DEMONSTRATORS







www.wefe4med.eu



Proteas (Platform of Research, Observation and Technological applications in Solar Energy)

Descriptive Summary

The PROTEAS facility is the largest research infrastructure in Cyprus and specializes in the development and testing of technologies relating to concentrated solar power (CSP) and solar seawater desalination. PROTEAS offers a unique environment for testing in realistic coastal-island conditions solar technologies. The PROTEAS experimental plant consists of a heliostat central-receiver system for solar harvesting, thermal energy storage in molten salts followed by electricity production and a unit for seawater desalination. These technologies were selected after an extensive technical and economic study lead by The Cyprus Institute, which concluded that they are the most suitable for the particular conditions of grid-isolated island communities in general and Cyprus in particular.

B

THE CYPRUS INSTITUTE

SCAN ME



City Limassol	Country Cyprus	Start year 2015	Focal Point
Acknowled The Cyprus I Nexus Dim	lgement of f nstitute ensions	unding source Total funding 1M - 5M €	Georgiou, C. Marios m.c.georgiou@cyi.ac.cy The Cyprus Institute
SDGs 6 CLEAN WATER AND SANITATION TO CLEAN AND SANITATION TO CLEAN COMPACT CLEAN COMPACT CLEAN COMPACT CLEAN COMPACT CLEAN COMPACT CLEAN C	DABLE AND ENERGY 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	13 CLIMATE	
Scores Environmen 00000	tal Social ●●O	Technological ⊃O ●●●●●	Financial Institutional
		www.proteas.cvi.ac.c	v



Biosolar Green Roofs



Descriptive Summary

Three municipalities of the Metropolitan Area of Barcelona (AMB) will instal three biosolar green roofs: 2 in kindergardens and 1 in a library. This is the combination of a green surface on which photovoltaic (PV) modules are placed. The presence of the vegetation lowers and stabilises the PV module temperature, which increases its performance. This helps to generate energy and reduce energetic demand of the buliding, increase urban green spaces and biodiversity, enhances air quality, etc.



City Start year **Focal Point** Spain 2024 **Total funding** 500 - 100k € **Nexus Dimensions Gemma Torres** gtorres@amb.cat MedCities (MedCités) Energy Water **Ecosystems SDGs** 4 QUALITY EDUCATION 6 CLEAN WATER AND SANITATION AFFORDABLE AND Clean Energy **9** INDUSTRY, INNOVATION AND INFRASTRUCTURE SUSTAINABLE CITIES 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE 15 LIFE ON LAND Scores Environmental Social Technological Financial Institutional

blogs.amb.cat/educacioambiental/23/02/2022/que-son-les-cobertes-biosolars

BE THE CHANGE

Malta National Water Conservation Campaign - Water Be The Change

SCAN ME

Descriptive Summary

Water - Be the Change is a national water conservation campaign launched in September 2019 with the aim of delivering an effective educational and awareness-raising campaign on the optimised and efficient use of water resources to facilitate a cultural shift in people's behaviour towards water conservation on the Maltese islands.



City Start year

End year

Malta

2019

2023

Total funding

10 - 100k €

Acknowledgement of funding source

European Cohesion Funds (2014-2020)

Nexus Dimensions





SDGs



Scores





Technological



Financial



www.water.org.mt

Focal Point



Manuel Sapiano manuel.sapiano@gov.mt

Water and Energy Agency, Malta



MENA Water Matchmaker II Project: Integrated technical solutions for sustainable agriculture in Jordan and Palestine

SCAN ME

Descriptive Summary

The applied WEFE Nexus technical intervention in Salt, Jordan, contributes to sustainable agriculture through reuse of treated wastewater from the Wadi Shuayb Wastewater Treatment Plant for irrigation in three farms, after its tertiary treatment through constructed wetlands, with renewable solar energy powered pumping, and climate-resilient planting. The project provides a proof of the added value of the WEFE Nexus approach and demonstrating its potential for replication in Jordan, the Middle East and North Africa (MENA) and beyond.



