saving and management
Energy audits
Photovoltaic systems

CONSTRUCTION
Licensing / Permits
Technical studies / Supervision
Green roofs

GREEN ROOF DISTRIBUTOR (BAUDER)
Wholesale of the greenroof systems
Plant substrate production
Design implementation studies
Project and site management
Expertise technical support

ENVIRONMENTAL IT TOOLS
WebGIS tools
Decision Support Systems
Information systems
Custom tools

RESEARCH & DEVELOPMENT
Research & Development programs
Capacity building & academic activities
Scientific publications & dissemination initiatives

CADASTRAL SURVEYS & MAPPING
Remote sensing
Photogrammetry
Geographical Information Systems (GIS)
Natural resources and Agro-Environment
Urban environment

Our expertise

ENVIRONMENT

Our team provides high quality and long-term services on environmental protection and management, aiming to human protection and legislation compliance, by taking advantage of our deep knowledge and broad know-how and utilizing our expertise software and tools as well as implementing and adopting new and innovative environmental technologies and best practices.

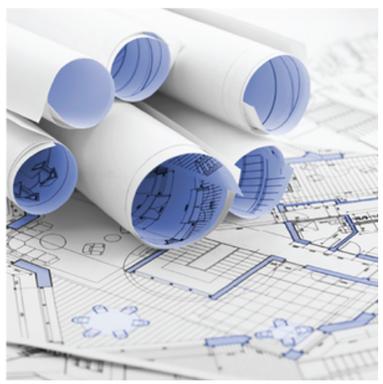
Environmental licensing	• environmental impact assessment • ecological assesments in protected areas • environmental liability / corporate social responsibility • integrated pollution and prevention control
Management of natural environment	• forest and pasture management • studies on flora and fauna • studies on marine environment • soil - water resource management
Water supply - Wastewater	• water treatment, use and supply • urban and industrial wastewater • natural wastewater treatment systems
Solid waste	• solid waste management permits • hazardous waste management studies • sludge treatment and disposal studies • recycling
Monitoring - Measurements - Analyses	• environmental compliance • flora and fauna in protected areas • air quality (indoor and outdoor) • water quality and soil • noise • health and safety
Expertise reports	• environmental due diligence • forest and land use • climate change mitigation and adaptation • environmental degradation and pollution

ENERGY

We have long professional and academic experience in energy sector and numerous projects related to energy saving, energy design and renewable energy implementation.
Our team consists of Certified Energy Auditors and Managers, while our acquired measurement equipment and modeling software allow us addressing challenging energy related assigments.

Energy saving and management	• energy studies for building sector • renewable energy implementation studies • expertise energy simulations of buildings • consulting services and support within funding / investment programs
Energy audits	• energy audits of building facilities and HVAC systems • energy performance certification of buildings • audits of energy management systems per standard EN ISO 50001:2011 • energy audits of large private companies (Directive 2012/27/EU) • indoor environment measurements and monitoring
Photovoltaic systems	• retail sales, design studies and site management of new installations • engineering studies and licensing consulting services

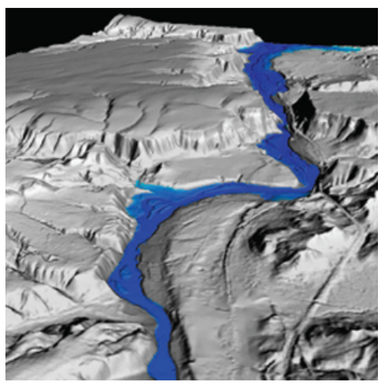
Our expertise



CONSTRUCTION

Our team provides high quality engineering consulting services mainly in industrial and residential private sector, completing since 2007 a remarkable amount of EIAs as well as several electromechanical and energy studies. In addition, our team holds Ministerial Licenses to conduct public studies in Greece mainly regarding environmental, forest and energy projects, providing expertise and technical support to the state and local administration.

Licensing - Permits	• licensing consulting services • building permits
Technical studies - Supervision	• EIAs, electromechanical and energy studies in industrial and residential sector • public engineering studies • supervision support at new building constructions and energy saving renovations
Green roofs	• design and simulations • engineering implementation studies • supervision support at new implementations • investment consulting services for public sector



CADASTRAL SURVEYS & MAPPING

In the era of Digital Convergence and Information, geospatial data represent the basis for the development of innovative applications. The management of geospatial data constitutes an integral part of public and private sector development policy.
kartECO is successfully responding to the above modern needs by undertaking projects related to mapping, cadastre and inventories and implementing them using new technologies. Furthermore, we offer IT solutions that support a wide range of geospatial applications and promote e-governance processes.

Remote sensing	• cartography • thematic mapping • multi-year monitoring applications • creation of Digital Elevation Models (DEMs) and Digital Terrain Models (DTMs)
Photogrammetry	• stereo photo-interpretation of aerial images • creation of DEMs and DTMs by aerial photos
Geographical Information Systems (GIS)	• GIS application development from local (municipality level) to large scale (country level) • web GIS custom applications and tools • geo-database development
Natural resources and agro-environment	• cadastral surveys and mapping • monitoring and management of Forest/Agro-Environment • change detection (identification of illegal building, illegal woodcutting and timbering, trespassing, etc.) • prediction, monitoring and management of extreme weather events and natural hazards • agricultural applications – precision agriculture
Urban environment	• mapping, monitoring and management of urban green areas • spatial planning of development and technical works • urban scale development and management studies

Our expertise

RESEARCH & DEVELOPMENT

High priority objectives of kartECO is to engage in research and development projects to design, develop and implement new practices, technologies and IT solutions.
Particularly, our team seeks new opportunities in co-funded research and development programs regarding mostly emerging environmental and energy markets. Additionally, we participate in capacity building events, academic activities and scientific dissemination initiatives. To this end, we constantly develop a wide network of key experts, scientific organizations and consulting firms in the EU, the Balkans and the Black and Caspian Sea region, Africa, as well as the Middle East.

Research & Development programs

Capacity building & $cademic activities

Scientific publications & 'issemination initiatives

ENVIRONMENTAL IT TOOLS

This department is structured with specific objective to design and develop IT solutions for environmental monitoring and data management, forest protection, energy management, climate change mitigation and adaptation, as well as digital services for citizen connection and access in local community administration.
Our IT tools have been already utilized by significant end users (municipalities, international organizations, utilities, etc.), within a great variety of environmental projects and innovative initiatives.

WebGIS tools

Decision Support Systems

Information systems

Custom tools

GREEN ROOF DISTRIBUTOR

BAUDER is one of the Europe's leading manufacturers of roof systems for over 150 years.
BAUDER is also a strong supporter of green roofs providing expert advice in addition to their decades of expertise with flat roofs and offering a wide range of tried-and-tested system designs for extensive and intensive roof planting.
We are proud to be the distributor of BAUDER’s green roof systems in Greece.

Wholesale of greenroof systems

Plant substrate production Design

implementation studies Project and

site management Expertise

technical support

Our international activities

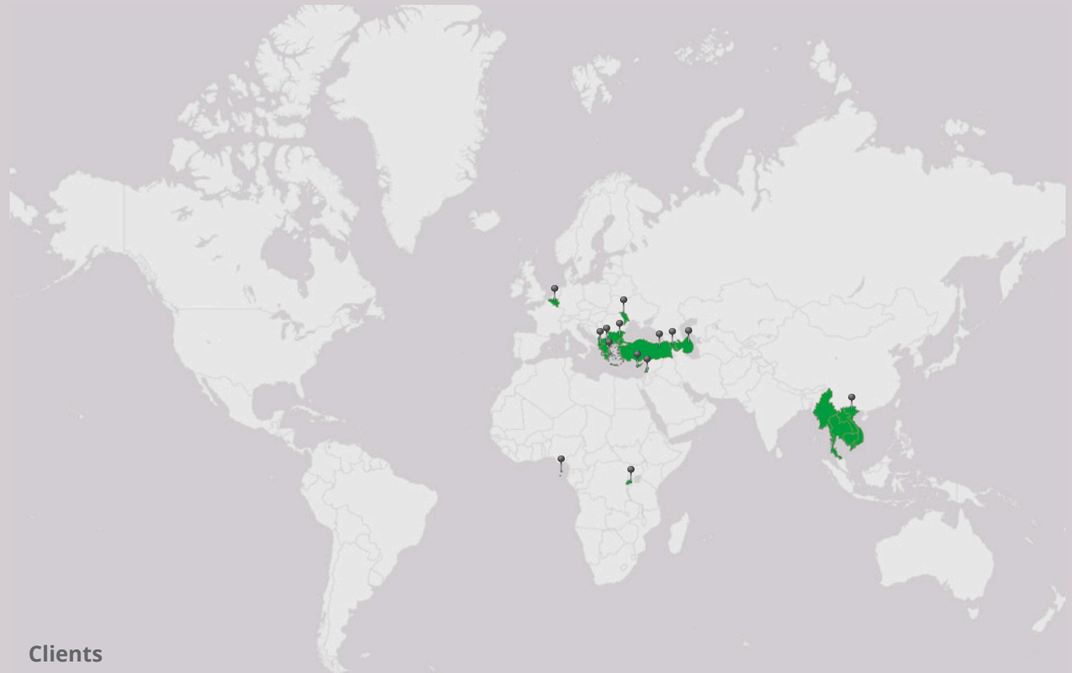
High priority of kartECO is to participate in international projects and pursue development initiatives in foreign countries with expanding environmental and energy markets. The last few years we constantly engage in innovation research calls as well as in international tenders and procurements on topics related to:

- environmental protection and management
- sustainable urban and rural development
- climate change mitigation and adaptation
- natural resource conservation
- energy saving in building and industrial sector
- renewable energy utilization
- well-being and public health protection

Within research and innovation programs, our team is collaborating on permanent level with national higher education institutes, public and private research organizations, NGOs, other SMEs and enterprises and external freelance experts.

Additionally, within pursuing projects procured by international organizations, funds and development programs (e.g. EU, WB, UNDP, ESA, FAO, KFW, ENABEL, EBRD etc.), kartECO has developed strong links and cooperations in the EU and emerging economies outside Europe.

Particularly, our collaboration network comprises international key players in environmental consultancy and -apart from EU-, is already extended in countries in Balkan peninsula (Albania, Bulgaria and N. Macedonia), in Black and Caspian Sea region (Armenia, Azerbaijan, Moldova and Turkey), in Middle East (Lebanon) and last but not least in Africa (Rwanda, São Tomé and Príncipe) and SE Asia (Vietnam).



Clients

European Union

THE WORLD BANK

UNDP

esa

KFW Bank aus Verantwortung

EBRD

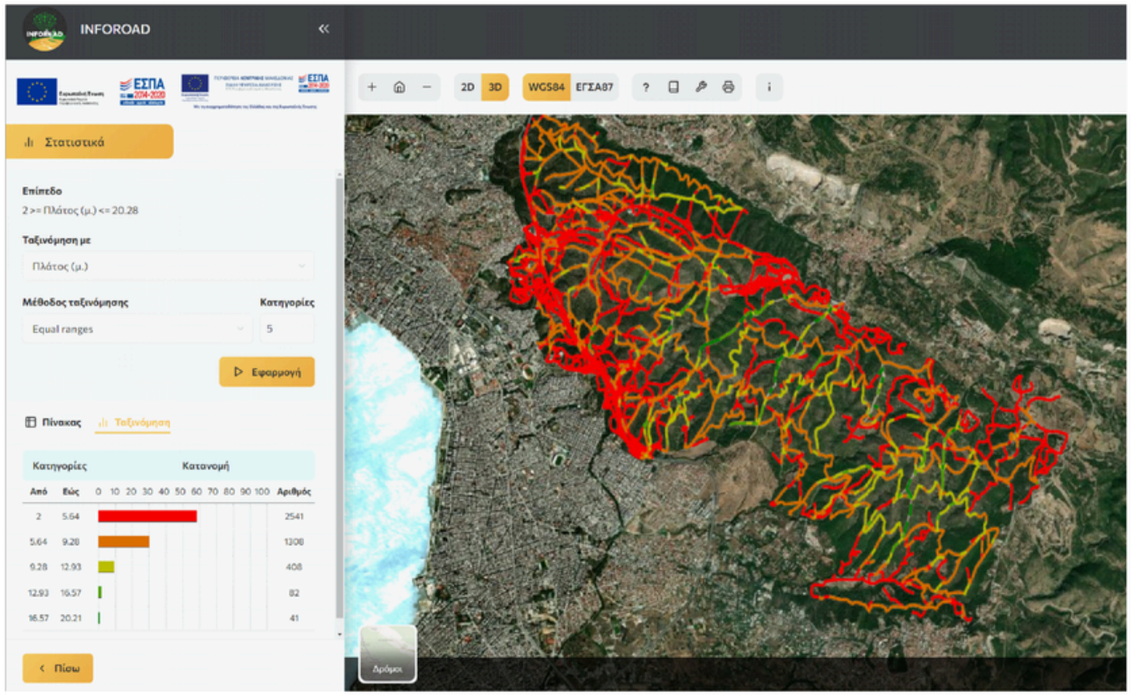
Food and Agriculture Organisation of the United Nations

Enabel

Countries

Services provided with our IT tools

We have developed a wide variety of IT tools throughout our activities with main objectives to facilitate assignments, such as data collection, visualization, query and analysis and provide efficient web solutions to support decision making.



WEBGIS TOOLS

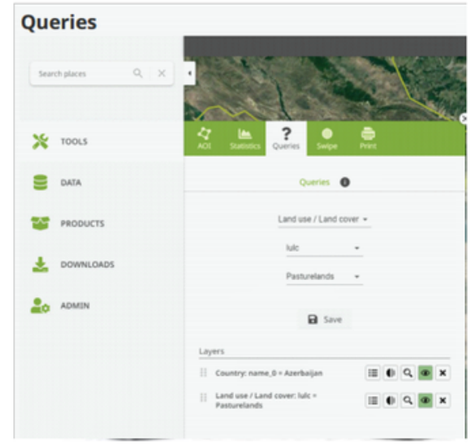
Custom, on demand, WebGIS tools to provide web management of spatial data at any time, from anywhere, allowing direct visualization, querying, analysis and interpretation.

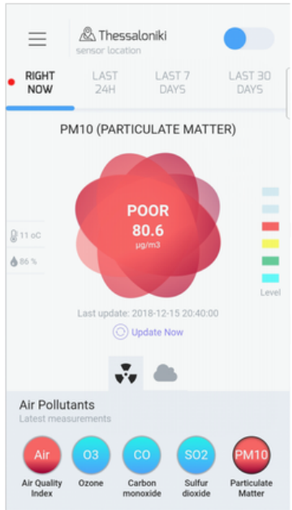
Implementation projects:
1) ECOSERVE - A Fleet / Ground support equipment management optimization tool targeting fuel economy in ground handling services
2) INFOROAD - An innovative web tool for mapping and monitoring forest and rural road network
3) RFO-SEA - Regional Forest Observatory for South-East Asia
4) UNFICYP - WebGIS tool for environmental audit of camps, observation posts and police stations in Cyprus

CUSTOM TOOLS

Tools which support field work activities, e.g. forest inventory surveys, environmental audits, etc., by providing a user-friendly interface for entering data, run automated calculations and assure the logical and referential integrity of the data.

Implementation projects:
UNDP - The development of forest inventory methodology within Sustainable Land and Forest Management in Greater Caucasus Landscape project in Azerbaijan.





INFORMATION SYSTEMS

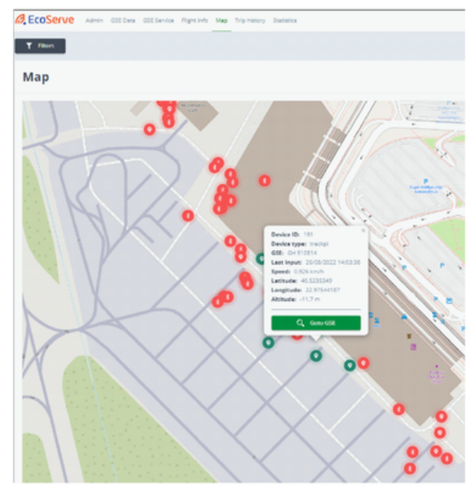
Innovative information systems providing solutions for environmental monitoring and assessment, natural environment preservation, energy consumption management, critical event control and mitigation, etc., by utilizing IoT, web based tools and databases as well as mobile applications.

