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- Innovation Manager at the Innovation & Entrepreneurship Department of CyI, a European research, academic & innovation organization working towards the creation of a knowledge-based economy for the Eastern Mediterranean and Middle East region, specializing on climate change & adaptation, energy/water management, built environment, high performance computing and digital approaches to cultural heritage and archaeology.
- Over 18 years of working experience in ICT, telecoms and smart technologies (R&D, commercial), product & services development, IP & technology transfer, acceleration of new entrepreneurial initiatives, open and impact innovation. PhD & MEng in Electrical and Electronic Engineering (Imperial College, London) / MBA (University of Cyprus)

# Building Resilience of Natural Infrastructures & Communities through Technology, Innovation and Entrepreneurship

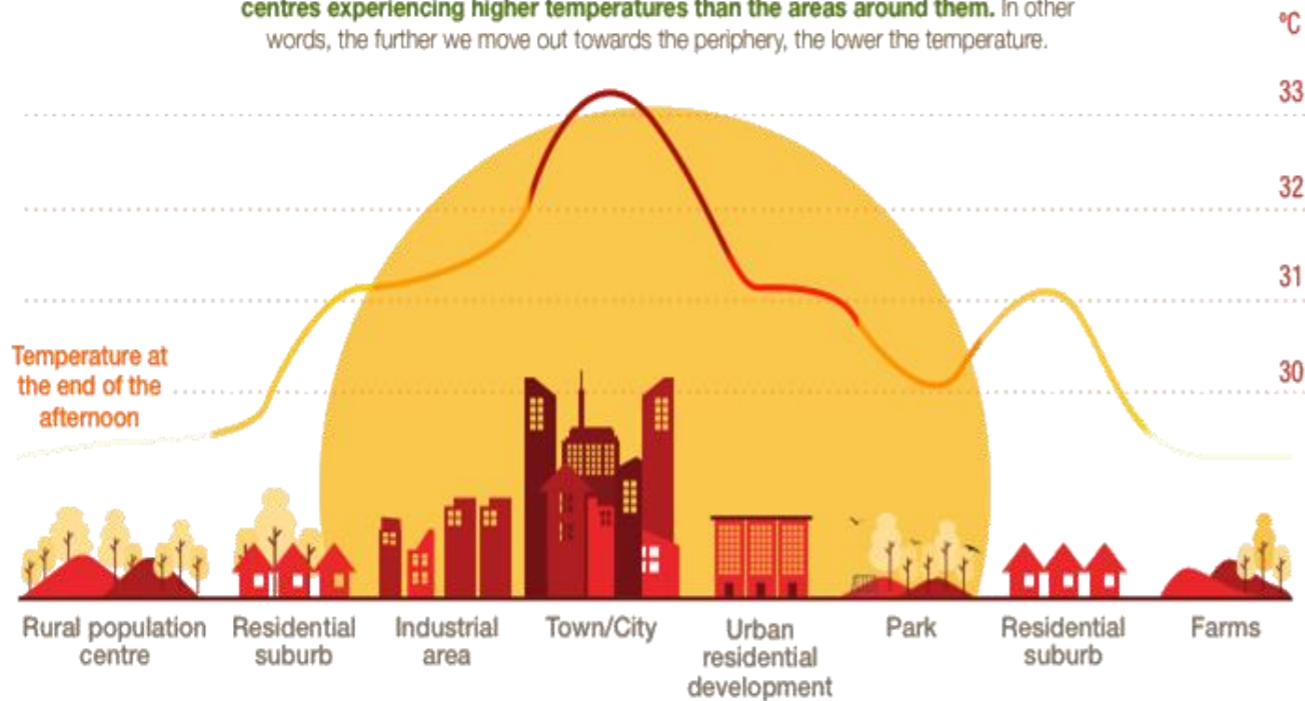
# What the future holds for Cyprus



## Prolonged heat waves/ Deteriorating Air Quality

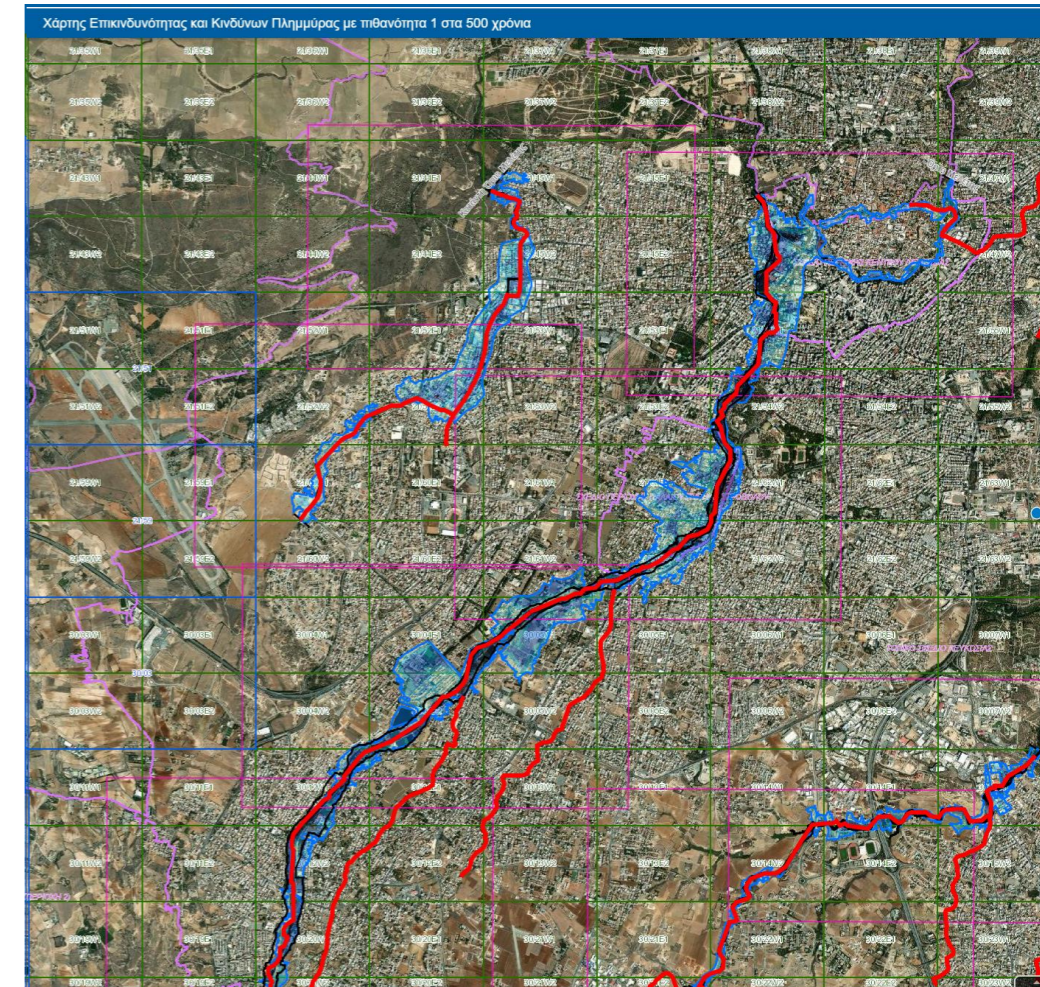
