



## **COST-EFFECTIVE REHABILITATION OF PUBLIC BUILDINGS INTO SMART AND RESILIENT NANO-GRIDS USING STORAGE**

### **DEAR READERS,**

It is our pleasure to introduce you to our new and ambitious project funded by the European Union under the ENI CBC Med Programme that brings together seven organizations from four Mediterranean countries, Cyprus, Greece, Israel and Italy.

The partnership of the project entitled "Cost-effective rehabilitation of public buildings into smart and resilient nano-grids using storage (Acronym: BERLIN)" welcomes you to this first project newsletter, which will inform you about the progress of the aim of the project and its activities implemented so far.

If you would like to keep up with all the latest developments of our project, follow us on Facebook and Twitter.

Kind Regards,  
The BERLIN Consortium

## **PROJECT DURATION**

02 September 2019

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01 September 2022



## ABOUT BERLIN

BERLIN focuses on increasing photovoltaics (PV) grid penetration, combined with energy storage systems (ESS) and demand side management (DSM), along with enhancement of energy efficiency in buildings. BERLIN will implement six pilots in Cyprus, Greece, Italy and Israel. The pilots will optimally integrate PV/ESS/DSM in an innovative way and transform each pilot into a self-sufficient nanogrid, as an energy rehabilitation solution in a range of climatic zones. Such a solution can contribute to alleviating the regional and global problem of high-energy consumption in buildings - 1/3 of energy consumption in Mediterranean Partner Countries, 40% in EU- and of resulting CO<sub>2</sub> emissions increase. Equally important is the need to support weak grids that are particularly common in MENA region and rural areas, with low reliability and frequent outages.

To this end, BERLIN will provide knowledge on achieving high levels of building energy self-resilience using smart nanogrids and design the solution as a cost-effective renovation. In addition, MED countries, despite their excellent solar potential, face the problem of its low grid penetration. BERLIN through onsite PV/ESS/DSM, will contribute to achieving higher levels of PV entering the grid whilst ensuring grid stability and power quality. Through these interventions, MED countries will benefit greatly from project's learning curves.

## AIM OF THE PROJECT

BERLIN aims to implement cross-border pilot measures to support innovative and cost-effective energy rehabilitations in public buildings based on the nanogrid concept, the building block for smart microgrids.

The motivation is multi-fold:

- to **address** high energy consumption in building sector that is primarily fossil-fuel based,
- to **support** areas of weak grids, common in MENA region & rural areas, as high energy consumption in buildings can compromise electric service reliability,
- to **achieve** higher grid penetration of RES whilst ensuring grid stability and power quality.



€2.5 MILLION  
EU  
CONTRIBUTION

€2.8 MILLION  
TOTAL BUDGET



## PROJECT IN NUMBERS



**PARTNERS**



**COUNTRIES**



**TECHNICAL OUTPUTS**

### WHAT WILL BE IMPROVED

- **Reduction of energy consumption** and CO2 emissions at the level of pilot buildings.
- **Replication in other Mediterranean/EU regions** and enhanced interest and capacity of public authorities in building energy retrofits.
- **Encourage a widespread policy adoption** for high photovoltaic grid penetration and high levels of self-sufficiency in buildings.
- **Boost SMEs competitiveness, R&D growth, investments** in photovoltaic grid integration, interest from local building professionals to train in new innovations for high efficient buildings, and business and job opportunities in building retrofitting.

### WHO WILL BENEFIT

The main target groups and final beneficiaries are:

1. **Energy stakeholders** (e.g. policy-makers, investors, distribution system operators, regulatory authorities, energy consultants, photovoltaic installers).
2. **Local/regional/national authorities** & their employees and building users.
3. The **scientific community**.
4. **Project consortium**.
5. **General public**.

### EXPECTED ACHIEVEMENTS

- **6 case studies** on the photovoltaic, energy storage solutions and demand side management hybrid technology.
- **4 country-specific recommendations** to stimulate the uptake of photovoltaic, energy storage solutions and demand-side management.
- **2 tools** developed for renovating public buildings using photovoltaic, demand-side management and energy storage systems.
- **6 pilot actions** in buildings in 4 countries.
- **3 cost-effective technologies** in public buildings optimally integrated.
- **5 public institutions supported** towards the adoption of cost-effective policies to increase the use and local consumption of photovoltaic energy.





