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Active RoofTops
South Europe

CASE STUDIES FACTSHEETS

Greece & Cyprus

This project has been funded by various national research and development agencies under the Driving Urban Transitions Partnership, which is co-funded by the European Commission.

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CASE
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FACTSHEETS

GREECE

HELLENIC TREASURY

Athens, Greece
Area: 650 m²


Source: greenroofs.com, credits: Andrew Clements, Oikosteges

Building Typology
Central-government office building

Roof Type
Lightweight extensive green roof

Rooftop Intervention
Extensive green roof with native drought-resistant planting, irrigation and thermal-performance monitoring

Intervention Overview
A 650 m² extensive green roof was installed on the Ministry of Economics and Finance building in central Athens, covering about 52% of the available roof area. The system was designed around strict retrofit and seismic load constraints: the growing medium is less than 10 cm deep and the reported saturated weight remains below 50 kg/m². Native, drought-resistant aromatic plants were combined with waterproofing, root protection, drainage and irrigation layers. Continuous monitoring made the roof a research platform for assessing green-roof performance in a dense Mediterranean setting. Monitoring compared roof and indoor conditions to quantify cooling, heating and wider ecological benefits over time.

Why this Case matters
An early Mediterranean retrofit with monitored evidence of energy savings and biodiversity benefits, demonstrating the feasibility of lightweight systems on existing offices.

Key Features
- Shallow substrate and lightweight build-up avoided major structural reinforcement.
- Planting selected for high heat, drought and solar exposure.
- Reported 50% reduction in cooling demand on the floor directly below the roof.
- Reported annual saving of about €5,630, including lower cooling and heating costs.

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GREECE

MENEMENI PRIMARY SCHOOL

Thessaloniki, Greece
Area: 491 m²


Source: greenroofs.com, credits: xafakou@gmail.com

Building Typology
Public primary school

Roof Type
Flat concrete roof converted to an extensive green roof

Rooftop Intervention
Thermal retrofit, stormwater management and urban greening

Intervention Overview
The roof of the 4th Primary School of Menemeni was converted from an unused concrete surface into approximately 491 m² of planted green infrastructure. Works included roof preparation and structural assessment, new waterproofing, drainage and filtration layers, lightweight growing medium, drought-resistant planting and irrigation. The intervention was conceived primarily as a nature-based building retrofit rather than a public rooftop garden. By shading the roof slab and buffering temperature fluctuations, the system aims to reduce summer overheating and improve indoor conditions for pupils and staff. The planted roof also retains rainfall, delays runoff and protects the waterproofing membrane from solar and thermal stress.

Why this Case matters
Public-school retrofit combining thermal comfort, stormwater management and roof protection, supported by a documented municipal budget and funding pathway.

Key Features
- Lightweight extensive system suitable for an existing school structure.
- Mediterranean planting selected for drought tolerance and manageable maintenance.
- Rainwater is retained and runoff delayed through the layered roof build-up.
- Vegetation protects the waterproofing membrane from solar and thermal stress.

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GREECE

EPAL STAVROUPOLI

Thessaloniki, Greece
Area: 3087 m²

Building Typology
Large public vocational school complex

Roof Type
Extensive Green roof with photovoltaic (PV) systems

Rooftop Intervention
A total green area of 3,087 sq.m. with 25,000 ground cover plants.

Intervention Overview
The EPAL Stavroupoli retrofit transformed extensive areas of an underused school roof into hybrid green and energy infrastructure. Approximately 3,087 m² were waterproofed, prepared with lightweight growing layers and planted with about 25,000 groundcover plants. An automatic irrigation system supports establishment and long-term survival, while integrated support bases allow photovoltaic systems to share the roof. The result combines a nature-based solution with renewable-energy equipment on a large public educational building, demonstrating how roof upgrades can contribute simultaneously to climate adaptation and decarbonisation. The planted layer also improves insulation, protects waterproofing, retains rainfall and helps reduce the surrounding urban heat-island effect.

Why this Case matters
Its scale demonstrates how municipalities can combine extensive planting and photovoltaic infrastructure across school estates to advance climate adaptation and decarbonisation.

Key Features
- Waterproofing, substrate formation, planting and automatic irrigation
- Extensive vegetation selected for relatively shallow build-up and limited maintenance.
- PV support structure coordinated with green-roof zones.
- Benefits include thermal buffering, sound insulation, runoff reduction and particle retention.

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CYPRUS

CYPRUS ENERGY AGENCY

Nicosia, Cyprus

Source: cyprus energy agency

Building Typology
Renovated 1960s mixed-use building; agency offices

Roof Type
Extensive green roof on flat roof, combined with PV

Rooftop Intervention
Green roof, renewable energy, biodiversity and social use

Intervention Overview
The Cyprus Energy Agency converted the roof of its premises in Nicosia's walled city into a compact demonstration of multifunctional rooftop retrofit. A low-water extensive planting system sits alongside existing technical equipment and photovoltaic panels, while a metal pergola with climbing plants and a furnished sitting area make the roof usable as a communal space. The build-up includes a root-resistant membrane, moisture-retention layer, drainage and ventilation sheet, growing substrate and selected vegetation. Herbs, aromatic plants, succulents, sedums and grasses were chosen for low maintenance and suitability to a dry climate. The roof also incorporates habitat features, composting, reused materials and a meteorological station for monitoring local conditions.

Why this Case matters
A compact retrofit combining planting, solar energy, biodiversity, monitoring and social use, offering a practical model for multifunctional roofs on existing urban buildings.

Key Features
- Green-roof depth of approximately 6-20 cm and reported wet load of 60-150 kg/m².
- Twelve 525 W photovoltaic panels installed across pitched and flat roof areas.
- Permeable gravel path and seating made from tiles reused during the retrofit.
- Bee hotels, bird nesting provision, composting and a rooftop weather station..

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WP1: Setting the Scene, Co-Design and Consultancy Package.

D1.1A: Regulatory and Technical Landscape on Rooftop Design and Installation. Executive Summary.

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Greece and Cyprus case studies: Michalis Psaras
Design credits: Marina Pasia

CONSORTIUM

COOPERATION PARTNERS

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