City

Country

Salt Sa'ir-Hebron Jordan Palestine Start year

2022

Total funding

1M - 5M€

Acknowledgement of funding source

Swedish International Development Agency (Sida), the Union for the Mediterranean (UfM)

Nexus Dimensions







RESPONSIBLE Consumption

Energy SDGs









Social

Technological ●0000

13 CLIMATE ACTION

Financial ●●●00

Institutional ●●●00

Focal Point



Ghazi Abu Rumman

ghazi.aburumman@gwpmed.org

Global Water Partnership Mediterranean - GWP MED



Water Reutilisation Station "El Prat de Llobregat"

Descriptive Summary

The Prat de Llobregat treatment plant is one of the three metropolitan WWTPs that have water reuse processes since it includes a Water Regeneration Plant. It is one of the most important stations in the world (50 thousand million L/year; peak flow: 3.25 m3/s). It includes 2 phases: 1st phase with physicochemical treatment plus microfiltration and disinfection, which treats %100 of the water. The resulting water is used for environmental use in the river; Agricultural irrigation; Urban Irrigation; Sewer cleaning; Maintenance of wetlands; Industrial uses. A 2nd phase includes ultrafiltration plus reverse osmosis, and treats %10 of the water. The resulting water of 2nd phase is reused to contribute to the creation of a barrier against saline intrusion.

SCAN ME





www.amb.cat/es/web/medi-ambient/aigua/instalacions-i-equipaments/detall/-/equipament/era-del-prat-de-llobregat/11818/360457



MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO CONFEDERACIÓN HIDROGRÁFICA DEL JÚCAR, O.A.

The Tous Multipurpose Dam and Reservoir System



Descriptive Summary

Multipurpose reservoirs, like the Tous Dam and the Júcar river reservoir system in Spain, exemplify integrated water management using the NEXUS approach, addressing the complex demands of irrigation, industry, human consumption, flood control, ecosystems, and power generation. The key challenge is balancing the competing needs of various water users, which requires careful planning and transparent decision-making by Dam boards. These boards, representing different stakeholders, make seasonal release decisions based on expected demands and precipitation. The Tous Dam and the associated dam system in eastern Spain is one such case. Altogether it ensures water security in the Júcar River Basin by regulating water for hydroelectric production, irrigation, and urban use, while also providing flood control. This system highlights the importance of strategic management in optimizing water resource distribution among energy, agriculture, urban needs, and environmental conservation.



MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO





www.chj.es/es-es/Organismo/organoscolegiados/Paginas/OrganosdeGestion.aspx

MEDISS

Mediterranean Integrated System for Water Supply (MEDISS)

Descriptive Summary

There is a big pressure on the use of aquifers in the Mediterranean region for irrigation and desalination of water is still a costly and energy-demanding process. MEDISS addresses the issue of improving the quality of saline groundwater present in the Mediterranean area opening alternative irrigation for higher quality and more diversified cultivations (dates, citrus, etc.). According to the features and specific needs of the partner areas - Palestine (Jordan Valley), Jordan (Aqaba Governorate), Italy (Arborea) and Tunisia (Gabès) - MEDISS tested innovative solutions in the use of treated wastewater and desalination of brackish water. Specific awareness initiatives for end-users challenged their reluctance toward non-conventional water resources (NCWR) and trained them on Best Agricultural Practices.

SCAN ME

On the longer term, the project will contribute to reducing stress on freshwater, as well as costs for water supply. At the same time, higher productivity and diversification of crops will increase food security and income for farmers. Local communities and institutions will be empowered, contributing to behavioural change on the use of NCW and on environmentally and economically sustainable development.



2019

2023

Start year

End year

CityCountryJordan ValleyPalestineAqaba GovernorateJordanArboreaItalyGabèsTunisia

Total funding

1M - 5M€

Acknowledgement of funding source

EU / ENI CBC Med

Nexus Dimensions







SDGs



www.enicbcmed.eu/projects/mediss

Focal Point



hedi bchir hedi.finance@cawtar.org CAWTAR



EcoFuture Pilot Demonstration in Palestine



Descriptive Summary

The Palestinian Pilot focuses on the reuse of wastewater for irrigation using an off grid solar powered wastewater treatment facility. The water will be treated to the level for agricultural water use. In addition, an existing desalination unit that has not been operational for the past 10-8 years will be upgraded. Desalinization of local groundwater mixed with the treated wastewater will increase the amount of water available for agriculture and enable farmers to produce cash crops in greenhouses, increasing local food supplies.