## PROGRESS SO FAR

During the first six months of the project, a lot of effort has been placed on studying the status of **Renewable Energy, Energy Efficiency and Energy Management measures in buildings** in each partner region. Necessary regional/national data on PV deployment, energy policies, market and barriers (technical, financial, regulatory) for PV, ESS and DSM use has been collected. In addition, current local practices on building energy rehabilitation have been analyzed. The partners have been working intensively on the planning phase of the pilot actions in the public buildings in the four selected countries (Cyprus, Italy, Greece, and Israel). They have nearly concluded with the selection of public buildings and the pilot specifications, which are necessary for the public procurement in relation to the equipment purchasing.



## PROJECT KICK OFF MEETING

*Organized by FOSS Research Centre for Sustainable Energy and Deloitte Cyprus!*

The kick-off meeting of the project was successfully held in **October 2019, in Limassol, Cyprus**. The kick-off meeting was a great opportunity for all the partners to meet in person and to acquaint themselves in detail with all the project tasks and the timelines. The partners agreed on a common work plan and methodology in order to achieve the project objectives.



## PRESS CONFERENCE

*Organized by FOSS Research Centre for Sustainable Energy and Deloitte Cyprus!*

A press conference was held on the 25th of October at the University of Cyprus to announce the kick-off of BERLIN project and communicate its objectives, expected achievements, and opportunities for further penetration of photovoltaics in the energy mix.



## UPCOMING MEETINGS

**JUNE 2020**

2nd Transnational Meeting  
(Municipality of Eilat, Israel)



## FLYER & BANNER

The BERLIN flyer and banner were designed and prepared by Deloitte. The flyers will be distributed at events and among relevant stakeholders. The roll-up banner with information about the project is located at the partners' premises in a location readily visible to the public, such as the entrance of a building. The banners are presented at any project-related event, including internal meetings, workshops, and conferences.

**ENI CBCMED**  
Cooperating across borders in the Mediterranean

Project funded by the **EUROPEAN UNION**

REGIONE AUTONOMA DE SARDEGNA  
REGIONE AUTONOMA DELLA SARDEGNA

**BERLIN**

**Cost-effective rehabilitation of public buildings into smart and resilient nano-grids using storage**

Thematic objective  
B.4 - Environmental protection, climate change adaptation and mitigation

Priority  
B.4.3 - Energy efficiency and renewable energy

**Project Partners:**

University of Cyprus, Eilat, Deloitte, Università degli Studi di Cagliari, UNIVERSITY OF WESTERN MACEDONIA

Project funded by the European Union in the frame of ENI CBC MED Programme

**Countries:**

Italy, Greece, Cyprus, Israel

**Main aims**

- To develop and promote sustainable and optimal solutions towards high degree of energy self-sufficiency in buildings in the Mediterranean region based on clean renewable energy and energy efficiency
- To increase grid penetration, combined with energy storage and demand-side management, along with enhancement of energy efficiency in buildings
- To reach high levels of self-resilience in public buildings and to make them greener, smarter, more innovative and sustainable

**Improvements of the project**

- Reduction of energy consumption and CO<sub>2</sub> emissions at the level of pilot buildings
- Adoption of a policy for high photovoltaic grid penetration and high levels of self-sufficiency in buildings
- Boost SMEs competitiveness, R&D growth, investments in photovoltaic grid integration, interest from local building professionals to train in new innovations for high efficient buildings, and business and job opportunities in building retrofiting

€ 2.8 million Total budget

€ 2.5 million EU contribution

36 months Duration

<http://www.enicbmed.eu/projects/berlin>

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## PROJECT WEBSITE & SOCIAL NETWORKING

- Everything you need to know about BERLIN can be found on our webpage <http://www.enicbmed.eu/projects/berlin>
- Make sure that you receive our Newsletter, so that you are kept informed regularly about the ongoing progress and results of the project.
- Stay informed on the BERLIN Project progress and news via its Twitter and Facebook accounts.