Implementation projects:
1) AID - Air Pollution Intelligent Defense
2) Real-t-SO - Real time operational control tool of combined sewer overflows at coastal cities
3) Odor measurment map tool applied in the city of Thessaloniki, Greece
4) ENABEL - The development of a user-friendly and customized district forest management plans database in Rwanda

DECISION SUPPORT SYSTEMS

Systems to support decision making and strategic policy planning with the use of models and analytic techniques.

Implementation projects:
1) ICARUS - Integrated Climate forcing and Air pollution Reduction in Urban Systems
2) SenSPa - Sentinels for Sustainable Pasture Management



Some of our developed IT tools

https://inforoad.karteco.gr

General description

INFOROAD is a tool for recording, mapping and monitoring the forest and rural road network. INFOROAD provides information of the road network constructive characteristics and surface condition, as well as other significant information (e.g. vehicle turning points, water tank locations, accessibility for people with disabilities, places of aesthetic interest, etc.).

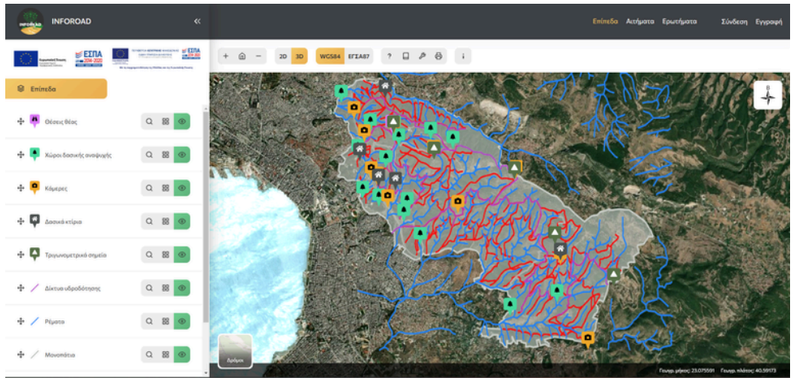
Where can it be applied

INFOROAD is an integrated tool that:

- Identifies problems in the road network for its faster restoration.
- Supports decision-making in response to natural disasters and crises (e.g. facilitate fire suppression operations and the safe and efficient movement of firefighting forces).
- Supports the sustainable management of the road network.
- Promotes areas of tourist and archeological interest.
- Supports the development of special forms of tourism (e.g. cycling tourism) and other sports and leisure activities.
- Contributes to the development and utilization of ecosystem services.
- Ensures easy and safe access to agricultural and livestock farms, in rural and forest areas.

Who Can Use it

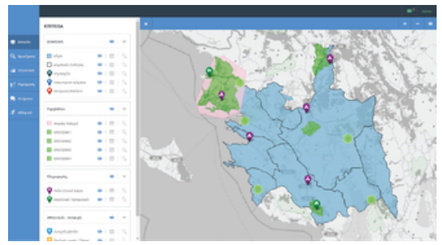
- Civil Protection
- Regions and local administrations
- Forest and Fire Services
- Other stakeholders (e.g. foresters, agronomists, farmers, traders of forest/agricultural products, mountaineering clubs, associations/organizers of mountain bike-motocross races, residents, visitors/tourists, people with disabilities, etc.)



Earth Polis

http://webgis.karteco.gr

Earth Polis is an independent WebGIS tool. It provides users with online access to spatial data, at any time and from anywhere. Local authorities, public utilities, private companies and citizens can use it to visualize, query, analyze and interpret data, in order to understand relationships, patterns and trends.



- It is made with open source software and is fully customizable.
- It is developed with add-ons architecture, allowing the option to select from the most simple system to the most complex one.
- It is easy to use, both by system administrators and individual users.
- Allows the update of information at any time.
- It provides specialized tools for the user to analyze and display the data.

TOOLS

Layers management

The user can manage the available geographic data layers, enable and disable them according to his requirements and access their descriptive data.

Citizens requests

The citizens are given the option to depict geographically a point of interest and then fill in the appropriate form and report a specific problem that has been identified in the region (tool for local government).

Creating queries

The user can create queries, using the available geographic data layers, depict the results of queries, adjust the visualization styling, etc.

Statistics

The user can produce statistics for each field, such as minimum, maximum and mean values, standard deviation, etc. and conclude to classifications by different methods, such as equal ranges, natural break etc.

Touring

Tourists and visitors of an area can create routes to follow with points of interest, for which detailed information is provided through the platform with text, photos and video.

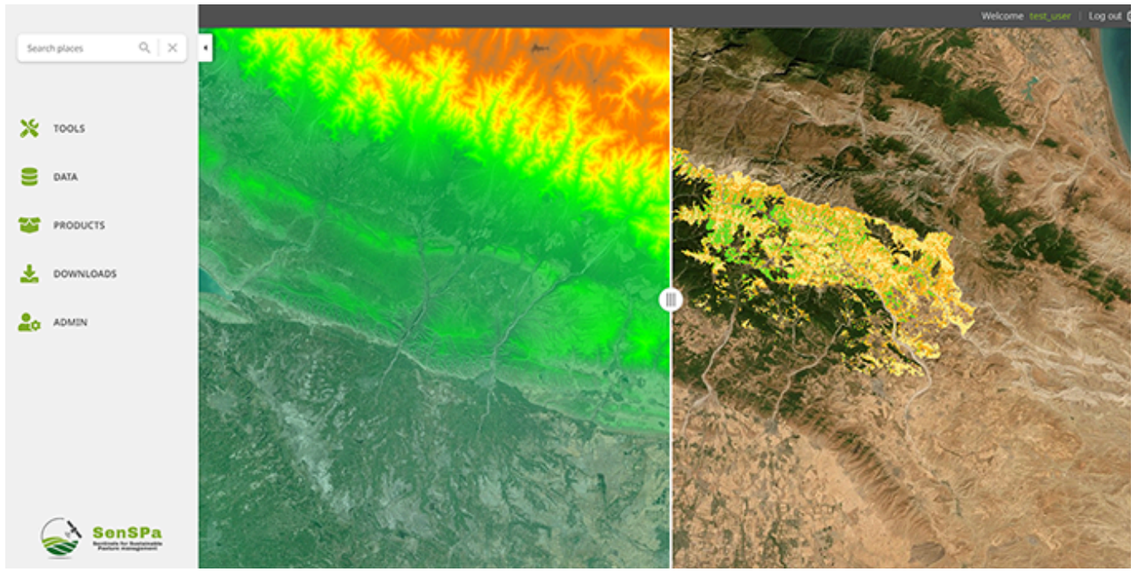
Some of our developed IT tools

SenSPa
Sentinels for Sustainable Pasture management

https://senspa.karteco.gr

Awarded with the WINNING prize in the Information and Knowledge thematic category of the Disruptive Tech Challenge 2021 of the World Bank.

The SenSPa tool is an on-line system that targets to assist sustainable pasture management, decision making, planning of activities and in the long-term pastures' restoration by providing useful, up to date information for sustainable pasture management. The information can be available to local and national public administrations, as well as to public and private stakeholders and end-users.



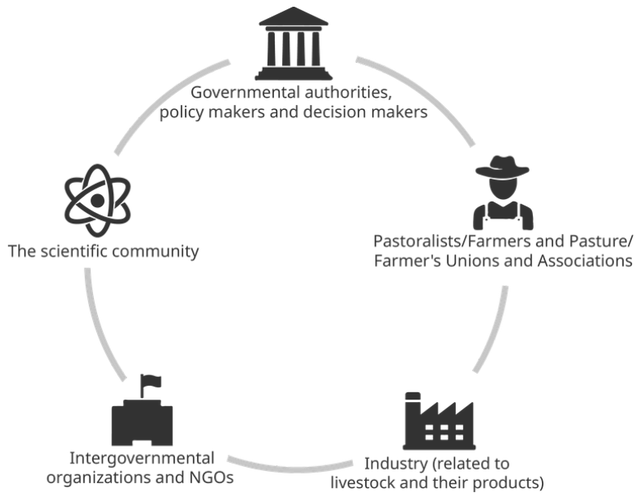
Where can it be applied?

The SenSPa tool primarily targets Central Asia and neighbor countries. Nevertheless, the tool has global application and can be used for several activities:

- Sustainable pasture management: facilitates stakeholders in monitoring and managing pastures sustainably
- Livestock management: assists livestock farmers to manage their herds more efficiently
- Policy making: assists governmental authorities and policy makers in decision making and planning of the long-term pasture management or restoration
- Research: assists researches to retrieve data and facilitate their research

Who Can Use it?

SenSPa provides added-value, cost-efficient and real-life-tangible solutions to various user categories:



What Products Are Provided to the User?

The SenSPa tool is processing continuously updated satellite data along with ancillary data in order to provide useful, up to date information for sustainable pasture management. The main products that are provided to the users are:

- Forage Production
- Grazing Capacity
- Plant Cover
- Pastures Condition
- Vegetation Indices and Band Ratios

Advantages

- Cost-efficient, web-based service
- Accessible from any computer or smart device
- Use of up to date information
- Wide range of features and pasture related products
- Wide range of applications

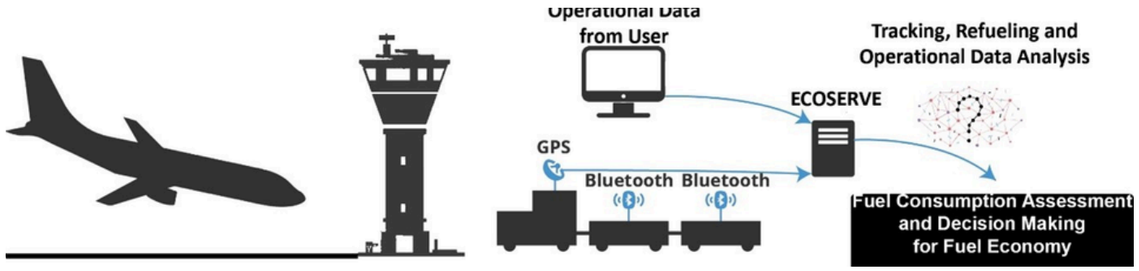
Benefits

- Supports sustainable pasture management and improved grazing management
- Increase of livelihood

Some of our developed IT tools

EcoServe

EcoServe is a Fleet / Ground support equipment management optimization tool targeting fuel economy in ground handling services.



How does it work?

- Real-time GPS tracking and operational data collection using custom-made tracking devices implemented on GSEs
- Refueling data collection utilizing an interactive user-friendly dashboard
- GSE maintenance, flight info and ground handling services data monitoring by automated connection to ground handling company's database
- Fuel consumption modelling using GSE trip tracking data

What services are provided?

- Real-time and historical GSE trip data (mileage driven, engine operational time) and flight info visualization in the airport map
- Trip, operational and refueling data analysis and assessment
- Refueling data control by comparing with fuel consumption modelling
- Key performance indicators evaluation for fuel consumption of ground handling services
- Alerts and notifications for significant deviations on fuel consumptions, irrational refuelings, unreasonable maintenance events, recorded data errors
- Online tool with admin and reporting export capabilities, valuable and user-friendly analytics and dashboards for an integrated GSE energy management

AID

http://aid.karteco.gr

Awarded in the "*Innovation and Technology*" National Competition organized in 2017 by the National Bank of Greece (NBG Business Seeds)

AID is an Innovative Real Time Air Quality Monitoring System consisted of multiple measurement stations and an interactive multi-agent network with main target to assess air quality and environmental conditions and support decision making and action implementation for public health protection and air pollution mitigation.

Perceives and evaluates the current environmental conditions using fuzzy logic

Informs the users with appropriate messages and indicators through internet and mobile app.

Decides for the appropriate actions towards public health protection and air pollution mitigation.

Implements respective interventions in order to control air pollution critical events

Some of our developed IT tools

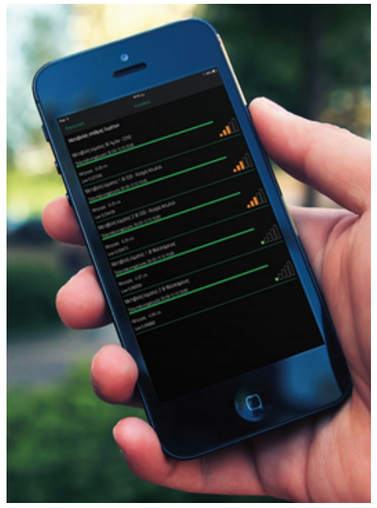
Real-t-SO
REAL TIME SEWERAGE OVERFLOW

https://realtso.karteco.gr/en

Real-t-SO is an Innovative Real Time Information System consisted of an interactive multi-agent intelligent network with main target to monitor and control both seawater intrusion and waste water overflows in Combined Sewer systems in coastal cities.

What is its objective?

The real time monitoring of seawater intrusion and waste water overflows, the continuous support of the sewage company in dealing with these issues and the direct implementation of corrective actions mainly related to the operation of the electromechanical equipment within the Combined Sewer system.



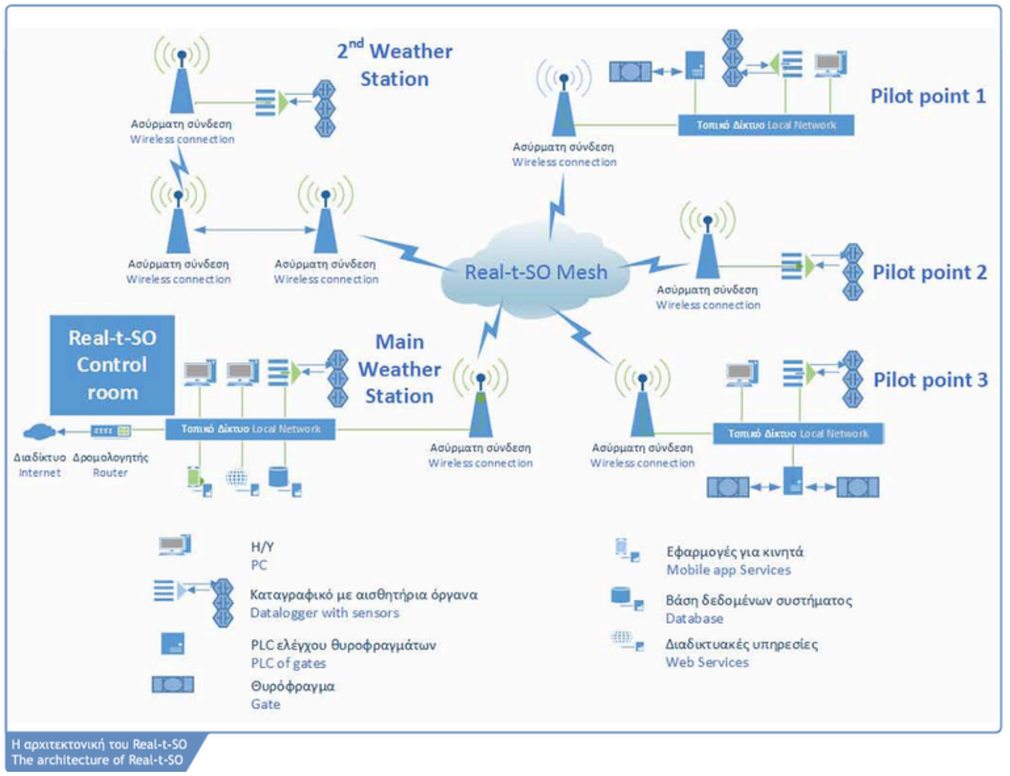
What services are provided to the sewage company?

The system receives and assesses real time measurement data from multiple environmental sensors in order to:

- Inform the staff of the sewage company about the combined sewer system's operational conditions
- Predict undesired conditions (e.g. weather conditions that can lead to seawater level raise and consequently to seawater intrusion)
- Alert in cases of wastewater overflows and/or in cases of seawater intrusion
- Decide in real time the appropriate corrective measures (e.g., moving gates, etc.) during critical conditions and implement a series of actions till the desired state of the combined sewer system is re-established

What are its benefits?

- The protection of the environment especially when receiving surface waters from the combined sewer system
- A reduction in frequency of wastewater overflow events due to unpredicted pipeline blockage.
- The elimination of high conductivity in wastewater treatment plant effluents caused by seawater intrusion, which renders the wastewater detrimental to plant growth and therefore unsuitable for re-use purposes
- A reduction in the added costs of transporting and treating seawater.
- The decrease in the number of interventions necessary to unlock flaps, which catch debris and remain opened as well as the time required by the sewerage company's staff to inspect the sewerage network.