City Country S

Start year

Marj Na'je State of Palestine

Total funding

End year

100 - 500k €

2026

Acknowledgement of funding source

PRIMA

Nexus Dimensions







Energy

SDGs



Scores



Social



Financial ●●●00



www.ecofuture-prima.eu

Focal Point

EcoFuture

info@ecofuture-prima.eu

Damour for Community Development



EcoFuture Pilot Demonstration in Jordan



Descriptive Summary

The Jordanian pilot under the EcoFuture Project aims to restore degraded agricultural land and enhance water supply for irrigation. This pilot introduces advanced water harvesting techniques to collect water from three dunums of greenhouses to irrigate tomato crops. To maximize energy efficiency, the collected water is stored in an irrigation pond, and photovoltaic (PV) panels are suppling the electricity needs of the system. The fertility of soil is also being improved with organic matter amendment to the soil. These integrated technologies additionally minimize the irrigation water losses to groundwater.



City Country

Start year

Dayr 'Allah Jordan

rdon

Total funding

End year

100 - 500k €

2026

2023

Acknowledgement of funding source

PRIMA

Nexus Dimensions







Energy

SDGs



Scores



Social ●●●OO



Financial ●●●00



www.ecofuture-prima.eu

Focal Point

EcoFuture

info@ecofuture-prima.eu

National Agricultural Research Center

y *x* regen

ReGen-R8

SCAN ME

Descriptive Summary

Our cloud-based AI-enabled platform for on-demand renewable energy (energy as a service) in the Middle East empowers farmers to implemnet efficient sustainable agriculture practices by providing clean energy, minimising water use, and reducing the carbon footprint of agriculture, making it an environmentally sustainable solution for the agriculture industry.

xregen

Focal Point City Country Start year **Total funding** 100 - 500k € Beirut Lebanon 2021 Acknowledgement of funding source Clean Energy and Food System Challenge **Nexus Dimensions Jaffar Hasan** hasan.jaafar@yy-regen.com ReGen Energy Food **SDGs** AFFORDABLE AND Clean Energy 2 ZERO HUNGER 5 GENDER EQUALITY 2 RESPONSIBLE CONSUMPTION 13 CLIMATE ACTION AND PRODUCTIO (((**Scores** Environmental Social Technological Financial Institutional ●●000 $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$ **●●○○○**

www.yy-regen.com



Renewable Energies for Agricultural and Rural Development in Tunisia



Descriptive Summary

The REFAT (Renewable Energies for Agricultural and Rural Development in Tunisia) project aims to contribute to national efforts to promote renewable energies in the agricultural sector and potable water production. Aligned with the initiatives of the Tunisian Ministry of Agriculture, Hydraulic Resources, and Fisheries (MARHP), the project aims to Support the development of an incentive framework for more efficient energy production and consumption in agricultural farms in Tunisia; Promote renewable energies to reduce the energy cost of water pumping for potable water. The project consists of two components:

Component 1: Promotion of renewable energies and sustainable water management for agriculture (pilot startups ,training and studies);

Component 2: Installation of a 500KW photovoltaic power station at a potable water pumping station of SONEDE in Gabès.



City Country

Start year

Tous

1M - 5M €

Spain

2018

Total funding

End year

2021

Acknowledgement of funding source

Contribution from the Ministry of Agriculture (Tunisia): €222,800 Contribution from the Ministry of the Environment (Italy): €1,973,000

Nexus Dimensions







Food





Focal Point



Bchir Bchir, Hedi hedi.finance@cawtar.org CAWTAR

SDGs



www.medrec.org/fr/refat



Salus Space - Front Ag Nexus

SCAN ME

Descriptive Summary

Salus Space, in the suburbs of Bologna, is a vibrant example of redeveloped multifunctional urban space, with the aim to favor social integration and local food production. The space includes a blended housing for elderly, migrants, refugees and young families, as well as a Syrian restaurant, a library, a vegetable garden and common areas for workshops, art and a weekly local market. Salus Space also hosts an innovative indoor hydroponic system developed within two shipping containers and used for the production of mushrooms, lettuce, kale, microgreens and much more, which represents the first demonstration case of UNIBO within FrontAg NEXUS project.



