

# ZenH Balkan

## Towards Zero Energy Hospitals in the Balkan Region

Newsletter  
Issue 3

**Interreg**   
Balkan-Mediterranean  
ZenH Balkan

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The Project aims to facilitate the implementation of the EU's Energy Performance of Buildings Directive (EPBD), by defining characteristics and standards in terms of zero energy in hospitals (ZenH) in the southern Balkan region. The project will contribute to the improvement of energy efficiency in the construction sector.

The ZenH Project is supported by the INTERREG Balkan-Mediterranean program and its duration is from December 2017 to November 2019.

*This project is co-financed by the European Union and National Funds*



## 3rd Technical Seminar

*June 11, 2019, Tirana, Albania*

The technical seminar on “Cogeneration, Geothermal energy and Biomass systems in buildings” took place in the conference room of Hotel COLOSSEO, Tirane, Albania on 11th June 2019.

The Executive Director of Albaforest, Mr. Mehmet Metaj, welcomed the participants and opened the seminar.

Mr Ardian Islami, Directorate of Conception and Feasibility of Industry and Energy Projects, Ministry of Infrastructure and Energy, Albania made an overview of the sector in Albania.

Ass Prof Argiro Dimoudi from DUTH presented the idea and the objectives of the ZenH Balkan project, as well as the conditions and the energy consumption of hospitals in Greece.

Mr. Arti Leskoviku, National Agency of Natural Resources, Tirana Albania, discussed the importance of geothermal energy.

Overview of the energy law and the hospital sector in Albania, was presented by Prof. Altin Dorri, Technical University of Tirana, Albania

Cogeneration of Heat and Power (CHP) - an energy efficient technology, was presented by Costas Theofylaktos, Mech. Engineer-Senior Energy Consultant, Hellenic Association of CHP, Greece

Dr Costas Karytsas, Director, Division of RES, Centre for Renewable Energy Sources, Greece presented applications of Geothermal energy systems in buildings - System design for large buildings.

From Prof. Besim Islami Albania made a presentation on Biomass applications in energy systems of buildings.

Technical guidance and applications of cogeneration systems in hospitals, was presented by Costas Theofylaktos, Mech. Engineer-Senior Energy Consultant, Hellenic Association of CHP, Greece

Types and quality of biomass used for heating in buildings, presented by Arch Evelina Stoykova (Sofia Energy Centre) & Energy Agency Plovdiv.

The lectures were followed by a discussion focused mainly on the possible use of Geothermal energy and Biomass system in the frame of the ZenH Balkan project.

The presentations were followed by a round table where were discussed the advantages of the application of cogeneration, geothermal energy and biomass systems in buildings. Closing remarks to the technical seminar was given by Project Coordinator Argiro DIMOUDI, Assoc. Professor (DUTH).

Prof Ass. Altin Dorri awarded the participants with certificates of attendance.

The participants were representatives from authorities, academy community, consulting companies.





## Project Progress

### Cyprus

The health provision sector (hospitals and clinics) is the 5th most energy consuming one in Cyprus (excluding housing) as a whole, while being the 4th most energy demanding one per square meter.

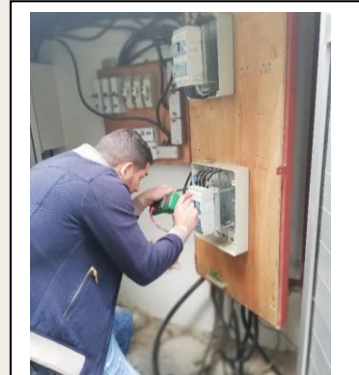
In the framework of the ZenH Project in Cyprus, for the energy audits, five (5) private hospitals were selected. The selection was based on the size of the establishments and their responsiveness of the hospitals to the project's demands. The Ministry of Health and the Cyprus Association of Private Clinics and Hospitals were informed about the hospitals' selection and they provided their support for the Project.