Η αρχιτεκτονική του Real-t-SO
The architecture of Real-t-SO

Our greenroof solutions

BAUDER

http://www.karteco.gr/greenroofs

BAUDER is one of the Europe's leading manufacturers of roof systems for over 150 years. A total workforce of around 750 people is employed at their main production plant in Stuttgart and their five other sites in Germany. BAUDER is also a strong supporter of green roofs providing expert advice in addition to their decades of expertise with flat roofs and offering a wide range of tried-and-tested system designs for extensive and intensive roof planting. A BAUDER green roof combines the finished planting scheme and all its supportive components with a high quality and secure waterproofing system to give you the best results every time.

kartECO is proud to be distributor of BAUDER's green roof systems in Greece and authorized as an approved green roof contractor (www.karteco.gr/greenroofs). Our green roof department provides:

- Wholesale of greenroof systems
- Plant substrate production
- Design implementation studies, project and sitemanagement and expertise technical support

BAUDER

Paul Bauder GmbH & Co. KG
Korntaler Landstraße 63
70499 Stuttgart
Phone: +49 7 11 / 88 07- 0
Fax: +49 7 11 / 88 07- 300
stuttgart@bauder.de

CERTIFICATE

Stuttgart, 15.07.2016

We hereby confirm that the company

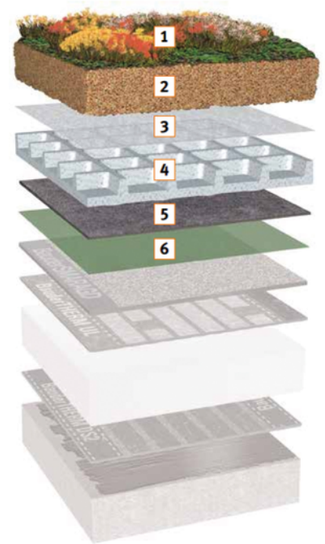
kartECO
Philippos Business Center
57001 Pylaia
GREECE

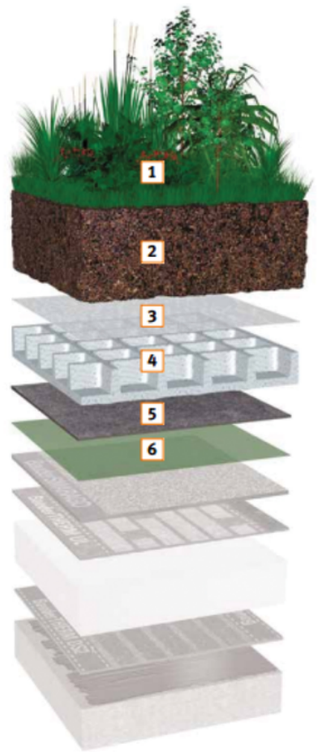
is authorized by us as approved contractor for Bauder green roof systems.

Kind regards

Paul Bauder GmbH & Co. KG

i.A. Matthias Barnert





Examples of green roof system designs

Extensive 1: WSP 50 water storage panel

Superior roof planting

Storage capacity of the water storage panel ≥ 10 l/m²

1	Planting	Bauder low-growing perennials Bauder seed mix
2	Vegetation layer	Bauder extensive vegetation soil
3	Filter layer	Bauder FV 125 filter fleece
4	Water storage and drainage layer	Bauder WSP 50 water storage panel
5	Protective layer	Bauder FSM 600 protection mat
6	Separating and sliding layer	Bauder PE 02 separating foil

Intensive 1: WSP 75 water storage panel

Huge storage capacity

Storage capacity of the water storage panel ≥ 21.5 l/m2

1	Planting	Bauder low-growing perennials Bauder seed mix
2	Vegetation layer	Bauder extensive vegetation soil
3	Filter layer	Bauder FV 125 filter fleece
4	Water storage and drainage layer	Bauder WSP 50 water storage panel
5	Protective layer	Bauder FSM 600 protection mat
6	Separating and sliding layer	Bauder PE 02 separating foil

Meet our people

The team of kartECO consists of qualified engineers, environmentalists and foresters with diversified experience and background specialized on public and private work studies as well as research and development co-funded activities and initiatives.
Our team is constantly engaged in promoting scientific knowledge in environmental and energy related topics and increasing public awareness about eco-friendly solutions for modern society. Therefore, it is actively participating in capacity building workshops, technology forums, academic lectures and other training events. Furthermore, proving that our work and progress is continuously approved from the scientific society, our team has already published numerous papers on environmental, forestry, remote sensing and energy topics in scientific journals and conferences.

Dr. Apostolos Karteris

Co-Founder Dr.
Environmental Engineer

a.karteris@karteco.gr

Co-founder and Head of Business Development in kartECO. Environmental Engineer with Doctorate on wastewater treatment modelling. Holder of Ministerial License for Environmental Assessments in Greece. Project manager with 20 years of experience on EIAs, environmental auditing, ecological assessments, SEA, capacity building regarding environmental legislation, field sampling, etc. Managerial coordinator on international resource management projects funded by IFIs (UN, ENABEL, WB, Europaid. etc.).

Dr. Marinos Karteris

Co-Founder
Dr. Mechanical Engineer

m.karteris@karteco.gr

Co-founder and Financial Manager of kartECO.
Mechanical Engineer with Doctorate on large-scale utilization of solar energy in the urban built environment. Holder of Ministerial Licenses for Energy & Electromechanical Public Studies in Greece. Certified Energy Auditor in Greece for buildings and HVAC systems and Lead Auditor of Energy Management Systems as per standard ISO 50001:2011. Project manager with 12 years of experience on energy saving, RES exploitation, air quality and climate change, energy audits, energy management systems and IT environmental tool implementation.

Em. Michael Karteris

External Partner
Emeritus Professor, AUTh

karteris@karteco.gr

Emeritus Professor and Former Director of Forestry Management and Remote Sensing Laboratory. Expert on forestry aerial photography, remote sensing, natural resources cartography, GIS and forestry photointerpretation. Project manager in the forest management, mapping and cadastre related projects of kartECO.

Dr. Emmanouel Tsiros

Project Manager
Dr. Agro-environmentalist

e.tsiros@karteco.gr

Agro-environmentalist with PhD in Satellite Agroclimatology/Hydroclimatology and MSc in Sustainable Management of Aquatic Resources. Holder of Ministerial License for Environmental Studies in Greece. Project manager with 18 years of experience in remote sensing and GIS applications, field surveys in natural environment, yield and climate modeling. He is the Technical Manager of remote sensing and regional forest cadastre projects and mainly engaged in international and R&D projects.

Panagiota Kasapidou

Project Manager
Environmentalist

p.kasapidou@karteco.gr

Environmentalist with MSc in Environment - New Technologies and MSc in Environmental Protection & Sustainable Development. Project manager with 16 years of experience on EIAs, ecological assessments, environmental studies, field studies, etc. She is the responsible of the quality assurance and mainly engaged in the tender and procurement preparations.

Dr. Dimitra Rapti

Project Manager
Dr. Forester/Environmentalist

d.rapti@karteco.gr

Forester / Environmentalist with a PhD on Ecology and Rangeland Management. Expert on ecology, rangeland management and landscape diversity. She is mainly engaged in natural environment and GIS projects of kartECO.

Dr. Stefanos Ispikoudis

Project Manager
Dr. Forester/Environmentalist

s.ispikoudis@karteco.gr

Forester / Environmentalist with a PhD on General and Forest Ecology and Silviculture. Expert on environmental and ecological surveys, forest inventory and propagation of forest plant species. He is mainly engaged in natural environment projects of kartECO.

Eleni Tokmaktsi

IT Manager
Geologist / Geophysicist

e.tokmaktsi@karteco.gr

Geologist with MSc in Applied Geophysics. She is experienced with desktop GIS, web development and programming. She also possesses experience in Geophysical measurements related to environmental and technical issues as well as natural resources exploration. She is mainly engaged in IT-related projects of kartECO.

Labrini Karamouza

Assistant Manager
Geographer

l..karamouza@karteco,gr

Geographer with a specialization in GIS, Physical Geography and Natural Environment, of Department of Geography of the University of the Aegean. She participates in kartECO projects related to environmental and phytotechnical studies, GIS, collection and processing of environmental data.

Our available infrastructure

Our infrastructure, technical equipment and software can support various aspects of research and development. The company possesses solid infrastructure, specialized software and a wide range of calibrated equipment for indoor and outdoor environmental measurements.





Specialized software

Type	Name
Energy simulations of buildings	EnergyPlus
	TEE KENAK (official Hellenic software for energy simulation of buildings)
Geographic Information Systems	ArcGIS Desktop Advanced
Renewable energy system design	PV*Sol Expert set (grid & stand alone) + 3D shade analysis
	T*Sol Pro
	GeoT*SOL basic
	RetScreen International
Electromechanical, environmental and wastewater studies / Public and Private Works' management	FINE NG and ERGA NG
	ADAPT/FCALC

Measurement devices and monitoring systems

Type	Name
Air Quality (Outdoor and Indoor)	
Air quality monitoring station (SO_2, NO_2, O_3, CO, air temperature and air humidity)	Aeroqual AQM 60
Particulate matter monitoring station ($PM_{2.5}$ or PM_{10})	Aeroqual Dust Sentry
Small scale air quality monitoring station (NO_2, O_3, $PM_{2.5}$, air temperature and air humidity)	Aeroqual AQY
Portable air quality sensor for odor measurements (H_2S, NMHC, VOC, SO_2 and CH_4)	Aeroqual Series 500
Portable indoor air quality (CO_2, VOC, $PM_{2.5}$, NO_2, CO, O_3) monitoring devices	uHoo
Low cost sensors for $PM_{2.5}$ or PM_{10} measurements	iOTECH
Gas Detector Pump (e.g. CO, H_2S, SO_2, etc.)	Dräger
Multi gas (e.g. LEL, CO_2, O_2, etc.) detection instrument with external electric pump	Dräger X - AM 5000
Air sampling device (e.g. VOCs, PM, heavy metals, etc.)	Sensidyne, Gillian Gilair 5
Sampling meter of temperature, humidity, CO_2 (+data logger)	NDIR CO_2-Meter PCE-GA 70
Energy audits	
Infrared camera	PCE-TC 3
Sampling meter of temperature, humidity, lux, decibel	Environmental meter DT-2232
Meter of temperature, humidity (+data logger)	Mini-Datalogger PCE-HT 71N
Wind velocity meters	Digital anemometer TA-430 / Anemometer PCE-AM81
Electromagnetic protection	
Electromagnetic field meter	EMF/ELF Meter
AC Electric Field Meter	AC Electric Field Meter
Acoustic comfort	
Sound level meter	RION NL-20
Photovoltaic efficiency	
Solar radiation meter and photovoltaics' efficiency estimator	PCE-SPM 1
Outdoor and indoor audits	
Meters of distance, space and volume	Prexiso X2-Laser distance Meter Garmin
GPS devices with integrated camera	GPSMap 62/62S / Garmin Montana 650t / Garmin GPS 11
Biodiversity monitoring	
Binoculars	KONUS 10x50 WA

Tools to run our projects

Project management

Microsoft 365 is a Productivity Suite which has been designed for helping important works to be accomplished and facilitate project management. Microsoft Office 365 enables users to access documents from anywhere on a multitude of devices. It includes applications such as Outlook, Word, Excel, PowerPoint, Access. In addition to Office applications, Microsoft 365 includes the best productivity applications which are cloud based and provide advance security. Microsoft 365 provides all the tools that are needed to work, communicate, and collaborate with your team each day.

Microsoft Teams is an online free access communication platform. It provides project management and co-operation which is utilized by the entire project team. It is designed for helping the co-operation within the members of the team, as it creates a public “space”, where the team can share access to project files, information, stay in contact and organize meetings.

Microsoft Planner

- Work management in one simple experience.
- A powerful tool for teams across departments.
- Management of tasks, to-do lists, plans, and projects across Microsoft 365 apps in one place online.
- Cocreation and collaboration on plans with company team for effective work management.
- Creation of project plans with powerful scheduling and resourcing tools that evolve as the plans evolve.
- Proactive management and allocation of resources as needs change with access to real-time dashboards and visualizations.
- Definition of plan goals at the organizational, team, or project level to help align work to strategic goals.

Network infrastructure, data protection and file backup

kartECO utilizes the latest network and storage infrastructure for data and file management and protection.

For storage the company takes advantage of Synology RackStation RS818RP+. NAS Synology RackStation RS818RP/PLUS has excellent performance and offers a complete file storage and management solution, so that the company can share and synchronize data efficiently. Particularly, NAS Synology RackStation

- makes data continuously available to collaborate effectively over a network;
- offers an easy-to-use option for shared data storage with RAID capability for data backup;
- provides the ability to set user permissions, folder permissions and restrict access to documents and project files; and
- deliver cloud and streaming services for recording, transforming, transferring and storing data remotely.

C2 Backup is a component of the Synology C2 cloud ecosystem, which offers effective protection and restoration for an infinite number of desktops and laptops and secures mission-critical data effectively with flexible backup and recovery options and highly configurable features tailored to businesses.

The company uses also Router Fortinet FortiGate® 50E Series with Fortinet UTM Protection for protection from malicious attacks and unwanted connections or abuses in its network.

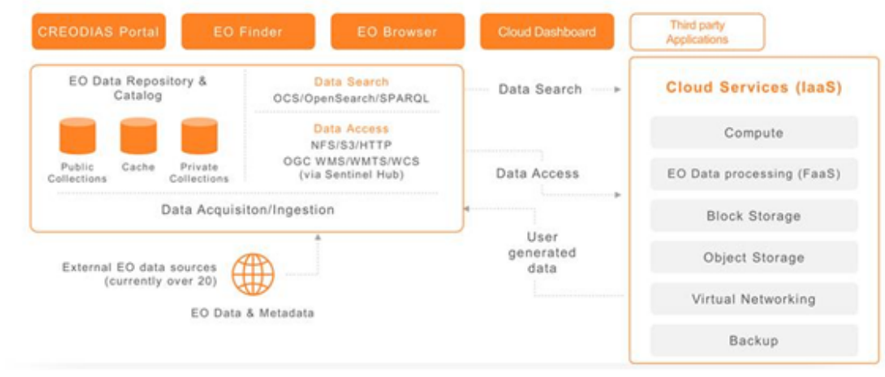
Tools to run our projects

Work remotely

With FortiClient VPN, remote encrypted VPN connection is achieved with the Fortigate equipment. FortiClient is a business security tool. It includes safe and trustworthy access at business networks and applications from almost any remote location which is connected with internet and simplifies the remote user's experience with automatic connection possibilities and continuous VPN operation.

Geospatial web data management

kartECO utilizes services of CREODIAS such as, viewing satellite images of various resolutions and spectra, Virtual Machines on Cloud with operating system options (for example Windows, Linux), data storage space, type of logistics infrastructure (SSD, HDD) data protection, backup, dedicated line, etc. Applications such as Geoserver, PostgreSQL are possible to be installed on Virtual Machines, so that the current infrastructure may be supported for WebGIS platforms and for developing new ones.



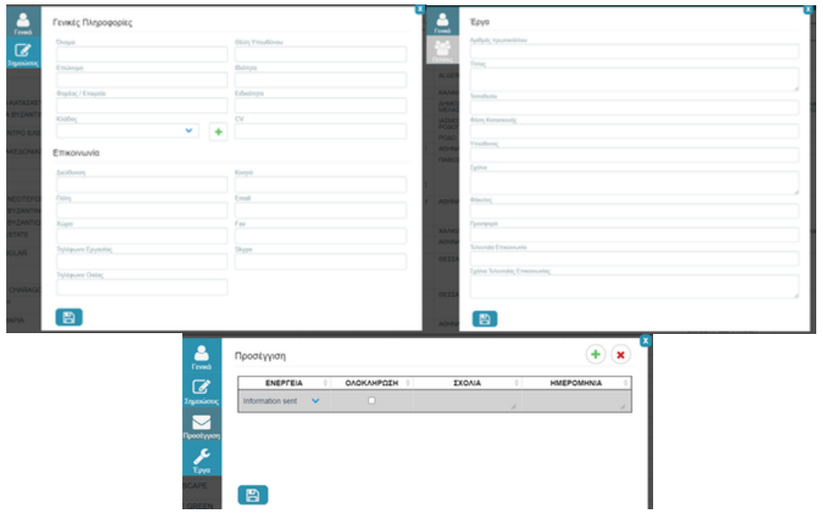
Communications

kartECO has a complete corporate communication solution with an advanced hybrid PBX (Private Branch Exchange) call center with unlimited possibilities such as teleconferencing and group device calls, firewall protection, remote communication with the internal network and connection to a dedicated Data Center to ensure a proper and continuous operation.