City Country

Bologna Italy

Total funding

End year

Start year

100 - 500k€

2026

2023

Acknowledgement of funding source

PRIMA, Horizon2020

Nexus Dimensions







SDGs



www.frontagnexus.eu

Focal Point



Elisa Appolloni elisa.appolloni3@unibo.it Alma Mater Studiorum Università di Bologna DISTAL Department of Agricultural and Food Sciences Bologna



Insect Farm - DISTAL Lab



Descriptive Summary

Step into the world of sustainable agriculture as we grow the insect Galleria Mellonella for scaling up in developing countries at the "Insect farm – DISTAL Lab". This small but innovative facility at the University of Bologna is at the forefront of researching sustainable, circular, and cost-effective methods for the production of Galleria Mellonella. Beside this main scope, DISTAL Lab also foresees the integration of experimental simplified hydroponic systems to implement the research on sustainability and circularity of cultivation systems for household consumption and small business development in emerging countries. Join us in our quest to expand the horizons of eco-friendly insect farming and accessible simplified hydroponic systems, and unlock the potential for a greener and more sustainable future.



Start year

City Country

Bologna Italy

2024

Total funding

100 - 500k€

Acknowledgement of funding source

PRIMA

Nexus Dimensions



Ecosystems

SDGs



Scores

Environmental

Social

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www.frontagnexus.eu

Financial ●●●OO

Institutional

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Focal Point

Elisa Appolloni

elisa.appolloni3@unibo.it

Alma Mater Studiorum Università di Bologna DISTAL Department of Agricultural and

Food Sciences Bologna

BONEX

BONEX pilot on sustainable agriculture in Jordan



Descriptive Summary

The Demonstration Pilot of BONEX in Jordan is a soilless substrate culture (hydroponics) located in Dhiban area within Wadi Mujib watershed (central Jordan).

Demonstration activities delivers a smart agricultural technique characterized by saving water, equipped with solar powered drip irrigation and fertigation system adapted to the rural MedReg context improving end-users adoption, market uptake and policy integration of WEFE Nexus in an area that is still at a low level of technology development and sustainable approaches, high poverty rates , and characterized by acute land degradation and very scarce water resources.

Additionally, the Demonstration Pilot is operated managed by a youth cooperative that was formed by 13 male and 10 female unemployed youth.



City

Dhiban, Madaba

Country

Jordan

Start year

Total funding

2022

500 - 100k€

Acknowledgement of funding source

PRIMA

Nexus Dimensions

Energy Food Water **Ecosystems SDGs** 5 GENDER EQUALITY AFFORDABLE AND Clean Energy B DECENT WORK AND ECONOMIC GROWTH 13 CLIMATE ACTION Ň**ŧ**ŧŤ E Scores Social Institutional Environmental Technological Financial **•••**00 **●●○○○**

bonex-prima.eu/projects/dp-jordan

Focal Point



Serena Sandri serena.sandri@gju.edu.jo

German Jordanian University



Co-funded by the European Union





Descriptive Summary

LIFE ECOdigestion 2.0 is a pilot demonstration project, funded by LIFE Programme and with a budget of more than 970,000 EUR, which generates biogas in sewage treatment plant digesters by mixing putrescible organic waste (slurry, poultry, organic fractions, MSW, horeca, etc.), thus transforming sewage sludge into green energy through technology.

The initiative led by Global Omnium, (Spain), in collaboration with the Finnova Foundation (Belgium) and Águas do Centro Litoral (Portugal) aims to become the most versatile digestion control tool on the market, achieving environmental and economic benefits through the production of biogas by making optimal use of waste.

Thanks to this technology, it favours the reduction of greenhouse gas emissions and the use of sewage sludge generated in wastewater treatment processes, thus achieving a positive impact on the environment. This programme is easily scalable with other funds such as FEDER, NextGenerationEU or RePowerEU.