## PROJECT PARTNERS



### UNIVERSITY OF CYPRUS COORDINATOR

[www.ucy.ac.cy](http://www.ucy.ac.cy)

FOSS Research Centre for Sustainable Energy of the University of Cyprus (UCY) is a research powerhouse in the field of sustainable energy solutions and in particular Photovoltaics. Committed to undertaking high quality research in order to tackle the climate and energy security challenges of today and the future, FOSS has currently over 40 active research projects, mainly funded by European grants, achieving imposing results. Through its research projects, FOSS has substantial experience in pilots where Photovoltaics are integrated with Energy Storage, and this knowledge will be transferred in the BERLIN project.

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### UNIVERSITY OF WESTERN MACEDONIA

[www.uowm.gr](http://www.uowm.gr)

The Department of Electrical & Computer Engineering of University of Western Macedonia (UoWM) has been involved in several European, regional and national projects with various tasks such as the integration of renewable energy resources, intelligent control of electric power generation and consumption, photovoltaics and storage hybridization and relevant pilot activities, smart grids and cyber security.

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### THE MUNICIPALITY OF EILAT

[www.eilat.city](http://www.eilat.city)

The Municipality of Eilat city is a leader in energy efficiency, as 75% of the city's daytime electricity is supplied by renewable energy (RE), and by 2020, the city will become energy independent. As in Eilat region there is more than 1850 sun hours per year, there is an advantage of using PV. The current state and the planned solutions are based on solar PV systems and energy efficiency, mostly in the cooling systems. Eilat is also a member of several H2020 projects in which a planning for a positive energy district is being developed.

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Università degli Studi di Cagliari



## UNIVERSITY OF CAGLIARI

[www.unica.it](http://www.unica.it)

UNICA participates in the BERLIN project through the Department of Electrical and Electronic Engineering (DIEE) that has a long history of participation to EU projects and calls and each year a significant portion of its budget is based on EU projects. The department cooperates with research labs (both industrial and public) and with other academic institutions worldwide.

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## BEN GURION UNIVERSITY

[www.in.bgu.ac.il](http://www.in.bgu.ac.il)

BGU is one of Israel's leading research universities and among the world leaders in many fields. BGU participates in the BERLIN project through the Department of Structural Engineering adding much needed structural/architecture expertise to consortium. Modern structural engineers face a variety of technological developments and challenges.

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# Deloitte.

## DELOITTE LIMITED

[www2.deloitte.com/cy](http://www2.deloitte.com/cy)

Deloitte participates in BERLIN through the Innovation and Entrepreneurship Centre (Deloitte IEC). Deloitte has an important role in the project as it has vast experience in managing successful European and local funded projects. The team of Deloitte IEC uses multiple research methods and tools for European Union-funded and ad hoc research for internal or external purposes in a number of areas covering Cyprus and the rest of Europe. Specifically, Deloitte IEC involvement in EU-funded projects is mainly on socio-economic impact studies, cost-benefit analyses, project and financial management, quality management and communication and dissemination.

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## HEVEL EILOT REGIONAL COUNCIL

<https://www.eilot.org.il>

Hevel Eilat Regional Council contribution will be on the off-grid applications, policy making at regional level and multi-level governance. Hevel Eilat is at the forefront of RE in Israel. The Eilat region established the Company for Renewable Energy (NGO) that works on the regulation and assimilation of innovation in the region. The regional council was the first one in Israel to build a PV solar farm and its developing new project as well as supporting start-ups.

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## ASSOCIATED PARTNERS

	Organization	Country
Associate 1	 <b>MUNICIPALITY OF KOZANI</b>	Greece
Associate 2	 <b>Municipality of Ussaramanna</b>	Italy
Associate 3	 <b>REGIONE AUTÒNOMA DE SARDIGNA REGIONE AUTONOMA DELLA SARDEGNA</b>	Italy

For more information please contact the project coordinator Prof. George E. Georghiou, Director of FOSS Research Centre for Sustainable Energy, University of Cyprus, Tel. +357 22892272, email: geg@ucy.ac.cy.