Client and partner management

The company has developed an in-house web platform to manage client relationships. The main purpose is to control the actions, sales and client services, as well as the promotion and communications in the context of project management, in a flexible, efficient and almost automated way.
The platform provides:

- detailed client and partner information;
- records of the communication actions of the company and control of the effectiveness of these promotion initiatives;
- information about the submitted proposals and potential projects and clients;
- connection with customers and partners with current projects and summary of the company's relations with customers and / or partners.



Some of our Clients / Partners

EcoContact Public Association

Goulandris Natural History Museum Greek Biotope/Wetland Centre

Elawan Energy

Aegean airlines

National Agency of Protected Areas

Arbonaut Oy Ltd

EMISIA SA

Enabel

Epirus Metallurgical Industry SA

Aristotle University of Thessaloniki

Athens Medical Group

Agricultural University of Athens

ESRI Portugal

Euroconsultants SA

European Commission

Business and Cultural Development Centre

Centre for research & technology HELLAS

Deimos

European Space Agensy

EYATH SA

Food and Agriculture Organization of the United Nations

Democritus University of Thrace

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Dotsoft SA

FCG Finnish Consulting Group Ltd

FCG Povvik

Florecha Forest Solutions SA

Some of our Clients / Partners

Lever

MNLT Innovations PC

Municipality of Kordelio - Evosmos

Forestry France

General Secretariat for Research and Innovation

GFA Consulting Group

Municipality of Pylaia - Hortiati

Municipality of Thessaloniki

N-able

Goldair Handling

Hellenic Air Force GSA Squad

Hellenic Ministry of Environment and Energy

National Observatory of Athens

Natural Environment & Climate Change Agency in Greece

Paticip GmbH

HELLENiQ UPSTREAM

Forest Research and Management Institute (ICAS)

Interbalkan Environmental center

PPC Renewables

Scient Act SA

St. Luke's Hospital

Intergeo Environmental Technology LTD

Institute of Botany after A. Takhtajyan (IOB)

Konnektable Technologies Ltd.

Thessaloniki Port Authority SA

United Nations Development Programme

World Bank

Case study 1

Energy

Energy audit and retrofit engineering studies of public buildings of the Municipality of Zakynthos in Ionian Sea, within the framework of the National Funding Program *"Saving Energy - Eksoikonomo"* supported by the National Strategic Reference Framework (NSRF) 2007-2013

Project Budget
30,000.00 € (Contract Value 16,107.00 €)

Implementation period
2009

Client
Euroconsultans SA

Funding
Municipality of Zakynthos

Project description
The project included energy audit of an elementary school and other public facilities of the Municipality of Zakynthos in Ionian Sea and techno-economic assessment of the potential energy saving retrofit scenarios in order to prepare an integrated proposal for the National Funding Program "*Saving Energy - Eksoikonomo*" introduced by the Hellenic Ministry of Environment and Climate Change in 2009 within the National Strategic Reference Framework (NSRF) 2007-2013.

Services provided
- Energy audits of buildings.
- In situ measurements and data collection.
- Processing and evaluation of data.
- Dynamic energy simulation of buildings.
- Techno-economic assessment of the energy saving retrofit measures.
- Investment and cost-benefit analysis.
- Implementation schedule of proposed energy saving retrofit measures.
- Report preparation considering the energy simulation and economic results.

Case study 2

Energy

Energy audit and energy conservation engineering studies of the National Hospitals of Kastoria (7,000m²) and Florina (8,700m²) in Northern Greece within the National Program *"Energy Efficiency, CHP and Energy Conservation"* supported by the National Strategic Reference Framework 2007-2013

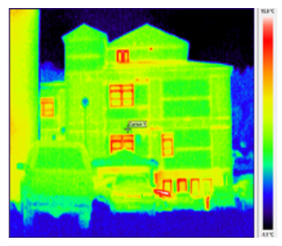
Project Budget
27,500.00 €

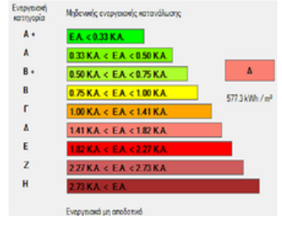
Implementation period
2010

Client
Hospital of Kastoria and Hospital of Florina

Funding
Hospital of Kastoria and Hospital of Florina

Project description
The project included the energy audits of the National Hospitals of Kastoria (7,000m²) and Fiorina (8,700m²) and the integrated techno-economic assessments of the potential energy saving retrofit scenarios in order to prepare integrated proposals for the National Program "*Energy Efficiency, CHP and Energy Conservation*" supported by the National Strategic Reference Framework 2007-2013.





Services provided
- Energy audits of buildings.
- In situ measurements and data collection.
- Processing and evaluation of data.
- Dynamic energy simulation of buildings.
- Techno-economic assessment of the energy saving retrofit measures.
- Investment and cost-benefit analysis.
- Implementation schedule of proposed energy saving retrofit measures.
- Report preparation considering the energy simulation and economic results.

Case study 3

Energy

Construction

Energy studies and implementation of small-scale photovoltaic systems (both residential and commercial)

Project Budget
> 100,000.00 €

Implementation period
2010 - to date

Client
Private and Public

Funding
Private and Public

Project description
- Audits of potential installation areas.
- Simulation and design of PV systems.
- Supervision of systems' implementation.
- Project management – coordination.

Services provided
- Area measurements, design with 3D software tools and shading analysis.
- Estimation of solar suitable areas and PV potential.
- Selection and use of certified PV equipment.
- Estimation of energy production and technoeconomic analysis.
- Supervision of implementation works and grid connection procedures.
- Project management – coordination.

Case study 4

Environment

Study on bird strike accident prevention measures for the Hellenic Air Force - 111 B.G. Air Force - H.A.F. Squadron

Project Budget
19,000.00 €

Implementation period
2010 - 2011

Client
Air Force - H.A.F. Squadron

Funding
Air Force - H.A.F. Squadron

Project description
The purpose of this study was to examine the problem of intense bird concentration in the Air Force Airport field 111 B.G.- H.A.F. Squadron. Overall scope was to propose a series of management measures to address the problem of collisions of birds to the aircrafts (Birdstrikes). The study included one year field measurements and records during bird migration and breeding seasons.

Services provided
- Field survey and collection of field data on bird population.
- Recording the movement of birds during bird migration and breeding seasons.
- Assessment of environmental and anthropogenic factors.
- Evaluation of the current way of dealing birdstrikes.
- Data processing.
- Reporting, Maps.
- GIS mapping.

Case study 5

Energy

Research & Development

Energy Efficiency of a Smart School - EESS

Project Budget
212,745.00 € (Contract Value 10,100.00 €)

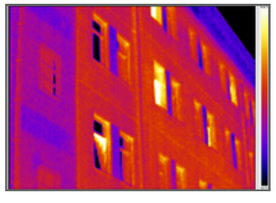
Implementation period
2011 - 2013

Client
Black Sea Economic Cooperation (BSEC) and the Hellenic Development Fund (HDF)

Funding
Black Sea Economic Cooperation (BSEC) and the Hellenic Development Fund (HDF)

Project description
The project EESS aimed to promote new implementations with regard to energy efficiency through sustainable models of infrastructure and energy production with natural energy resources through raising awareness. The Specific Objectives of the project were:

- To create and implement an "Energy Smart School" infrastructure model
- To promote energy efficiency through awareness raising and participation



Services provided

- Responsibility to bring and share the national and regional know how in the field.
- Share information on existing policy, legal and administrative framework in Greece, and relative experience from the implementation based on dynamic simulations and techno-economic studies in Greece.
- General overview on the energy behaviour of the school building, evaluation of functional status according to its orientation, HVAC and lighting systems, thermal and cooling loads, etc.
- Indoor measurements of air temperature and humidity, CO^2 ppm levels and air infiltration resistance.
- Assessment and proposition of energy saving intervention scenarios.

Case study 6

https://aid.karteco.gr/en/index

Environment

Environmental IT tools

Research & Development

AID - Air Pollution Intelligent Defense

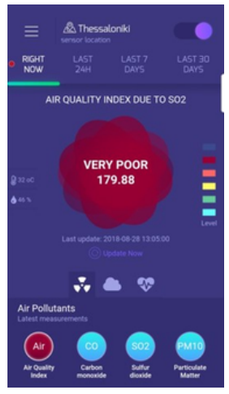
Project Budget
189,000.00 € (Contract Value 189,000.00 €)

Implementation period
2011 - 2014

Client
General Secretariat for Research and Innovation (GSRI)

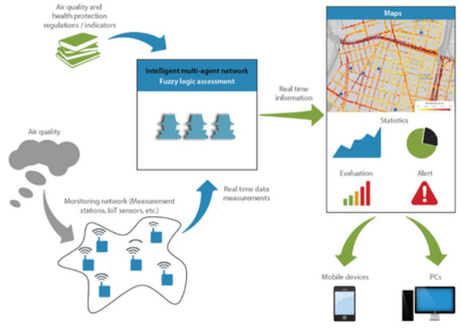
Funding
Action "*Support of new businesses on R&D activities*", NSRF 2007-2013

Project description
AID is an Innovative Real Time Air Quality Monitoring System consisted of multiple measurement stations and an interactive multi-agent network with main target to assess air quality and environmental conditions and support decision making and action implementation for public health protection and air pollution mitigation.
AID utilizes real time monitoring and fuzzy logic assessment of air quality conditions in order to protect public health by providing continuous information through internet and mobile application as well as to propose the appropriate actions to control air pollution critical events.
The system was awarded in 2017 with the 5th place in the 7th Innovation and Technology Competition of the National Bank of Greece (NBG business seeds).



Services provided

- Public health study on air quality.
- Development of a web-based database.
- Development of a multi-agent system software.
- Setting of multi-agent behaviour, indicators, limits.
- Data collection system design: sensors, data transmission and logging.
- Air pollution characterization system testing.
- Design of mobile application.
- Pilot case implementation.
- Exploitation and Dissemination actions.



Case study 7

https://domathess.karteco.gr/

Green Roofs | Cadastral Surveys & Mapping | Research & Development

Impact simulation of Green Roofs on the improvement of the environmental conditions in the Municipality of Thessaloniki using GIS and remote sensing tools

Project Budget
61,290.00 € (Contract Value 42,946.80 €)

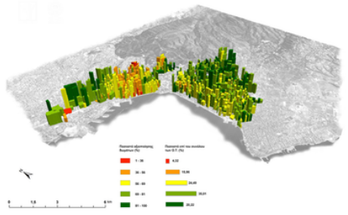
Implementation period
2012

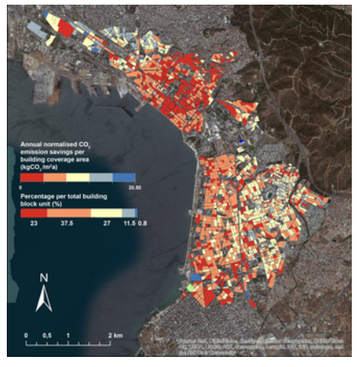
Client
Green Fund of Hellenic Ministry of Environment and Energy

Funding
Green Fund of Hellenic Ministry of Environment and Energy

Project description
The aim of this study was to assess the green roof potential and the quantification of its benefits over Thessaloniki, Greece's second largest city. To delineate the available green roof areas, very high spatial resolution satellite image and natural colour orthoimagery were used along with a geographical object-based mage analysis approach. Potential green roof extent was extracted,and discriminated from staircases, penthouse setbacks and terracotta tiles.

Services provided
- Determination of suitability criteria.
- Specification of simulation scenarios.
- Collection of field data on green urban areas (parks, zoos, urban forests, road and block green spaces) and building typology.
- Simulation procedures:
  - Carbon sequestration.
  - Energy performance and emission savings.
  - Rainwater retention behavior.
- Processing and analyzing with Geographic Information Systems.
- Processing and analysing of satellite images and true color ortho - photos.





Case study 8

https://www.karteco.gr/greenroofs/index.html

Energy | Construction

Wholesale of green roof systems in Greece

Project Budget
>200,000.00 €

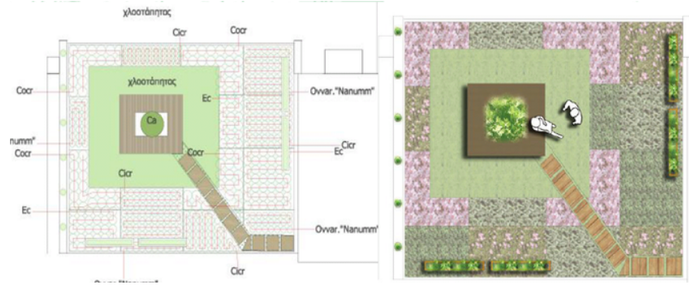
Implementation period
2012 - to date

Client
Private and Public

Funding
Private and Public

Project description
kartECO is proud to be one of the official distributors of BAUDER's green roof systems in Greece and authorized as an approved green roof contractor.

Services provided
- Wholesale of the greenroof systems.
- Plant substrate production.
- Design implementation studies.
- Project and site management.
- Expertise technical support.



Case study 9

https://realtso.karteco.gr/en/index.html

Environment | Environmental IT tools | Research & Development

Real-t-SO - Real Time Operational Control Tool of Combined Sewer Overflows at Coastal Cities

Project Budget
689,900.00 € (Contract Value 134,900.00 €)

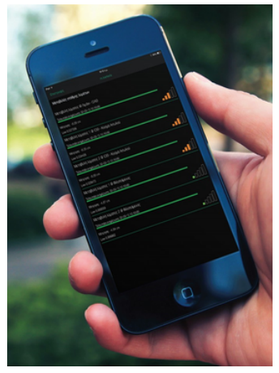
Implementation period
2013 - 2015

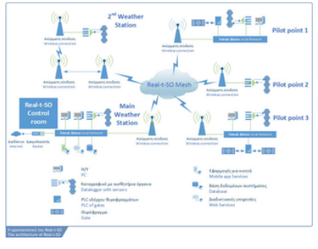
Client
General Secretariat for Research and Innovation (GSRI)

Funding
National Action "*COOPERATION 2011*"

Project description
Real-t-SO t is an Innovative Real Time Information System consisted of an interactive multi-agent intelligent network with main target to monitor and control both seawater intrusion and waste water overflows in Combined Sewer systems in coastal cities. The system receives and assesses real time measurement data from multiple environmental sensors in order to:

- Inform the staff of the sewage company about the combined sewer system's operational conditions.
- Predict undesired conditions (e.g. weather conditions that can lead to seawater level raise and consequently to seawater intrusion).
- Alert in cases of wastewater overflows and/or in cases of seawater intrusion.
- Decide in real time the appropriate corrective measures (e.g., moving gates, etc.) during critical conditions and implement a series of actions till the desired state of the combined sewer system is re-established.





Services provided
- Hydraulic and environmental study.
- Development of a web-based database.
- Development of a multi-agent system based on machine learning.
- Action protocols and hydraulic modelling.
- Data collection system design: Sensors, Data transmission and Logging.
- Implementation of automated water gates.
- Mobile application and pilot testing in coastal city.
- Exploitation and dissemination actions.

Case study 10

Environment | Energy

Due Diligence and Restriction analyses, EIAs, Special Ecological Assessments and biodiversity monitoring in Wind Parks and other RES

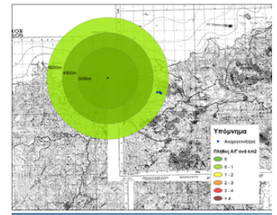
Project Budget
> 200,000.00 €

Implementation period
2013 - to date

Client
Private

Funding
Private

Project description
- Due Dilligence / Restriction analysis.
- Issuing new Environmental Permits and/or renewal and modification of current Environmental Permits of the RES facilities due to their expansion-upgrading and modernization.
- Conducting Special Ecological Assessment Studies for the purpose of supporting the EIAs, according to Directives 92/43/EC and 79/409/EC for the conservation of natural habitats and wild fauna and flora. SEAs concern the evaluation of the impacts on flora and fauna within protected area network "*NATURA 2000*", during the construction and the operation of the projects and proposes also -if necessary- management protection measures. Moreover, SEAs include detailed description of all species of fauna and their general behavior, eating habits, threats and conservation measures.
- Designing and implementing integrated plans for the environmental monitoring of birds in wind parks.
- Seasonal field monitoring surveys during the construction and operation of wind parks.