City

Quart-Benàger, Valencia Coimbrão

Country

Spain Portugal

Start year

Total funding 500 - 100k €

2020

Acknowledgement of funding source

Cofunded by the European Union, LIFE Programme

Nexus Dimensions

Food Energy Water **Ecosystems SDGs** 6 CLEAN WATER AND SANITATION **9** INDUSTRY, INNOVATION AND INFRASTRUCTURE SUSTAINABLE CITIES 13 CLIMATE ACTION Scores Environmental Social Technological Financial Institutional **•••**00 $\bullet \bullet \bullet \circ \circ \circ$

www.lifecodigestion.com

Focal Point



Juan Manuel Revuelta

juanmarevuelta@finnova.eu

FINNOVA



FrontAg Nexus -Hydroponics Demo by UM6P, Morocco



Descriptive Summary

The UM6P (Université Mohammed VI Polytechnique) Hydroponic Pilot Project is an innovative agricultural initiative designed to explore and promote hydroponic farming technologies. This project focuses on growing plants without soil, using nutrient-rich water solutions in a controlled environment. The goal of the pilot is to enhance agricultural productivity, especially in regions with limited arable land or water resources, by optimizing water and nutrient usage.

The project seeks to provide sustainable agricultural solutions by reducing water consumption, increasing crop yields, and exploring the potential of hydroponics as a viable alternative for future food security in Morocco and beyond. Additionally, it involves research and development to further refine hydroponic technologies and link indoor hydroponics to electricity produced in agri-photovoltaic systems, making them accessible and scalable for broader agricultural applications.



City Country Start year Rhamna region Morocco 2023 **Total funding End year** 100 - 500k € 2026 Acknowledgement of funding source PRIMA **Nexus Dimensions** Energy Food Water **Ecosystems**

Focal Point

Oukarroum Abdallah

Abdallah.Oukarroum@um6p.ma University of Mohamed VI Polytechnic UM6P Ben Guerir Morocco

SDGs









Scores



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Technological

15 LIFE ON LAND

Financial

Institutional

www.frontagnexus.eu



FrontAg Nexus - Deir-Alla Aquaponics Demonstrator by NARC, Jordan



Descriptive Summary

The Deir-Alla Aquaponics Demonstrator serves as training and prototype system at NARC, Jordan in the Deir Alla region of Jordan. It is linked to the electricity grid but is suitable for agro-photovoltaic. The Deir-Alla region faces significant agricultural challenges, including severe water and arable land scarcity, making traditional farming methods less viable. The Demonstrator is a climate-smart farming technology allowing to grow fish and plants more efficiently by optimizing water and nutrient use in a controlled environment.





www.frontagnexus.eu



FrontAg Nexus - Taşarası Village Demonstrator by EUROSOLAR Türkiye

Descriptive Summary

The Taşarası Village Demonstrator in Havran district of Balıkesir, Madra Mountains is focuses on improving agricultural productivity and sustainability in Tasarasi village through the introduction of climate-smart farming and agro-photovoltaic The project aims to enhance crop yields, address water scarcity, and promote sustainable farming practices, while also providing local farmers with training and resources to ensure long-term food security and environmental stewardship.

SCAN ME



City Country Rhamna region Turkey

Total funding

End year

Start year

100 - 500k€

2026

2023

Acknowledgement of funding source

PRIMA

Nexus Dimensions

Food







SDGs





15 LIFE ON LAND **Focal Point**

UYAR Tanay Sıdkı tanayuyar@eurosolar.org.tr

AffiliationEurosolar Türkiye

Institutional

Financial

www.frontagnexus.eu



FrontAg Nexus - Distal Lab-Simplified Hydroponics Demo at UNIBO, Italy



Descriptive Summary

The Department of Agricultural and Food Sciences and Technologies (DISTAL) of the University of Bologna (UNIBO) is working on the integration of a circular simplified hydroponics system for plant production. The hydroponics system maximizes water and energy use efficiency, and contributes to food and nutrtion security of migrants and other vulnerable groups. To implement the research on sustainability and circularity of plant cultivation systems for household consumption and small business development in emerging countries. The simplified hydroponic systems also want to serve as a therapeutic and educational garden for students and disabled people.