The Procurement for the energy audits and for the instrumentation & software has been completed, the equipment has been purchased and the Energy audits have been executed. The Walk-through energy audits and interviews with hospital staff and all relevant activities in 5 hospitals have been carried out and have been completed. Also, the detailed energy audits in 3 hospitals have been carried out and have been implemented successfully. All relevant reports are accomplished.

A weather station was installed in the pilot case study Building, Hippocrateon hospital, as well as data loggers in various indoor spaces {(offices, patients' rooms, common spaces)}.

The procurement documents concerning WP5 are being prepared.

The works of WP4 concerning the Energy Technologies have been put on hold due to the withdrawal of the corresponding company. The procurement for this work package will be re-announced soon.



Electricity measurements

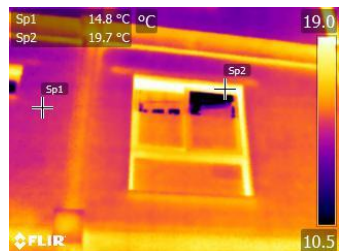


Photos of the hospital's boilers

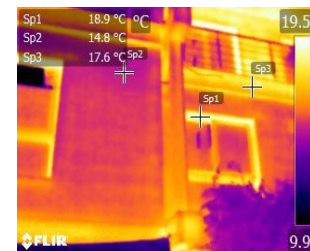
### PHOTOS FROM THE ENERGY AUDITING OF HOSPITALS



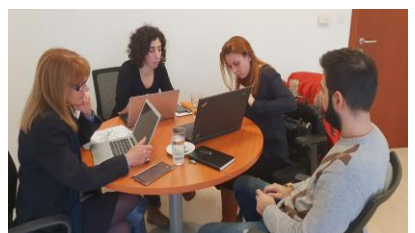
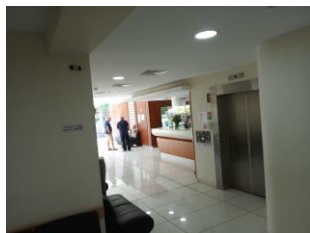
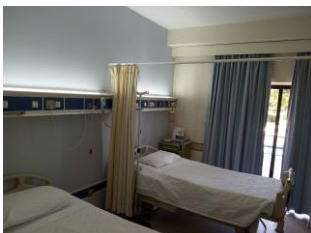
Photo of Ledra Clinic showing its physical context/surrounding environment



Photos of Ledra Clinic Façade with thermal camera



### INSTALLING DATA LOGGERS IN PILOT HOSPITAL



## Project Progress

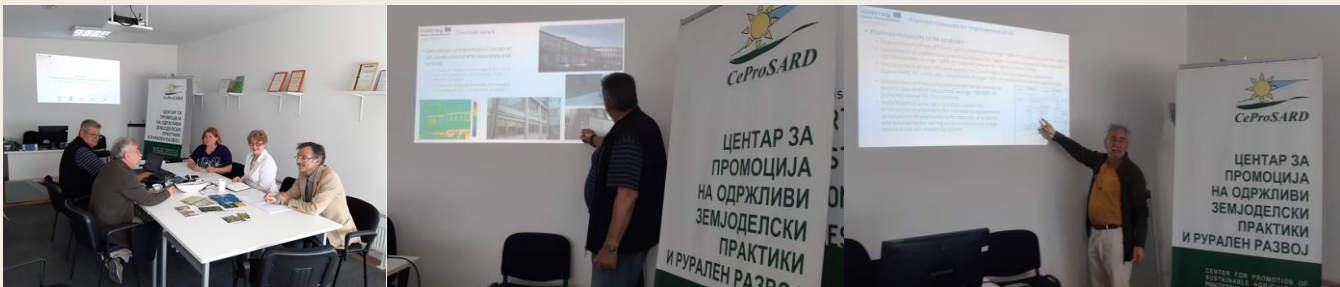
### Republic of North Macedonia

#### Energy Efficiency of Hospitals - ZenH Balkan Project in Republic of North Macedonia

For achieve the project objectives - Preparation of detailed analysis and testing of models for upgrading hospital buildings with near-zero energy, project team in Republic of North Macedonia implemented those activities:

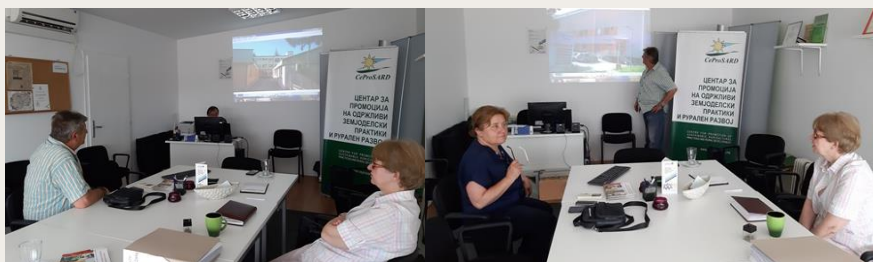
- The results of the conducted energy audit in the Special Hospital for Gynecology and Obstetrics “Mother Teresa“ in Skopje, were presented and
- PHI General Hospital Ohrid were presented.

After the data collection, the measurements performed and their analysis for the Energy Audit of the Special Hospital for Gynecology and Obstetrics “Mother Teresa“ in Skopje, experts engaged by CeProSARD to implement energy audit, made a presentation of the results obtained for the project team at the premises of CeProSARD.



On 17.06.2019, the experts engaged for the implementation of energy audit of hospitals presented the results of the preliminary examination of the facility of the PHI General Hospital Ohrid in front of the project team. This is the second so-called "walkthrough audit" and detailed energy audits of hospital buildings in the Republic of North Macedonia.

The prepared documentation will be submitted for use by the Ministry of Health, which provided support in the realization of this project.





## Cooperation with the institutions - meeting of AC CeProSARD with representatives of the Energy Agency of the Republic of North Macedonia

On July 16, 2019, at the premises of the AC CeProSARD, a meeting was held with Mr. Nehri Emrula, Director of the Energy Agency of the Republic of North Macedonia and Mr. Pance Atanasovski, Consultant for Energy Efficiency and Renewable Energy Sources.

At the meeting, a discussion was held on the past activities implemented by CeProSARD in the field of energy efficiency and renewable energy so far, with particular emphasis on the implementation of the “Zen-H Balkan” project and the possibilities for future cooperation with the Energy Agency. Mr. Nehri Emrula, Director of the Energy Agency, pointed out the possibilities for future cooperation between the Energy Agency and CeProSARD in the area of improving the energy efficiency and utilization of renewable energy sources in the industry and the sector of hospitals, future trainings on energy auditors, the creation of policies in the part of EE, and the need for support with equipment for determining energy savings.