Services provided
- Due Dilligence.
- Special Ecological Assessments.
- Biodiversity monitoring - Field surveys.
- Consulting for compliance with the Decisions of Approval of Environmental Terms.
- Forest road planning and road delimitation studies.
- GIS Mapping, Restriction maps, Visual assessments, CAD Mapping.

Case study 11

Environment

Cadastral Surveys & Mapping

Development of Forest Maps in the Regional Unit of Magnissia in Prefecture of Thessaly, apart from the Local Government Organizations (Pre-Kapodistrian) of Alonnisos, Volos, Nea Anchialos and Skiathos

Project Budget
1,569,818.83 € (Contract Value 1,334,346.01 €)

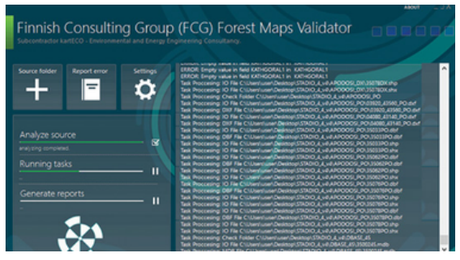
Implementation period
2014 - 2015

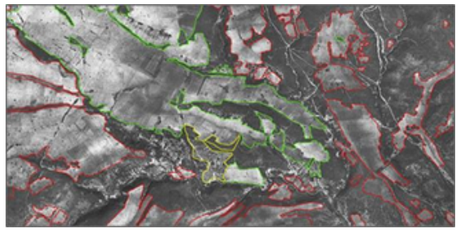
Client
Finnish Consulting Group Ltd
(FCG International)

Funding
Hellenic Cadastre SA

Project description
The project aimed at the development of Forest Maps in the Regional Unit of Magnissia in Prefecture of Thessaly, apart from the Local Government Organizations (Pre-Kapodistrian) of Alonnisos, Volos, Nea Anchialos and Skiathos (coded D4-05) (Total Area: 238,843.842 ha). The development of Forest Maps aims to the spatial (geographic) and temporal (past and present time) recording, mapping and registration of forests, forestlands and pastures.

Services provided
- Collection of materials and processing in a GIS.
- Forest photo-interpretation and digitization of forests, forest lands and pastures using GIS.
- Development of tools for automating common or repeatable tasks. Several custom tools were developed in Python for ArcGIS.
- Field surveys for the collection of forest data.
- Thematic accuracy assessment.
- Database development and management.
- Development of an automated software for quality control of the deliverables.





Case study 12

Environment

Energy

Indoor thermal and acoustic comfort measurements at office facilities of AEGEAN AIRLINES in Athens / Outdoor and indoor environmental measurements within Health & Safety framework at the hangar facilities of AEGEAN AIRLINES at the Athens International Airport "*El. Venizelos*"

Project Budget
1,891.90 €

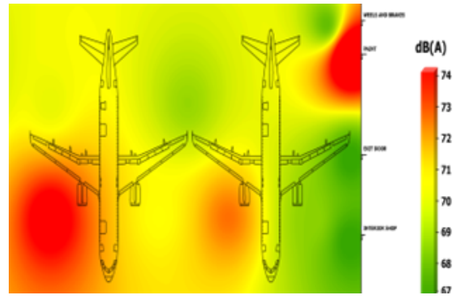
Implementation period
2015

Client
Aegean Airlines

Funding
Aegean Airlines

Project description
Implementation of indoor and outdoor measurements at the office facilities of AEGEAN AIRLINES in Athens and at the hangar facilities of AEGEAN AIRLINES at the Athens International Airport "*El. Venizelos*".

Services provided
- Measurements of thermal confort.
- Measurements of acoustic comfort/noise levels.
- Measurements of CO_2 concentrations.
- Measurements of optical comfort.
- Measurements of dust at the hangar facilities.
- A/C system sampling and laboratory analysis for legionella bacteria.



Case study 13

Environment

Environmental IT tools

Development of Forest Inventory Methodology, UNDP project "*Sustainable Land and Forest Management in Greater Caucasus Landscape*"

Project Budget
97,200.00 $

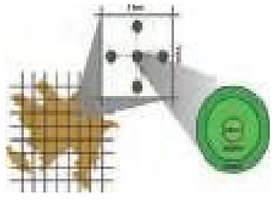
Implementation period
2015 - 2016

Client
United Nations Development Programme (UNDP), Azerbaijan

Funding
Global Environment Facility (GEF)

Project description
The scope of the assignment was to assist with the development / preparation of a National Forest Inventory (NFI) methodology and trainings in the Republic of Azerbaijan. A forest inventory was implemented in two pilot regions: Ismayilli and Shemakha (Total Area: 5,000 ha).

Services provided
- Development of methodology for National Forest Inventory.
- Development of methodology on satellite imagery interpretation.
- Provision of a methodology for field surveys and train qualified staff to conduct such surveys by using modern equipment and software.
- Development of methodology for establishing an information system that may provide up to date and accessible information to the government and relevant stakeholders.
- Training of staff members of the Ministry of Environment & Natural Resources (MENR) and other institutions based on prepared methodology.
- Inventory study/plan (5,000 ha) for the test forests with accompanying georeferenced data and maps.



Case study 14

Energy

Energy audits and energy studies of Municipal Buildings

Project Budget
13,000.00 €

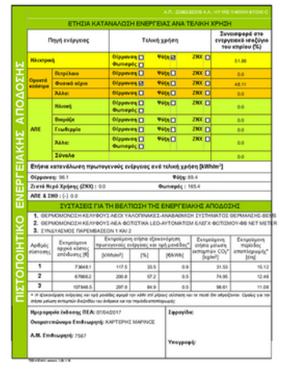
Implementation period
2016

Client
Municipality of Pylaia - Hortiati

Funding
Municipality of Pylaia - Hortiati

Project description
Energy audits of municipal buildings (ca. 13,000m²) of Pylaia - Hortiati, provision of energy certificates and an integrated energy study (11 partial studies, one per building) including a techno - economic assessment of the potential energy saving retrofit scenarios in order to prepare a future proposal for funding request under national and EU funding.

Services provided
- Energy audits of buildings.
- In situ measurements and data collection.
- Processing and evaluation of data.
- Energy simulation of buildings according to EU standards.
- Techno-economic assessment of the energy saving retrofit measures.
- Investment and cost-benefit analysis.
- Implementation schedule of proposed energy saving retrofit measures.
- Report preparation considering the energy simulation and economic results.



Case study 15

Environment

Assist UNDP with the supervising and preparation of the pasture management plans in the selected pilot regions (Shamakhi, Ismayilli - 12,500 ha, 3,000 ha of winter pastures and 9,500 ha of summer pasture areas) within the framework of "*Sustainable Land and Forest Management in Greater Caucasus Landscape*" UNDP project

Project Budget
95,000.00 $

Implementation period
2016 - 2017

Client
United Nations Development Programme (UNDP), Azerbaijan

Funding
Global Environment Facility (GEF)

Project description
- Economic impact assessment among pasture users, analyzing existing situation, challenges, projections for the future in target areas with the support of local experts contracted by the project.
- Preparation of participatory and consensual pasture management plans with 5 year implementation period, for the selected areas, taking into account the recommendations from the socio-economic impact assessment.

Services provided
- In-depth assessment of the socio-economic dynamics of pasture lease holders in the selected areas with the support of local experts.
- SWOT analysis.
- Recommendations for mitigating negative socio-economic impacts of current pasture management practices -among experts opinion.
- Development of participatory and consensual pasture management plans for winter and summer pastures, to address the challenges to sustainable pasture management in the area.
- Mapping the areas of summer and winter pastures using GIS, synthesis of land use maps based on remote sensing data, identification of elevation zones, mapping of slopes, etc.

Case study 16

Environment

Assist UNDP with the supervising and preparation of the forest management plans for the pilot regions (Shamakhi, Ismayilli) within the framework of "*Sustainable Land and Forest Management in Greater Caucasus Landscape*" UNDP project

Project Budget
85,000.00 $

Implementation period
2016 - 2017

Client
United Nations Development Programme (UNDP), Azerbaijan

Funding
Global Environment Facility (GEF)

Project description
- Socio-economic impact assessment among forest users, analyzing existing situation, challenges, projections for the future in target areas with the support of local experts contracted by the project.
- Supervision and development of consensual and multi-functional forest management plans (MfFMP) with presentation of final report and findings.

Services provided
- In-depth assessment of the socio-economic dynamics of forest users in the selected areas with the support of local experts.
- SWOT analysis.
- Recommendations for mitigating negative socio-economic impacts of current forest management practices.
- GIS analysis and development of thematic maps using field and satellite data.
- Development of participatory, consensual and multi-functional forest management plan for the forest covered areas of the pilot regions with presentation of final report and findings.
- Implementation plan for the application of the new MfFMP during the project timeframe and beyond in order to initiate forest recovery and sustainable use of the resources.

Case study 17

Environment

Environmental IT tools

Odor monitoring (SO_2, NMHC - Non Methane Hydrocarbons, CH_4, VOC, H_2S) in the city of Thessaloniki

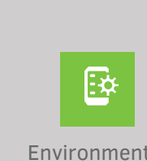
Project Budget
7,050.00 €

Implementation period
2016 - 2017

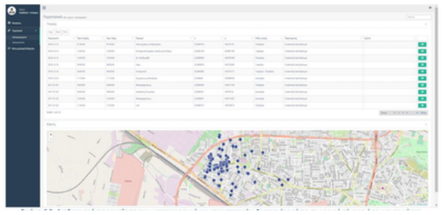
Client
Municipality of Kordelio - Evosmos

Funding
Municipality of Kordelio - Evosmos

Project description
The project aimed at the provision of real time monitoring services on air quality using mobile sensors for parameters related to odor such as SO_2, NMHC - Non Methane Hydrocarbons, CH_4, VOC, H_2S.



Services provided
- Identification of the sites for measurements.
- Development of a web-based data collection system combining information from air quality sensors, meteorologicall data, odor events recorded from citizens, etc.
- In situ measurements: Route planning and measurements using portable sensors.
- Data analyses, correlations with meteorological data and recommendations regarding odor events per odour parameters.
- Development of a web database including the presentation of measurements (charts and tables).
- Bibliographic review on odor limits, odor sources, etc.
- Reporting and planning.



Case study 18

Environment

Gas pipeline environmental projects

Project Budget
14,677.00 € (Contract Value 14,677.00 €)

Implementation period
2016 - 2017

Client
Povvik EAD

Funding
Private

Project description
- Participation in the preparation of topic "*Environment*" in the application dossier for obtaining a license for gas pipeline (approx. 50 km) from N. Mesimvria to the Greek - North Macedonia borders, Greece.
- Preparation of environmental baseline information for the application dossier for obtaining a gas distribution license for three settlements (Kilkis, Serres and Veria, Greece).
- The preparation of digital drawings, digital maps and GIS layers for a project for gas transmission pipeline for the cities of Razlog and Bansko in Bulgaria.

Services provided
- Environmental Report.
- Tables with background and baseline information.
- GIS Mapping, CAD Mapping with background and baseline information.

Case study 19

Environment | Environmental IT tools

Support the establishment of a prototype of a regional forest observatory in continental south-east Asia, including the countries of Cambodia, Laos, Myanmar/Burma, Thailand and Vietnam

Project Budget
422,770.00 € (Contract Value 116,261.75 €)

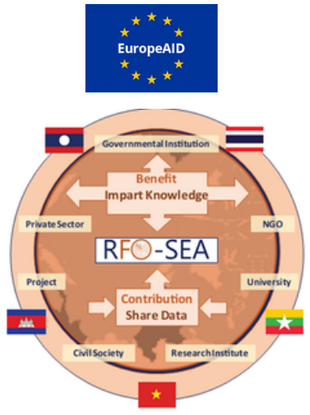
Implementation period
2016 - 2018

Client
European Commission

Funding
Program EuropeAid

Project description
This service contract supported the ReCaREDD (Strengthening National and Regional Capacities for Reporting on the Mitigation Actions of the Forest Sector - ReCaREDD) objective of strengthening regional forest observatories by developing a prototype of a regional forest observatory for continental Southeast Asia, including the countries of Cambodia, Laos, Myanmar, Thailand and Vietnam.
The '*regional forest observatory*' provide to the countries of the region a platform for sharing, exchanging and accessing data and information related to regional forests and REDD+.

Services provided
- Provision of a "*Report on the State of Forests and REDD+ activities*" in the region.
- Assessment of the conditions and recommendations for a long- term implementation of an operational '*regional forest observatory*' to be hosted at an institution/organization.
- Development of a database containing information relevant for the monitoring of regional forest cover change and for reporting in the context of REDD+ in the region.
- Development of a website that will make the regional database accessible to users and serve as the main interface of the regional forest observatory.



Case study 20

https://icarus2020.eu

Environment | Environmental IT tools | Research & Development

ICARUS - Integrated Climate forcing and Air pollution Reduction in Urban Systems (Horizon 2020)

Project Budget
6,815,765.00 € (Contract Value 357,187.50 €)

Implementation period
2016 - 2020

Client
European Commission

Funding
Program "*Horizon 2020*"

Project description
The project's main objective was to develop integrated tools and strategies for urban impact assessment in support of air quality and climate change governance in EU Member States leading to the design and implementation of appropriate abatement strategies to improve the air quality and reduce the carbon footprint in European cities. The project concluded to detailed policies and short and medium term measures for air pollution and climate change mitigation. For the long term perspective (2050 and beyond) ICARUS set visions of green cities and explored pathways on how to start realizing these visions.

Services provided
- Data analysis, generation of future activity-emission factor matrices and development of the activity-emission geodatabases for the participating cities.
- Life cycle emissions and carbon footprint estimation.
- Identification of feasible mitigation and abatement options and development of the respective policy-measures databases including estimation of effects and costs.

- Development of the ICARUS Decision Support System (DSS). The DSS included (a) a web-based guidebook for estimating the effects of a number of policies in each participating city; (b) a GeoDatabase, which support data collection and give access to the ICARUS city data; and (c) a computational system allowing the integration of existing and new models and tools, supporting AQ and GHG policy option assessment.

Case study 21

Environment | Cadastral Surveys & Mapping | Environmental IT tools

UNFICYP - Provision of Environmental Consultancy Services

Project Budget
19,800.00 €

Implementation period
2018

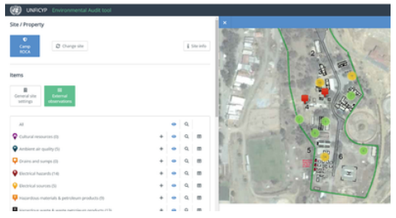
Client
United Nations Peace - Keeping Force in Cyprus (UNFICYP)

Funding
United Nations Peace - Keeping Force in Cyprus (UNFICYP)

Project description
- Environmental Assessment Study (EAS) in 23 UN facilities, such as Military camps and Police Stations
- Comparison of the new findings with the findings of the previous environmental baseline study (EBS) and provide an analysis on the progress of UNFICYP i.e. improvement, deterioration or unchanged and recommend actions for improvement.

Audited area: 570,000 m² / 22 UN facilities.

Services provided
- Collection of desktop information (Previous EBS, envronmnental regulations, site plans, history, use and activities, etc.).
- Preparation of questionnaire and audit protocol.
- Field work, walk over audit of current situation.
- Hazardous substances inventory.
- Identification and highlight of the environmental concerns during operation - Hazard Risk Assessment.
- Recommendations and Environmental Good Practices based on Int/nal Standards
- Web tool development.
- Incorporation of all data, point locations and photos collected, in a WebGIS tool.