City	Country	Start year	Focal Point	
Bologna	Italy	2018		
Total funding		End year		
100 - 500k€		2026		
Acknowledge	ment of fu	nding source		
РКІМА			Cerasola Vito	
Nexus Dimen	sions		vito.cerasola@unibo.it	
Food Water SDGs	Ecosystems		Alma Mater Studiorum Università di Bologna DISTAL Department of Agricultural and Food Sciences Bologna Italy	
2 ZERO HUNGER SSSS -MAR	5 GENDER EQUALITY	CLEAN WATER AND SANITATION COMMUNITIES		
Scores Environmental ●●●●O	Social ••••	Technological •••••O	Financial Institutional ●●●OO ●●●OO	

www.frontagnexus.eu



BIOwayste

Descriptive Summary

BIOwayste is a machine that converts organic waste into cooking gas and fertilizer. Simply add your organic waste to the machine, and it will produce biogas for cooking and liquid fertilizer for your plants. The machine is easy to use and it is fully automated and can save you money and energy costs and waste disposal fees. It is also environmentally friendly and comes in different sizes to suit your needs.

SCAN ME

WAYSTE





www.biowayste.com



Valorization of Mediterranean Almond orchards through the use of intercropping integrated strategies (VALMEDALM Project)

SCAN ME

Descriptive Summary

Almonds are a crop adapted to the conditions of the Mediterranean region. However, the intense soil management practices and the current climate change scenario have led to decreased organic matter, water stress, and biodiversity loss. Therefore, experimenting with innovative practices such as intercropping and drip irrigation techniques is important to ensure sustainable almond production. The VALMEDALM project aims to identify and promote intercropping practices across almond orchards in the Mediterranean, evaluate the effect on pests and weed control, assess the economic, social, and environmental impacts of intercropping, and promote training and knowledge transfer towards local farmers and associations.



		\sim		
City	Country	Start year		
Selca - island Bra č	Croatia	2022		
Italy	Italy	End year		
Aknoul	Morocco	Lifu year		
Macedo de Cavaleiro	os Portugal	2026		
Total funding				
1M - 5M€				
Acknowledgement of funding source				

PRIMA

Nexus Dimensions

Water





Food **SDGs**



Scores

Environmental



Social ••000 Technological



Financial





candre colab.pt

Laboratório Colaborativo Montanhas de Investigação

t

www.valmedalm.eu



Integrated Watershed Management Using Vallerani and Marab Rain Water Harvesting (RWH) Systems in Jordan



Descriptive Summary

The arid landscapes of Jordan confront substantial difficulties, such as pronounced land degradation, water scarcity, and diminishing agricultural production, jeopardizing local ecosystems and livelihoods. The Integrated Watershed Management Using Vallerani and Marab Rain Water Harvesting (RWH) Systems in Jordan intervention employed an integrated watershed approach, utilizing Vallerani and Marab water harvesting technologies to manage resources both upstream and downstream efficiently.

The Vallerani technique, applied upstream, employs a tractor-mounted plow to form intermittent pits along the contours of the ground. These pits collect precipitation and runoff, enhance soil moisture, and facilitate the establishment of indigenous shrubs, averaging two seedlings per pit. Over time, vegetation rehabilitates soil health and provides forage for cattle. The Marab system redirects and distributes surplus runoff across extensive deep-soil floodplains. This procedure encompasses gully-filling, seedbed leveling, and the construction of bunds and spillways to facilitate flood-irrigated agriculture, hence supporting high-yield crops such as barley.



City Country

Start year

Amman

lordan

2016

Total funding

End year

100 - 500k€

2024

Acknowledgement of funding source

U.S. Department of Agriculture Forest Service

Nexus Dimensions





Food



SDGs



Scores



Social Te

Technological ●●●OO Financial ●●●OO



Focal Point

Haddad Mira

m.haddad@cgiar.org

International Center for Agricultural Research in the Dry Areas (ICARDA)

www.icarda.org/research/projects/watershed-restoration-badia-areas-jordan