



BERLIN



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

DEAR READERS,

It is our pleasure to welcome you to the second edition of the BERLIN Newsletter!

"BERLIN Cost-effective rehabilitation of public buildings into smart and resilient nano-grids using storage" is an 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 first year of the project implementation has passed and we would like to update you about the progress of the project.

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 contribute² 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 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


7

PARTNERS


4

COUNTRIES


6

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.
- **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

Even though the **COVID-19 pandemic** has had an impact on some project activities, the BERLIN partners continued to work towards achieving the objectives of the project, in the context of the different tasks. Partners' work focused mainly on the technical preparation of the pilots in the four countries in order to launch the required public procurement processes in relation to the purchase and installation of all the necessary equipment. The selection of the **public buildings** in the four MED countries (**Cyprus, Italy, Greece and Israel**) and the **pilot** specificities, which are necessary for the public procurement in relation to the equipment purchasing, has been completed. An initial energy audit for each pilot building selected to identify the building automation system needs has been conducted and the preparation of server database to receive pilot data has been implemented. Significant progress on the creation of the **Intelligent Utilization of PV Technology** in the MED region hub (IUPVMED hub), where major stakeholders will have the opportunity to interact and facilitate through knowledge exchange the adoption of **cost-effective policies** to increase the use and local consumption of PV energy has been made as well.



PILOT INSTALLATIONS IN MED COUNTRIES

The BERLIN project aims at the implementation of cross border pilots that will support innovative and cost-effective energy rehabilitation in public buildings based on the nanogrid concept.

BERLIN project focuses on the increase of photovoltaics (PV) penetration, which coupled with energy storage and demand-side management (DSM) will increase the energy efficiency (EE) of the buildings. The implementation of these technologies in a cost-effective way will result in a high level of **self-resilient** public buildings that are **green, smart, innovative and sustainable**.

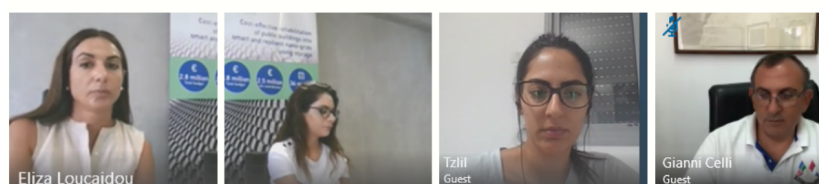
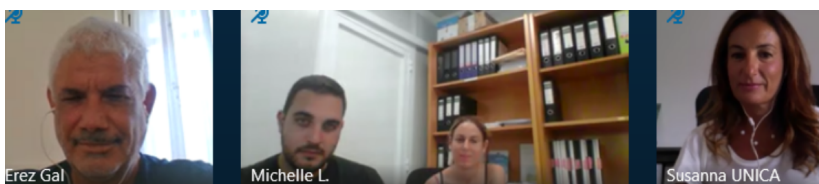
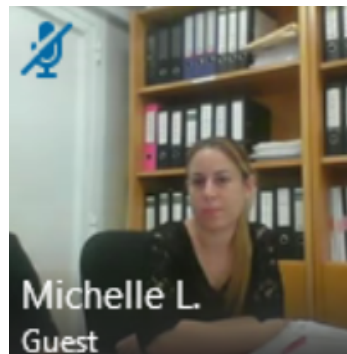
The six pilot buildings, where the nanogrids will be implemented are as follows:



PROJECT MEETINGS

During the first year of the project, meetings were mainly organized online with the participation of all partners, due to the travel restrictions that were introduced by the national governments to protect public health and safety. The second physical meeting that would take place in Eilat in June 2020 was postponed and it will be rescheduled when travel restrictions are lifted. Instead, an extensive online meeting was organized on 23 June 2020, to discuss in detail the project progress to date and plan the next steps.

BERLIN GOES ONLINE!



PARTICIPATION IN EXTERNAL EVENTS

Med-EcoSuRe and BERLIN work together to develop cost-effective energy efficiency and high-tech renewables in isolated areas.

A webinar organized by Med-EcoSuRe and hosted by SOLARTYS (Spanish association for the internationalization and innovation of solar companies) and the University of Seville took place on the 28th of July 2020. The topic of the event was "How can cost-effective efficiency and high-tech renewables take place in isolated zones/towns?"

The Coordinator of the project, Professor George E. Georghiou, shared the experiences, milestones and goals, of BERLIN project, which is thematically related to Med-EcoSuRe, during this webinar. Follow the link to watch the relevant video from the presentation of BERLIN in the webinar.

ENI CBCMED
EUROPEAN UNION
MED-EcoSuRe
MED bex live
Mediterranean Cross Border Living Lab
live the experience of university building environment
WEBINAR
Med-EcoSuRe series of webinars concluded: main results and recommendations fostering the transition towards energy efficient building stock

Logos at the bottom include: MEDREL, UNIVERSITÀ DEGLI STUDI DI FIRENZE, DIDA, U.S., anea, SOLARTYS, Università degli Studi della Campania Luigi Filicelli, and Università della Basilicata.



PROJECT PARTNERS



UNIVERSITY OF CYPRUS COORDINATOR

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

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

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

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

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

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 |  MUNICIPALITY OF KOZANI | Greece |
| Associate 2 |  Municipality of Ussaramanna | Italy |
| Associate 3 |  REGIONE AUTÒNOMA DE SARDIGNA REGIONE AUTONOMA DELLA SARDEGNA | 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.