Case study 22

Energy

Energy audit of GOLDAIR HANDLING SA in Greece and Bulgaria according to the Directive 2012/27/EU

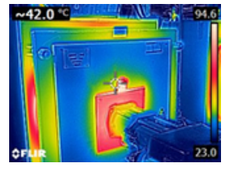
Project Budget
34,400.00 €

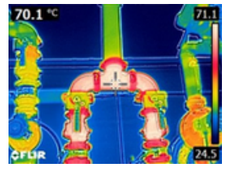
Implementation period
2018 - 2019 & 2023

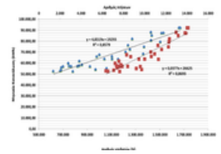
Client
Goldair Handling SA

Funding
Goldair Handling SA

Project description
Our team with certified energy auditors completed the energy audit of GOLDAIR HANDLING SA, according to the Directive 2012/27/EU and the relevant legislations that force the large companies to submit annual energy audit reports. The audit included all the company's facilities, vehicle fleet and ground support equipment in 14 airports in Greece and 3 airports in Bulgaria. The main purpose of the auditing was to provide information on the use and costs of the used energy, as well as to propose appropriate measures for energy saving and reduc-tion of the financial costs, while at the same time to achieve a high level of environmental protection.







Services provided
- Analysis of the current status and energy consumption.
- Determination of the energy consumption baseline.
- Data processing and analysis.
- Determination of the energy performance of the company and the possibilities for improvement.
- Preparation and evaluation of a list of measures for energy efficiency improvement.
- Determination of the annual amount of energy savings for the all measures.
- Analysis and estimation of the annual amount of carbon dioxide emissions (CO_2) saved as a result of the developed measures for energy efficiency improvement.
- Preparation of an Energy Audit Report and a Summary for the results of the survey.

Case study 23

Environment

Environmental IT tools

Enabel

Development of a User-Friendly and Customized District Forest Management Plans (DFMP) Database

Project Budget
196,222.36 € (Contract Value 26,432.00 €)

Implementation period
2018 - 2020

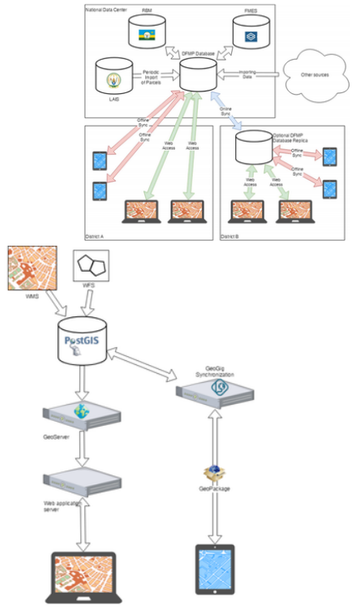
Client
OY ARBONAUT LTD

Funding
Belgian Development Agency (ENABEL)

Project description
The Government of Rwanda, through its Vision 2020 has made the development of theforestry sector a national priority. To drastically improve the management of forest resources, the Forest Policy, enforced by the 2013 Forest Law, required the development and implementation of one District Forest Management Plans (DFMPs) in every District.
In order to ensure easier management of DFMPs by the state staff, a user-friendly and customized DFMP database was developed in this particular project, allowing easy design, monitoring and upgrade of forest management plans.

Services provided
kartECO as a subcontractor was in charge of planning, implementing and reporting the software testing, as well as planning, preparing training materials and conducting training for the project beneficiaries and stakeholders. Particularly our activities included:

- Participation in stakeholder consultations.
- Planning the testing methods and environment.
- DFMP application development, describing of the test cases for WebGIS software components, application of automatic testing, manual testing.
- DFMP testing, test reporting.
- User and IT training of DFMP – system, production of the necessary user training material, conduct of the user training.
- Implementation of FMU/SFMP system.



Case study 24

https://icarus2020.eu

Environment

Research & Development

REPSOL

Implementation of the "*Health, Safety and Environment on exploration and production of hydrocarbons*" Workshop with Local Stakeholders in Ioannina Block

Project Budget
21,000.00 €

Implementation period
2019

Client
Repsol Exploracion Ioannina SA

Funding
Hellenic Hydrocarbons and Energy Resources Management Company (HEREMA)

Project description
The project involved the coordination and preparation of the first ever organized in Greece, capacity build-ing workshop with local stakeholders (servants of public administration in Prefecture of Epirus) about "*Health, Safety and Environment in Exploration and Production of Hydrocarbons*". kartECO prepared the training material about the EU and the Hellenic legislative framework related to the hydrocarbons and the environmental monitoring plan and the seismic research activities as well. The workshop was held in the Ioannina Block, Northern Greece, under the auspices of the Hellenic Hydrocarbons and Energy Resources Management Company (HEREMA). Contractor was the Repsol Exploracion Ioannina SA Greek Branch, which had the lease agreement of Ioannina Block.

Services provided

- Preparation of all training material.
- Translation of all training material from Greek to English.
- Coordination with presenters and participants.
- Arrangement of logistics and catering services.
- Hotel reservations of attendees.
- Preparation of the meeting room to host the workshop with all technology means.
- Preparation of field trip in places of interest in site operations (Surveying, Drilling, etc.) in Ioannina block.
- Presentations on the following topics: a) The EU and the Hellenic legislative framework related to the hydrocarbons and b) The environmental monitoring plan related to the seismic research activities.

Case study 25

Environment | Cadastral Surveys & Mapping

Development of Forest Maps in the Regional Unit of Evros

Project Budget
2,230,000.00 € (Contract value 2,007,000.00 €)

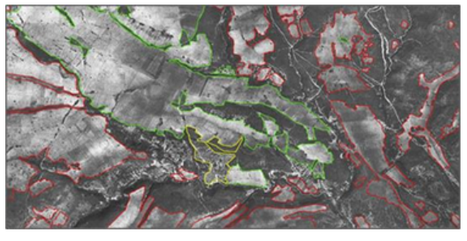
Implementation period
2019 - 2020

Client
FCG International Ltd

Funding
Hellenic Cadastre SA

Project description
The project aimed at the development of Forest Maps in the Regional Unit of Evros in Prefecture of Eastern Macedonia and Thrace (Total Area: 401,413.233 ha).
The development of Forest Maps aims to the spatial (geographic) and temporal (past and present time) recording, mapping and registration of forests, forestlands and pastures

Services provided
- Collection of materials and processing in a GIS
- Forest photo-interpretation and digitization of forests, forest lands and pastures using GIS.
- Development of tools for automating common or repeatable tasks.
- Several custom tools were developed in Python for ArcGIS.
- Field surveys for the collection of forest data.
- Thematic accuracy assessment.
- Database development and management.
- Development of an automated software for quality control of the deliverables



Case study 26

http://senspa.karteco.gr

Environment | Environmental IT tools | Research & Development

SenSPa - Sentinels for Sustainable Pasture Management

Project Budget
149,900.00 €

Implementation period
2019 - 2020

Client
European Space Agency (ESA), European Space Research Institute Ministry of Education, Research and Religious Affairs

Funding
European Space Agency (ESA)

Project description
SenSPa aimed to develop, test and validate through real-life piloting, an innovative earth observation application to investigate the use of Sentinel 2 satellite data in the retrieval of pasture related information and its use to support sustainable grazing management, measures planning and decision making in developing countries.

Services provided
- Stakeholders' engagement and assessment of user needs.
- Development of raster datasets with the different vegetation indices and the different final products.
- Collection and homogenization of historical data.
- Development of SenSPa web portal.
- Implementation of the pilot case study.
- Dissemination actions.
- Organization and implementation of a training seminar and at least 2 webinars.
- Exploitation and development of business model to reach commercialization.
- Project management.

Case study 27

Environment | Cadastral Surveys & Mapping

Registering of geo-reference points and inventorization of trees and shrubs as part of the Skopje Green Cadaster

Project Budget
12,485.00 $ (2020) 18,518.00 $ (2021)

Implementation period
2020 - 2021

Client
United Nations Development Programme (UNDP), North Macedonia

Funding
United Nations Development Programme (UNDP), North Macedonia

Project description
The main project objective was to assist the City of Skopje to become more resilient to climate change and other environmental challenges, and to build public administration that will design and deliver innovative and more efficient services for its citizens, implemented by UNDP and the City of Skopje. kartECO was in JV with Resource Environmental Center (REC) – North Macedonia Skopje.
The aim of the assignment was the digital identification of spatial coordinates (geo-references) of trees and shrubs within the boundaries of the City of Skopje, and their inventorization with detailed attributes (e.g. type, height, health condition, etc.) which provide valuable information for the improvement of the
management of the public greenery, as well as input for various urban resilience analysis.

The objective of this assignment was to upgrade the Skopje Green Cadaster through:

- Digital geo-referencing of trees and shrubs.
- Inventorization of the same geo-referenced points (trees and bushes).

Services provided
- Collection of user requirements for water quality monitoring service.
- Service data collection.
- Service testing.
- Impact assessment for water quality monitoring service.
- Final report.
- Promotion and dissemination of results.
- Project Management.

Case study 28

Energy | Environmental IT tools | Research & Development

ECOSERVE - Fleet/Ground support equipment management optimization at airports targeting energy consumption reduction

Project Budget
320,435.00 € (Contract Value 152,703.52 €)

Implementation period
2020 - 2022

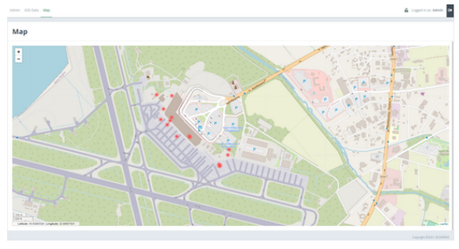
Client
General Secretariat for Research and Innovation (GSRI)

Funding
Program "*Research-Create-Innovate (B cycle)*"

Project description
The project aimed at developing a novel vehicle and airport ground support fleet monitoring system to provide automated recommendations on energy and fuel consumption reduction. The system included the use of energy consumption analysis models, the implementation of an online geoinformation system (WebGIS), and the active involvement of the vehicle operators by using a mobile phone application developed specifically to collect usage data and feed them to a server (operating hours, routes, number of passengers served, fuel quantities, maintenance data, etc.). The proposed system automatically highlights the issues in the vehicle fleet by constantly monitoring all vehicles.

Our main partner in the project was EMISIA SA, Greece.

Services provided
- Developing an innovative system of vehicle fleet tracking system for automated decision making optimizing energy and fuel savings.
- Developing energy consumption analysis models.
- Developing an online geoinformation system (WebGIS).
- Pilot operation and evaluation of this system in a company which provides airport ground handling services.



- GPS tracking to collect usage data and feed them to a server (operating hours, routes, number of passengers served, fuel Tuantities, maintenance data, etc.).
- Detailed monitoring and management of fleet operation.
- Recording of each vehicle individual operation (driven kilometers, hours of operation, routes, etc).
- Energy consumption recording (fuel fill or electricity consumption).
- Energy management.

Case study 29

Environment

Energy

2D-3D Marine Seismic Survey: Environmental Baseline Report (EBR) and Environmental Action Plan (EAP) for the Block 10 – Kyparissiakos Gulf Lease Area

Project Budget
97,900.00 €

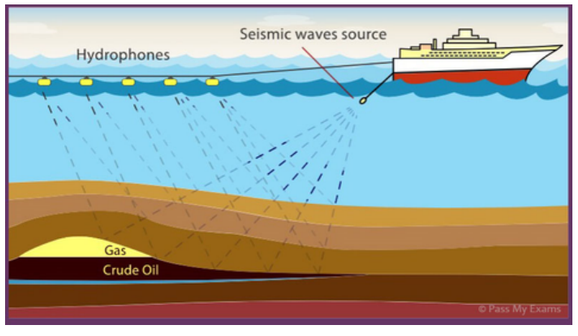
Implementation period
2020 - 2022

Client
Private

Funding
Private

Project description
- Preparation and submission of the Environmental Baseline Report to the Competent Authorities (Hellenic Hydrocarbons Resources Management – HHRM)
- Preparation and submission of the Environmental Action Plan (EAP) (includes Social, Heritage and Health) to the Competent Authorities (Hellenic Hydrocarbons Resources Management – HHRM), regarding a 2D-3D Marine Seismic Survey (MSS)

Services provided
- Environmental Baseline Report.
- Environmental Action Plan (includes Social, Heritage and Health).
- Underwater Noise Propagation Modelling.
- Stakeholder inventory and mapping.
- Participation in authorities' consultation process.



Case study 30

Environment

Development of Management Plans for Rangelands Outside Forests (RMP) in the High Mountains of Akkar and Jbeil Districts

Project Budget
120,940.00 $

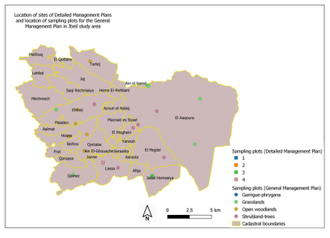
Implementation period
2021 - 2022

Client
United Nations Development Programme (UNDP), Lebanon

Funding
Global Environment Facility (GEF)

Project description
- Assessment of rangelands management elements in the high mountains of Akkar and Jbeil target districts.
- Assessment of small ruminants' systems
- Assessment of health and rangeland condition of all RMUs outside forests.
- Development of a general management plan for high mountains of Akkar and Jbeil districts.
- Development of detailed Management Plans for Rangelands outside Forests for selected representative sites of the High Mountains of Akkar and Jbeil.
- Execution of targeted trainings for the adoption of RMPs.

Services provided
- Extensive and solid field assessment of the rangelands' resources (water, plant cover, species composition, forage production, livestock, grazing periods, wildlife habitat, etc.).
- Identification, mapping and assessment of terrestrial Habitat types and land changes, covering a total of 25,500 ha.
- Identification of all shepherds with grazing activities within the study areas.
- Survey questionnaire based on National Guidelines for the Management of Rangelands Outside Forests.
- Livestock farming economic data collection.
- General and Final Rangeland Management Plan.
- Trainings per district in Arabic and English.
- GIS mapping.



Case study 31

Environment

Completing and updating the mapping of the habitat types in the protected areas of Kefalonia-Ithaca

Project Budget
19,758.00 €

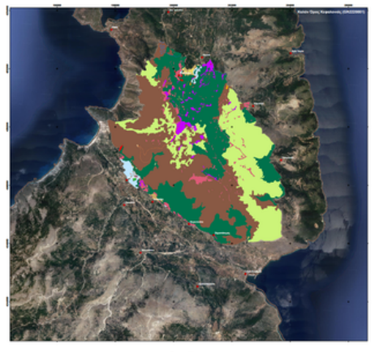
Implementation period
2021 - 2022

Client
Ainos National Park Management Body

Funding
Natural Environment & Climate Change Agency (NECCA)

Project description
The main goal was to complete / update the mapping of the terrestrial and marine habitat types (GR2220006, GR2220001, GR2220002 and marine GR2220004, GR2220005 και GR2220007), by applying field and Remote Sensing methods. The deliverables were used to update the NATURA 2000 database and maps.

Services provided
- Field work design (releves) and use of protocol.
- Identification, mapping and assessment of terrestrial Habitat types and land changes.
- Development and use of RS methods for marine Habitat types (1120) mapping.
- Staff training.
- Reporting.
- GIS mapping according to Law 3882/10 and the National GeoSpatial Data Infrastructure.



Case study 32

Environment

Assessment of the Habitat type 9340 - Restoration of coppice forests

Project Budget
27,896.00 €

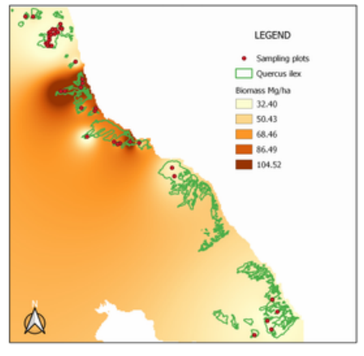
Implementation period
2021 - 2022

Client
Karla - Mavrovouni - Kefalovruso Velestinou - Pineios Delta Management Body

Funding
Natural Environment & Climate Change Agency (NECCA)

Project description
The main goal was the development of a model management plan for the protection, conservation, and sustainable management of the Habitat type 9340 "*Quercus ilex forests*" in the Natura 2000 protected areas (GR1420004 and GR1430001).

Services provided
- Field work design.
- Mapping and assessment of Habitat type 9340 "*Quercus ilex forests*".
- Biomass carbon and CO_2 fluxes estimation.
- Stakeholder Engagement.
- Forest Habitat Assessment.
- Management Plan for Restoration of coppice forests.
- Case study implemented by local Forest Agency.
- GIS mapping according to Law 3882/10 and the National GeoSpatial Data Infrastructure.