## Project Progress

### Greece

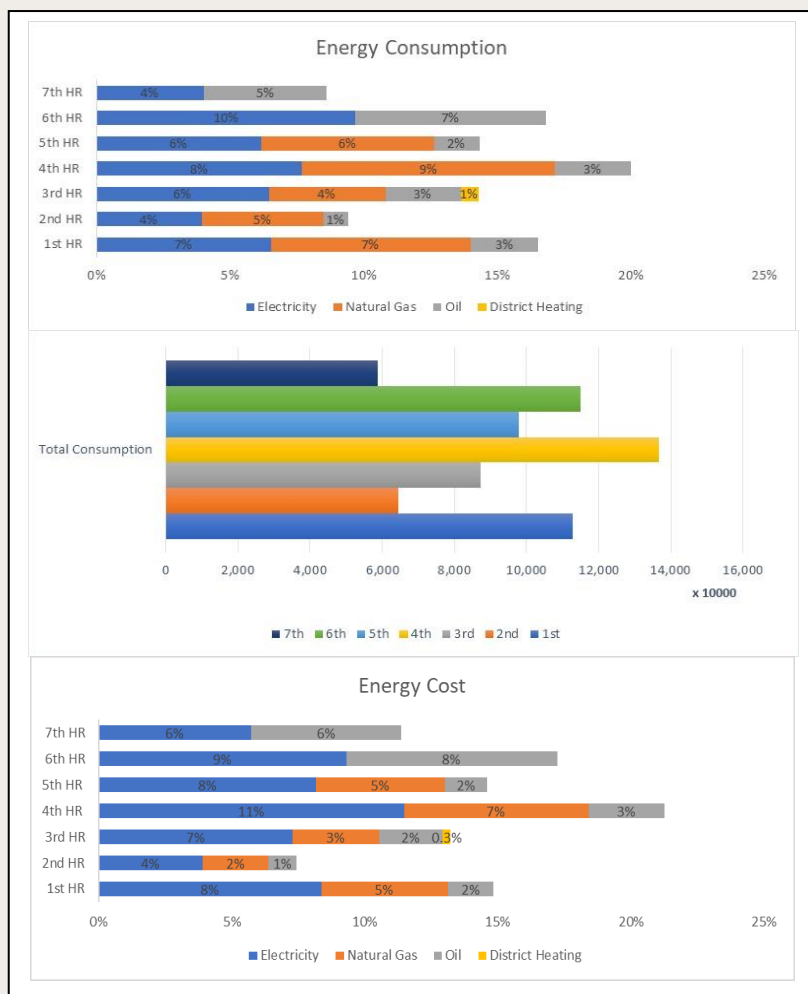
According to the National Health System of Greece the territory is divided into seven Health Regions, HR, which are not identical to Climatic Zones.

In order to investigate the current energy behavior of Greek hospitals, an energy data analysis was conducted. The Energy Data Report focused primarily on existing energy data of hospitals in Greece. An analytical estimation and thorough assessment of the existing data included in the report. The mainly aim of this analysis was to contribute in the assessment of the current energy efficiency behavior of the hospitals.

So, in all Greek hospitals buildings, the primary energy consumption per m2 declines a lot from the European target for existing nZEB in tertiary sector. The deviation from the desired target value is about 81.8%. This marks the great challenge for interventions to improve the energy efficiency behavior of buildings and their upgrading into nZEB-Hospitals.

The “Energy Data Report” of current situation concludes that factors which affect the energy consumption and cost of the hospitals are, among else, the total surface of the hospital, the available energy sources, the prevailed extremely weather conditions during winter or the increased cooling needs during summer.

Further research will be conducted to investigate more factors that affect energy consumption, saving and production, such as thermal insulation, heating and cooling systems, appliances, window frames, RES use etc for Hospitals’ operation.



## Project Progress

### Albania

In Albania the Hospital services are provided through 42 public hospitals (municipal & regional), the most of which were built before 1990 and they are not in good situation (non-quality of construction materials, lack of maintenance and investment). So, there is a great potential for energy saving improvements (thermal insulation, efficient window/door, lighting, etc.).



For the energy audits, 3 regional hospitals were selected for measurements and 4 hospitals for questionnaire distribution. The criteria for selection were the climatic zone, the location, the size and the availability of data.

The data collection indicates the follows:

- Public hospitals have only central heating system but no systems for cooling.
- Automatic regulation system is missing or outdated and it is difficult to measure the use of energy.
- The buildings of hospitals in Albania have no or limited isolation, except from buildings which constructed in the last decade.

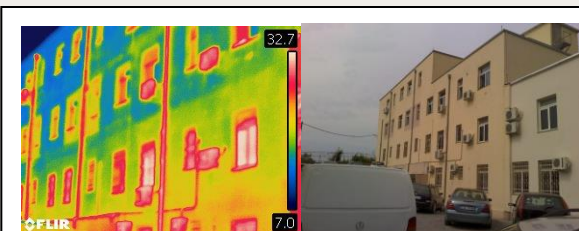


Fieri

Korca

Lezha

### On-site visit





Website and Social Media



ZenH Balkan Interreg



## Upcoming Events

A/W 2019: 3<sup>th</sup> one-day workshop on “Zero Energy Hospitals” in Xanthi, Greece

## Partners Contacts

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