### The urban heat island effect

The Urban Heat Island (UHI) effect affects large towns and cities and consists of **urban centres experiencing higher temperatures than the areas around them**. In other words, the further we move out towards the periphery, the lower the temperature.



Source: World Meteorological Organization

## Urban flooding from high-intensity rainstorms



Source: <https://civildefence.com.cy/floodmaps/>

## Water Scarcity



The Kourris reservoir during the drought of 2008  
Source: Cyprus-mail.com



Source: nbcnews.com

*“Cyprus turns off taps to farmers as fresh water levels drop”*

*“Countries in the eastern Mediterranean are increasingly vulnerable to drought as the changing climate brings higher temperatures and less precipitation”*

Shaping the Future 2022  
Föreningen Global Forum

Science, Technology & Research Infrastructures

**Climate & Atmosphere Monitoring**

**Energy**

**Water Science**

**Computation-based Science & Technology**

**VR/AR Technology**

**Science & Tech in Archaeology & Culture**

Source: www.cyi.ac.cy

Open Innovation, Sustainable Development & Entrepreneurship

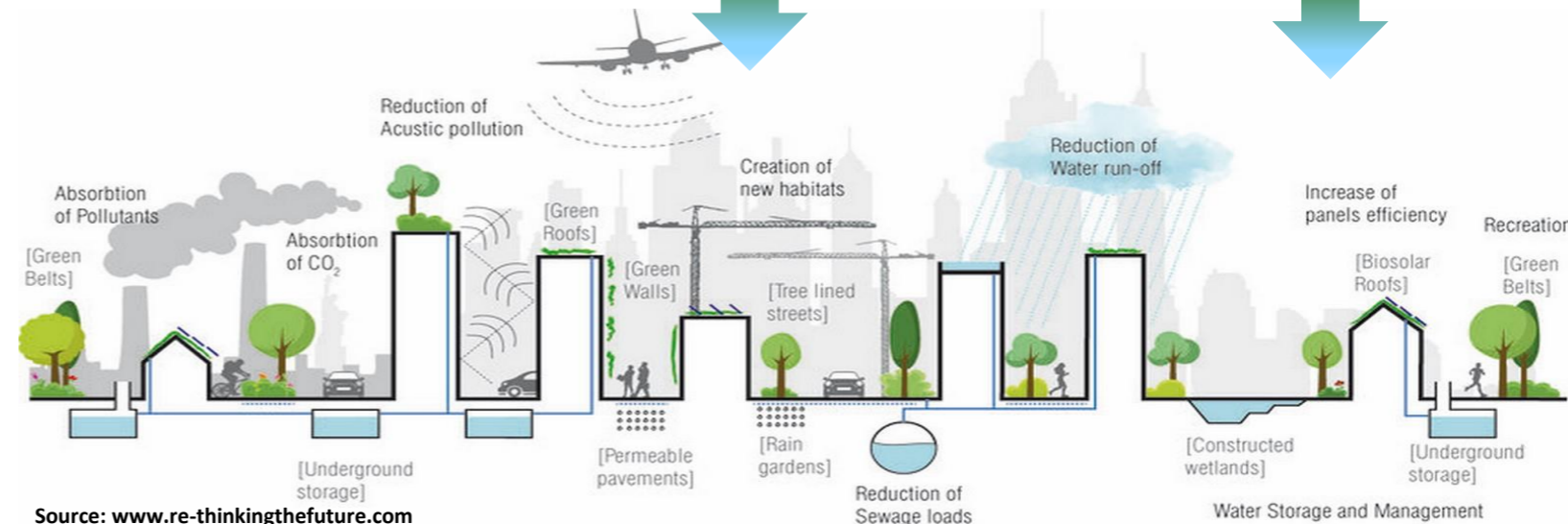
Source: Karayiannis et al.