Case study 33

Environment | Environmental IT tools | Research & Development

MedEOS: Earth observation for land-based pollution assessment and monitoring in the Mediterranean coastal waters

Project Budget
500,000.00 € (Contract Value 23,920.00 €)

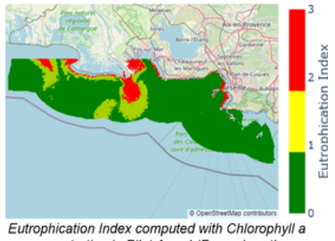
Implementation period
2021 - 2023

Client
ESA - European Space Agency

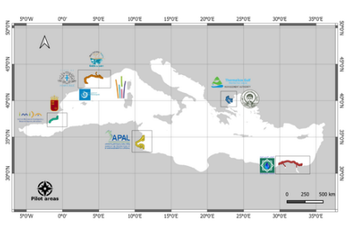
Funding
ESA - European Space Agency

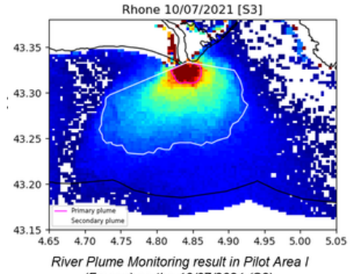
Project description
MedEOS was part of the ESA Mediterranean Sea Regional Initiative (Mediterranean Regional Initiative Applications - Theme 2 -"*Land-based Pollution Assessment and Monitoring over the Mediterranean Coastal Waters*") and it aimed to develop and produce high-resolution, gap-free maps of experimental Earth observation water quality products. MedEOS employed data fusion techniques to combine the high temporal resolution of S3-OLCI and high spatial resolution of S2-MSI data

Services provided
- Collection of user requirements for water quality monitoring service.
- Service data collection.
- Service testing.
- Impact assessment for water quality monitoring service.
- Final report.
- Promotion and dissemination of results.
- Project management.



Eutrophication Index computed with Chlorophyll a concentration in Pilot Area I (France) on the 2021/08/02 (S3).





River Plume Monitoring result in Pilot Area I (France) on the 10/07/2021 (S3).

Case study 34

Environment

Guidance for attracting and managing visitors in the Canyon "*Skala*" (Faraggi Skalas) and recommendations for promoting its special natural resources

Project Budget
14,354.00 €

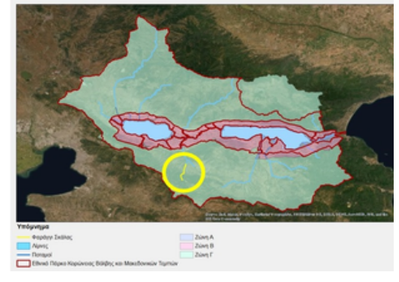
Implementation period
2021 - 2022

Client
Management Unit of Protected Areas of Central Macedonia

Funding
Natural Environment & Climate Change Agency (NECCA)

Project description
The objective of the project was to record the current situation of Canyon "*Skala*", regarding the existing ecotourism activities and infrastructure, the identification of the type and visits statistics through interviews, the assessment of the possibilities of ecotourism development of the area and subsequent Action Plan through stakeholder engagement. The Canyon "*Skala*" is located in a Natura 2000 protected area (GR1220009) and within the outer Boundary Zone C of the National Park of Lakes Koronia-Volvi. It has a length of approx. 5km (altitudes 220-820m). The downstream part is called "*Platanorema*". Overall project scope was an action plan to attract more visitors and in parallel enhance the environmental protection of the canyon.

Services provided
- Collection of background information, best practices and provisions related to Ecotourism activities in Protected areas with emphasis on hiking.
- Stakeholder Engagement.
- Questionnaires' design, interviews and data analysis regarding visitors' number, visitors type, duration and periodicity of visits, etc.
- Field design and visits and baseline study related to ecotourism and hiking activities.
- Examination of environmental sensitivities and threats.
- Ecotourism Action Plan for attracting new visitors, through new or improvements of existing infrastructure, services, and visitors' management.
- GIS mapping.



Case study 35

https://inforoad-map.karteco.gr/

Environment | Environmental IT tools | Research & Development

INFOROAD - Development of an innovative web tool for mapping and monitoring forest and rural road network

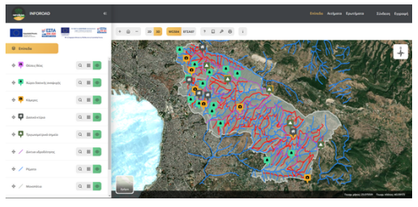
Project Budget
354,500.00 € (Contract Value 139,900.00 €)

Implementation period
2021 - 2024

Client
Prefecture of Central Macedonia

Funding
Program "*Investment Innovation Plans*"

Project description
The role of the forest and rural road network is important and multifaceted. Thus, it is considered imperative to systematically record, map and monitor the characteristics and condition of the road network, as well as important information along it. The purpose of INFOROAD was to develop a comprehensive methodology and a tool for the detailed recording, mapping and monitoring of theforest and rural road network and support decision-making in response to natural disasters and crises, the rational management of the road network and, consequently, the best possible utilization of forest and agricultural resources. The extraction of information is based on a system of automatic recognition of road characteristics using satellite images and machine learning, while the information demonstrated, is disseminated, and managed through an online Geographic Information System (WebGIS).



Services provided
- Scientific coordination and management.
- Collection, analysis and consolidation of user requirements.
- Development of map legend prototype.
- Design and development of system architecture.
- Collection and processing of data.
- Validation of indices and models for the assessment of road condition.
- Development of Artificial Intelligence models.
- Development of the infrastructure for setting up the produced Artificial Intelligence models.
- Development of the geodatabase and the WebGIS.
- Sub-systems integration.
- Pilot operation and transition to production process.
- Dissemination and promotion of the project results.
- Feasibility study and business planning.

Case study 36

Environment | Cadastral Surveys & Mapping

Sub-project 8: Photointerpretation tasks and initial installation of National Forest Inventory and Monitoring System (IMS) sampling plots and data collection in the Decentralized Administration of Crete (Region of Crete)

Project Budget
89,696.25 € (Contract Value 80,726.63 €)

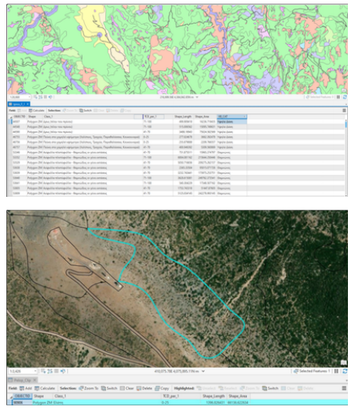
Implementation period
2022 - 2024

Client
Ministry of Environment and Energy

Funding
Ministry of Environment and Energy

Project description
The project was implemented in the context of Ministry's Project "*Inventory and Monitoring System of Forests and Forest Lands to Cover the Country's Obligations and Formulate a Strategy for their Adaptation to Climate Change and its Mitigation*" which aimed to record and monitor all the necessary data and parameters related to emissions / sequestrations of CO_2 and other greenhouse gases from forests and forest lands, through the installation of a permanent Inventory and Monitoring System (IMS) of Greek forests and forest lands, which is necessary to cover the country's international and European obligations, as well as for the formulation of a strategy for adaptation to climate change and its mitigation.

Services provided
- Stereoscopic photointerpretation of selected photopoints and the entire area of forests and forested lands, demarcation of lands and rendering of boundary lines.
- Data collection, both at sampling plot clusters and tree level.
- Map production (Vegetation and ground cover maps).
- Databases production.
- Training of staff.
- Project Management - Coordination.



Case study 37

Environment

THE WORLD BANK

Armenia: Advancing the establishment of the Emerald Network and management of the Emerald Sites

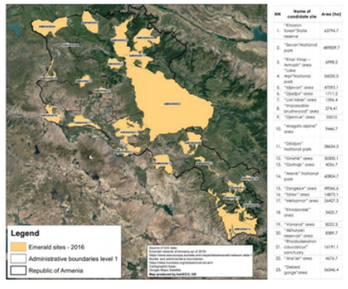
Project Budget
66,480.00$

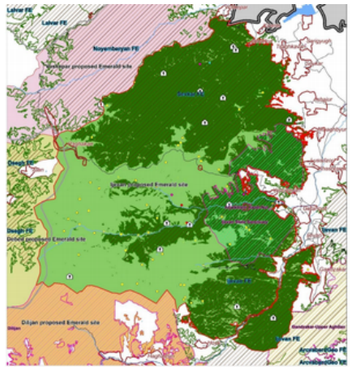
Implementation period
2022 - 2024

Client
World Bank

Funding
World Bank

Project description
This assignment was implemented in the framework of the "*European Union for Environment*" EU4Environment Program and aimed to advance the establishment of the Emerald Network in Armenia, by developing methodological guidelines for preparing Emerald Site management plans and concluding to two pilot management plans for selected Emerald sites.





Services provided
- Identification of Emerald sites within and outside of the nationally designated protected areas and definition of the conservation objectives and desired outcomes.
- Propositions for the official designation of selected Emerald Sites and the promotion of the official designation of candidate Emerald Sites.
- Analysis of the current practice of the existing administration and management of the candidate Emerald Sites.
- National Action Plan preparation to advance the establishment of the Emerald Network in Armenia.
- Pilot management plan development for two (2) specific Emerald Sites of Armenia.
- Capacity building trainings.

Action implemented by:

Case study 38

Environment

European Commission

Supporting the reforms in Forestry in North Macedonia

Project Budget
1,255,100.00 € (Contract Value 162.662,40 €)

Implementation period
2023 - 2025

Client
European Commission

Funding
European Development Fund (EDF)

Project description
The overall objective is to facilitate the implementation of EU related strategies, policies and acquis in order to boost sustainable development of the Forestry sector in North Macedonia. The specific objectives of this contract were to provide assistance to the Ministry of Agriculture, Forestry and Water Economy (MAFWE) to progress in the reforms in the forestry sector including strategic, legal, institutional and entrepreneurial frameworks, as well as development of informational and other tools for sustainable forest management.

Services provided
- Supporting the implementation of the long-term Strategy for Sustainable Development of Forestry (SSDF), the new Forest Law and the National Forestry Programme (NFP).
- Developing a plan for establishing the Forest Agency and restructuring the Public Enterprise "*National Forests*".
- Building the professional and administrative capacity of the forestry sector institutions / organizations.
- Establishing an Integrated Forest Information System (IFIS).
- Developing the methodology of the National Forest Inventory (NFI), the elaboration of forest management plans (FMPs), forest functions' mapping and a Plan for the Sustainable Development of Forests (PSDF).
- Supporting the development and testing of guidelines for implementation of sustainable and close-to-nature forest management systems in certain forest types and the concept and criteria for forest biodiversity conservation
- Improving the tools for prevention of forest damages.
- Supporting the implementation of a Forest Certification scheme.

EU with YOU

Case study 39

Environment

Preparation of a post-fire soil erosion protection guidebook. Training / capacity building on post-fire soil erosion planning and field practices. Preparation of post-fire soil erosion management plan in a pilot area demonstration plan

Project Budget
25,600.00 $

Implementation period
2022 - 2023

Client
United Nations Development Programme (UNDP), Lebanon

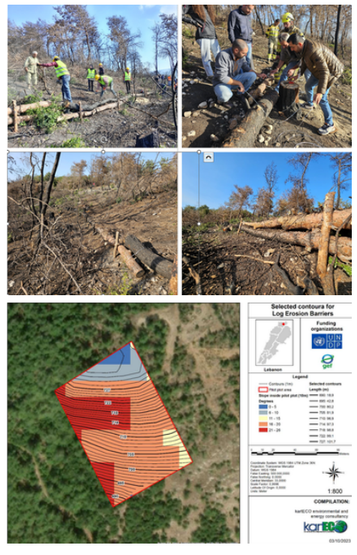
Funding
United Nations Development Programme (UNDP), Lebanon

Project description
The project's objectives were to:

- Develop a guidebook regarding post-fire soil erosion and present standard internationally approaches and locally adapted practices for Lebanon taking into account local contexts.
- Develop practical methodologies for a demonstrative «*Post-fire soil erosion Management Plan*» in the pilot area of a recently burnt site in Akkar, approximate size of 1.5 ha.
- Provide technical capacity on post-fire soil erosion planning and field practices based on the "*Post-fire soil erosion Management Plan*".

Services provided

- Desk review of existing initiatives regarding post fire soil and runoff management and protection in Lebanon.
- Development of post-fire soil erosion protection Guidebook.
- Assessment of soil erosion and hydrological elements in the pilot area of Akkar [e.g., Burned area, Map with Hydrological or sub basin, DEM - Contour maps, Meteorological data (Rain), Pre-fire vegetation information and map in the burned area (age and type of trees, etc.)] to assess the material needed for soil erosion protection, access roads, GIS shp files, etc.
- Development of a post-fire soil erosion management plan and maps of interventions, in the pilot area of Akkar of approximate size of 1.5 ha.
- Preparation of training plan and material as well as training implementation.



Case study 40

http://efidar.eu/

Environment

Environmental IT tools

Early Fire Detection and Ranging for disaster prevention and management – eFIDAR

Project Budget
1,392,073.50 € (Contract Value 12,895.16 €)

Implementation period
2023

Client
Aristotle University of Thessaloniki

Funding
Interreg – IPA CBC – Territorial Cooperation
"*Greece – Republic of North Macedonia 2014-2020*"

Project description
The overall aim of the eFidar project was to enhance technological capabilities for the efficient detection and management of wildland fires in the cross-border area of Greece and North Macedonia, by utilizing appropriate ICT tools. The project had the following specific objectives:

- The development of an ICT-based multicomponent system for forest fire detection and disaster prevention over vulnerable elements-at-risk within the cross-border region.
- The increase of cross-border communities' resilience to the danger of forest fires through improved preparedness through fire smart governance systems empowered by local communities
- The enhancement of cooperation and coordination avoiding redundancies, overlaps and critical gaps for establishing an effective holistic fire management scheme.

Services provided
kartECO as a subcontractor played a central role in the design and development of the innovative fire early warning system and in shaping cross-border forest fire prevention strategies. Particularly our activities included:

1. Design & Development of the Early Warning System:
   - Participatory design (user needs) of innovative early detection systems for fires.
   - Protocols for the joint use of the early warning system.
   - Training on the early warning system.
   - Digital platform for fire safety.
2. Integrated prevention and management of forest fires in the cross-border area:
   - Cross-border action plan for reducing the risk of forest fires.

Case study 41

Environment

Cadastral Surveys & Mapping

Habitats survey in Prespa National Park (PNP): Provide expertise on the identification and mapping of selected habitat types in Prespa National Park, according to Annexes of the EU Habitat Directive

Project Budget
53,925.00 €

Implementation period
2023

Client
National Agency of Protected Areas (Albania)

Funding
KFW Development Bank on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ)

Project description
The scope of the project was to identify, map and assess the forests and shrubland habitats in the National Park Prespa, based on the Interpretation Manual of European Union Habitats (Natura 2000 habitat types).

Services provided
- Review of desktop information.
- Plan, preparation and implementation of habitat survey.
- Field survey training of staff of the relevant authorities.
- Identification and mapping of habitat types.
- Compilation of habitat GIS database.
- Development of habitat maps.
- Conduct of ecological studies.
- Identification of important biodiversity areas.
- Evaluation of the conservation degree of habitats and conservation threats.
- Preparation of the Standard Data Forms.
- Result presentation to relevant stakeholders.

Case study 42

Environment

Environmental IT tools

Support services in the development and implementation of an inventory, reporting and monitoring data management system for specially protected natural areas

Project Budget
30,080.00 $

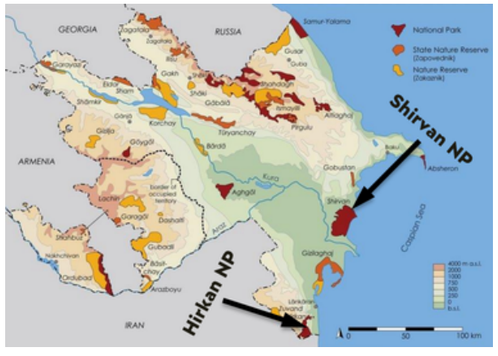
Implementation period
2023 - 2024

Client
Food and Agriculture Organization of the United Nations (FAO)

Funding
Food and Agriculture Organization of the United Nations (FAO)

Project description
The scope of the assignment was the development and implementation of an inventory, reporting and monitoring data management system for specially protected natural areas under the project GCP/AZE/004/GFF Conservation and sustainable use of biodiversity: Strengthening Azerbaijan's system of protected areas through improved governance and management.

Services provided
- Assessment of the baseline state.
- Conduct of the needs analysis.
- Evaluation and recommendations on implementation.
- Support the MENR in the phased implementation of an inventory, reporting and monitoring data management system for SPNAs.
- Capacity building trainings.



Case study 43

Environment | Cadastral Surveys & Mapping

HELLENIC REPUBLIC ASSET DEVELOPMENT FUND
INVESTING IN DEVELOPMENT

Preparation of a Fire Protection Master Plans of the areas of responsibility of the Forestry Departments of Volos, Skopelos, Alexandroupoli, Thassos, Thessaloniki, Polygyros, Arnaia and Kassandra. (Contract Codes: SP-01 and SP-02)

Project Budget
1,215,300.00 € (Contract Value 148,060.00 €)$

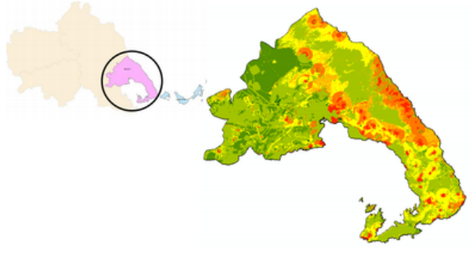
Implementation period
2023 - 2024

Client
Ministry of Environment and Energy

Funding
Hellenic Republic Asset Development Fund (HRADF)

Project description
The objective of this project was the preparation of fire protection plans for the areas of responsibility of the Forestry Departments of Volos, Skopelos, Alexandroupoli, Thassos, Thessaloniki, Polygyros, Arnaia and Kassandra. The aim was to provide a targeted analysis of the problem of forest fires in a specific area and then to plan the appropriate actions that will lead to better protect forest areas in general and thus to protect from the risk of fire the settlements, buildings, industrial and other facilities and agricultural holdings located in or near them.

Services provided
- Desktop information and field data collection as well as detailed description of the study areas regarding existing forest fire protection infrastructure and related agencies; natural environment information (e.g. terrain); area vegetation; human activities and infrastructure; historical occurrence of fires.
- Adaptation, update and digitization of vegetation maps.



- Assessment and mapping of fire occurrence probability, fire intensity and fire threat.
- Creation of an overall Forest Fire Risk Map.
- Fire Risk Action Plan for all areas with guidelines, actions and measures for forest fire prevention, preparedness and response (e.g. stakeholder engagement and public awareness activities, forest management actions, maintenance of existing or proposing new fire prevention and protection infrastructure in forests, etc.).
- Public consultation and hearing.

Case study 44

Environment | Energy

ARIADNE INTERCONNECTION

Report on carbon footprint and climate change resilience of infrastructure of the project: Crete-Attica electrical interconnection owned by Ariadne Interconnection SA.

Project Budget
14,800.00 €

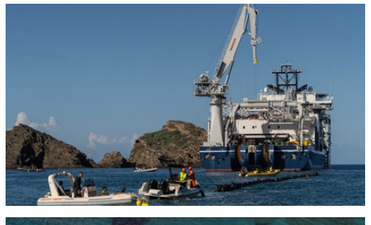
Implementation period
2024

Client
Ariadne Interconnection S.A.

Funding
Ariadne Interconnection S.A.

Project description
Climate change adaptation and mitigation considerations are integrated in the preparation and approval of major projects funded by the European Regional Development Fund (ERDF) and the Cohesion Fund and listed in the concerned operational programmes. Adaptation seeks to ensure adequate resilience of major projects to the adverse impacts of climate change, for example flooding or forest fires. Mitigation seeks to reduce the emission of greenhouse gases, for example in the selection of low-carbon options. This is addressed through the quantification of greenhouse gas emissions and integration in the cost-benefit analysis.

Main objective of this project was to conduct a climate change vulnerability and risk assessment as well as carbon-footprint estimation of the Crete-Attica electrical interconnection project (two submarine 500 kV cables, 335 km in length, of a total 1,000 MW transmission capacity, laid in record depths of up to 1,200 meters on the Aegean seabed).



Services provided
- Project vulnerability assessment:
  - Sensitivity analysis to identify the relevant climate hazards for the given specific type of project.
  - Exposure analysis to identify the relevant hazards for the foreseen project location, irrespectively of the project type.
- Project carbon footprint estimation (evaluation of GHG emissions) throughout the project development cycle:
  - Quantification of absolute project emissions.
  - Identification and quantification of baseline emissions.
  - Calculation of relative emissions.

Case study 45

Environment

Support services for the assessment and environmental licensing procedures of projects and activities within the Natura 2000 network for the geographical region of Macedonia and Thrace, Greece.

Project Budget
34,490.00 €

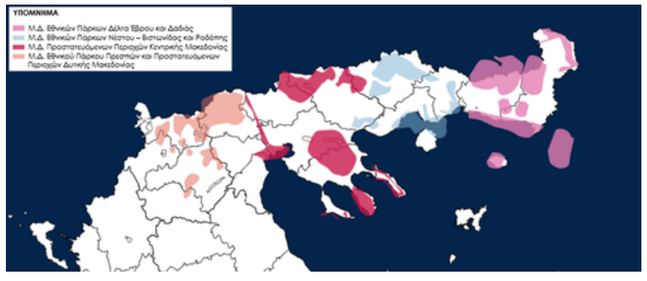
Implementation period
2024 - 2025

Client
Natural Environment & Climate Change Agency (N.E.C.C.A.)

Funding
Natural Environment & Climate Change Agency (N.E.C.C.A.)

Project description
The objective of the project is the provision of support services to N.E.C.C.A. for the assessment and environmental licensing procedures of projects and activities within the Natura 2000 network based on the provisions of Article 6.3 of the Directive 92/43/EEC, Article 10 of Law 4014/2011 and Article 27 of Law 4685/2020, as applicable.

Deliverables:
- Opinions / Assessment of the Special Ecological Assessments files of the under approval projects.
- Database of Legislation: Includes National and European environmental laws, articles, decision, directives etc..



Services provided
- Assessment of the Special Ecological Assessments files.
- Research on new environmental laws.
- Impact assessment of the projects on the natural environment, species, flora and fauna, habitats, etc.

Case study 46

Environment

The Development of National Fire Risk Management Guidelines for Lebanon's Protected Areas

Project Budget
74,500.00 $ (Contract Value 74,500.00 $)

Implementation period
2024 - 2025

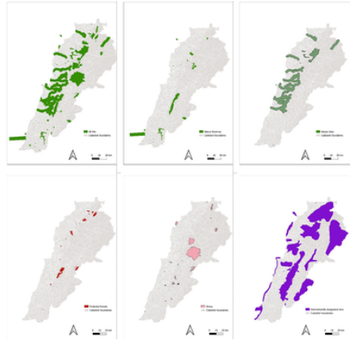
Client
United Nations Development Programme (UNDP), Lebanon

Funding
United Nations Development Programme (UNDP), Lebanon

Project description
The objective of this project is to develop tailored fire risk management plans for various terrestrial Protected Areas (i.e., mainly nature reserves) in Lebanon. These plans will be integrated into the overarching management plans of each reserve, aligning with the updated "*National Strategy for Forest Fire Management.*" The focus is on safeguarding and sustaining the ecological integrity and biodiversity of Lebanon's protected areas by addressing the increasing threat of wildfires. The specific objectives are:

1) Develop comprehensive fire risk management guidelines tailored to Lebanon's terrestrial protected areas.
2) Develop fire risk management plans for each of the targeted terrestrial Protected Areas based on the formulated guidelines to improve the preparedness of targeted PAs for potential wildfire incidents and to minimize the likelihood and impact of wildfires in protected areas.
3) Provide training programs to promote best practices in fire prevention and response.

Services provided
- A comprehensive desk and literature review.
- Formulation of national fire risk management guidelines for Lebanon protected areas.
- Development of fire risk management plans for Nature Reserves.
- Development and implementation of training material.
- Project Management.



Case study 47

https://liferenata.eu/el/

Environment

Research & Development

Roadmap for the alignment of Emerald network establishment and management to Natura 2000 standards in Moldova

Project Budget

989,663.89 € (Contract Value 196,451.49 €)

Implementation period

2024 - 2026

Client

European Commission

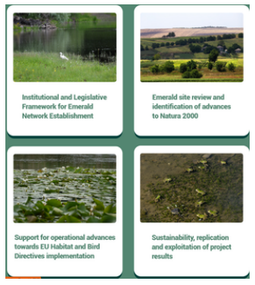
Funding

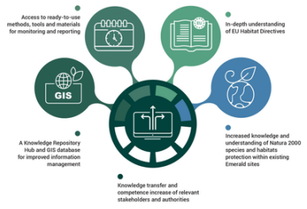
Programme for the Environment and Climate Action "*LIFE-2023-PLP-NA T-ENV*"

Project description

Life Renata project aims to support the Republic of Moldova (MD) in aligning its protected Emerald Network sites' establishment and management with EU standards, by providing support in the legal, technical and operational horizontal fundamental areas.

Services provided





- Conduct assessments of the legal and institutional framework to evaluate alignment with EU Nature Directives and offer regulatory recommendations.
- Provide an overview of the MD's Emerald sites, supporting the identification of areas and mapping of sites.
- Review and evaluate MD's Emerald sites to ensure compliance with EU Nature Directives.
- Propose new Emerald sites.
- Offer expertise on habitats and species listed in the Birds and Habitats Directives, along with training on the technical aspects of EU Directives.
- Provide guidelines for preparing action plans and ensuring appropriate management of Emerald/Natura 2000 sites.
- Offer capacity building for effective site management, monitoring, and reporting.
- Develop a feasibility tool for transitioning from Emerald to Natura 2000, with two pilot examples.
- Create a knowledge repository hub.
- Provide a roadmap through 2030 to transition the Emerald network to meet Natura 2000 standards.
- Support the Replication and Exploitation Plan.
- Assist with dissemination and communication activities.

Case study 48

Environment

Research & Development

Flash flood risk prevention & resilience in Mediterranean area through an Integrated Multi-stakeholder Governance Model, gathering prevention, adaptation, and mitigation solutions - LocAll4Flood

Project Budget

24.193,55 €

Implementation period

2024 - 2026

Client

Aristotle University of Thessaloniki

Funding

Interreg Euro-MED Programme

Project description

Environmental engineering external expertise and services within the research project "*Flash flood risk prevention & resilience in Mediterranean area through an Integrated Multi-stakeholder Governance Model, gathering prevention, adaptation, and mitigation solutions - LocAll4Flood*" within Interreg Euro-MED Programme which is co-funded by European Union

Services provided

- Participation in the following Deliverables:
  - Report on the testing outcomes of the mitigation solutions in the Pilot sites.
  - Development of catalogue of mitigation solutions to reduce flash flood impact in different topographical (urban, industrial, natural / rural, coastal) areas of Euro-MED (part about Greek site).
- EIA conduct.
- GIS mapping.
- Stakeholder engagement and consultation.

Case study 49

https://it4est.flywheelsites.com/

Environment

Research & Development

IT4EST - Interregional Tech for forEst SusTainability

Project Budget

7,665,483.15 € (Contract Value 360,690.79 €)

Implementation period

2024 - 2027

Client

European Innovation Council and SMEs Executive Agency (EISMEA)

Funding

EU Programme *"Interregional Innovation Investments Instrument (I3-2023-INV2)"*

Project description

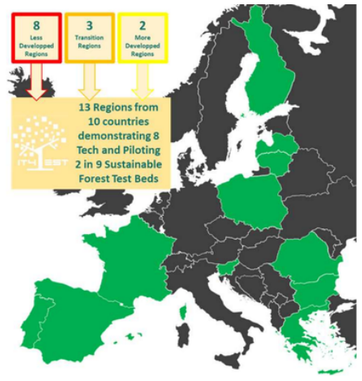
IT4EST launches the first EU Technology Deployment platform for Sustainable Forest Innovation. It is a first-of-a-kind initiative built to tackle two major risks for EU forests:

- Wildfires; and
- Sanitary (e.g., bark beetle infections).

Both are highly exacerbated by climate change and can be addressed by advanced technologies. To save and grow the "*carbon sink*" but also new valorization tracks of Forestry Assets, IT4EST is built upon 3 priority pillars which underpin the Forestry value chain and can trigger huge and fast impacts, especially for Less Developed Regions: 1/ Prevention, 2/ Intervention, and 3/ Restoration/valorisation.

Services provided

- Build a fully integrated Interregional Network of 9 "*Sustainable Forest Test Beds*" across 5 countries (EL, LT, PT, RO, ES). These sites are Real Forests prepared for IT4EST, fully arranged as physical joint demonstration environment to welcome all necessary sensors and be tested for each solution – including intervention tech (e.g., for fire extinction, etc.).
- Scale breakthrough, sustainable forestry tech from less developed regions.
- Anchor innovation capabilities into the very Forest Test Beds of these Regions, reinforcing their environmental and economic position in an unprecedented way.



Case study 50

Environment

Wildfires Information Systems Enhancement projects in North Macedonia

Project Budget

238,830,00 $

Implementation period

2025 - 2026

Client

United Nations - UN / Climate Technology Centre and Network - CTCN

Funding

United Nations - UN

Project description

The objective of the project is to enhance North Macedonia's capacity for comprehensive wildfire risk management by upgrading the existing MKFFIS.

The project will enhance system functionality through the development and integration of additional wildfire information modules to improve fire hazard mapping, damage assessment, and countermeasure planning. Activities include software development, hardware procurement, and system testing to ensure operational reliability and sustainability.

Particular attention will be given to Disaster Risk Reduction (DRR), ensuring that the perspectives of women and vulnerable groups are meaningfully incorporated through targeted stakeholder consultations and surveys.

Capacity-building activities will support national and local institutions in effectively using and maintaining the upgraded system. The project will also assess gaps and opportunities for the development of a broader cross-border climate change adaptation initiative.

The project is structured into six Work Packages covering planning, module demonstration and development, capacity building, DRR integration, project management, and strategic gap analysis.

Services provided

- Assess wildfire risk and review the current MKFFIS to identify gaps.
- Design, develop, and integrate new modules, including required hardware upgrades.
- Strengthen institutional capacity for effective system use.
- Integrate Disaster Risk Reduction (DRR) measures, ensuring inclusion of women and vulnerable groups.
- Explore further improvements and cross-border cooperation opportunities.

Case study 51

Environment

Assessment and Mapping of Natural and Anthropogenic Risks in Mount Olympus

Project Budget
30,000.00 €

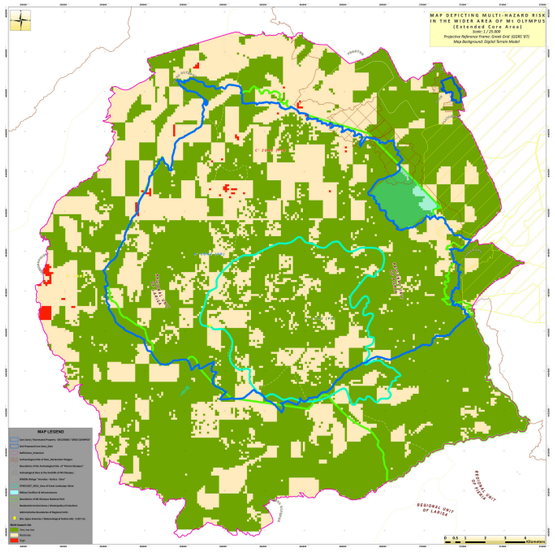
Implementation period
2026

Client
Natural Environment & Climate Change Agency (N.E.C.C.A.)

Funding
Natural Environment & Climate Change Agency (N.E.C.C.A.)

Project description
The objective of the project was the assessment and mapping of compound risks in the wider area of Mount Olympus. The study focused on key interacting stressors—wildfires, drought, erosion, invasive species, and human development—which compined can intensify impacts on ecosystems and socio-economic systems.

A spatial and scenario-based framework was applied, to evaluate ecosystem vulnerability and examine how this risk may change in the future under different climate change scenarios. Overall, the assessment is intended to support decision-making within the broader context of natural and anthropogenic risk assessment in Mount Olympus.



Services provided
- Mapping and analysis of key risk factors, including wildfires, soil erosion, drought, invasive species and human pressures (with emphasis on tourism and infrastructure).
- Development of a composite (compound) risk map for the study area equal-weight multi-hazard approach.
- Assessment of climate change impacts on existing risks using future climate models.
- Identification of risk mitigation priorities and development of indicative mitigation measures.