Source: Doughnut Economics, Kate Raworth

Source: www.innovativeleaders.world

## IMPACT

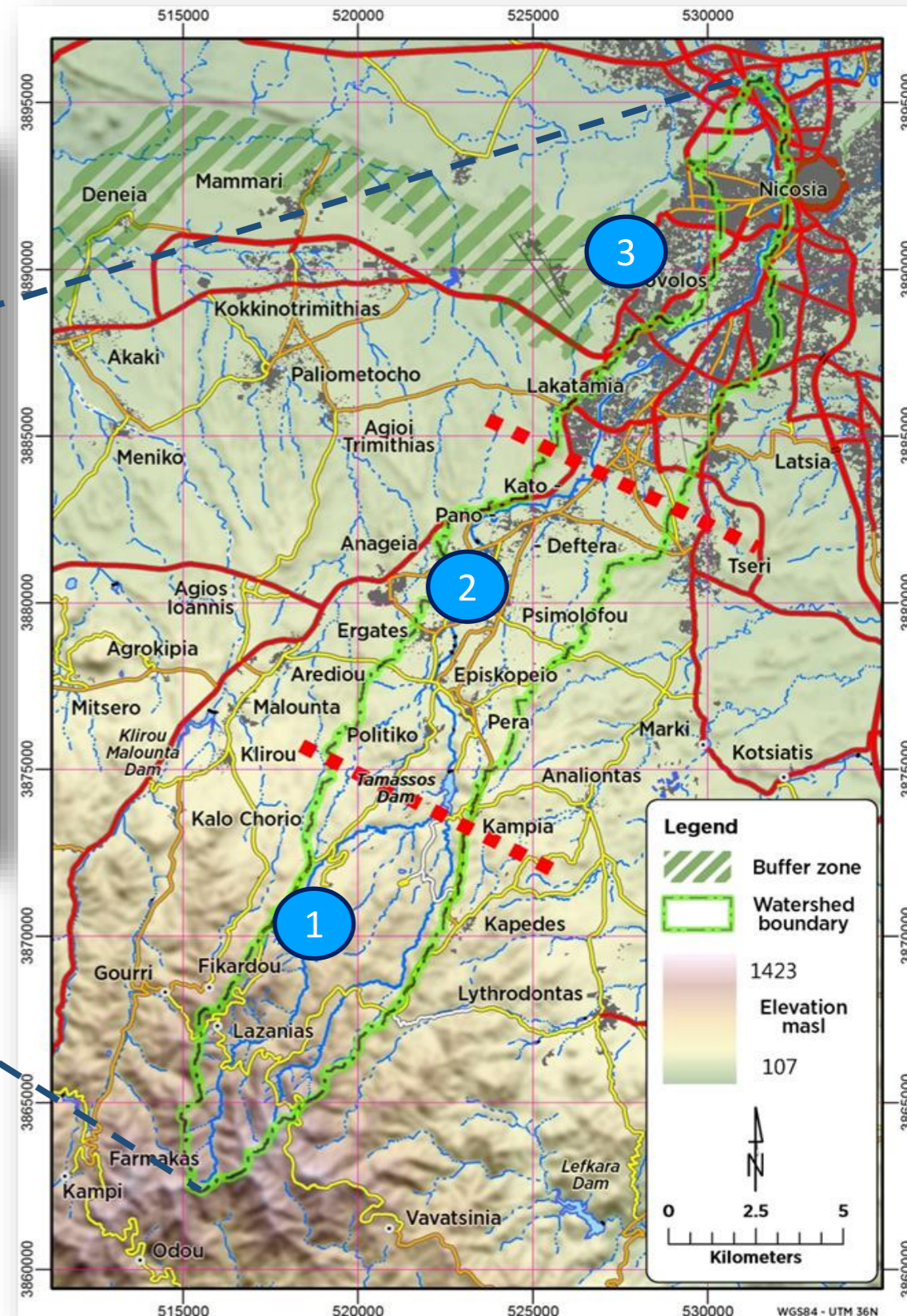
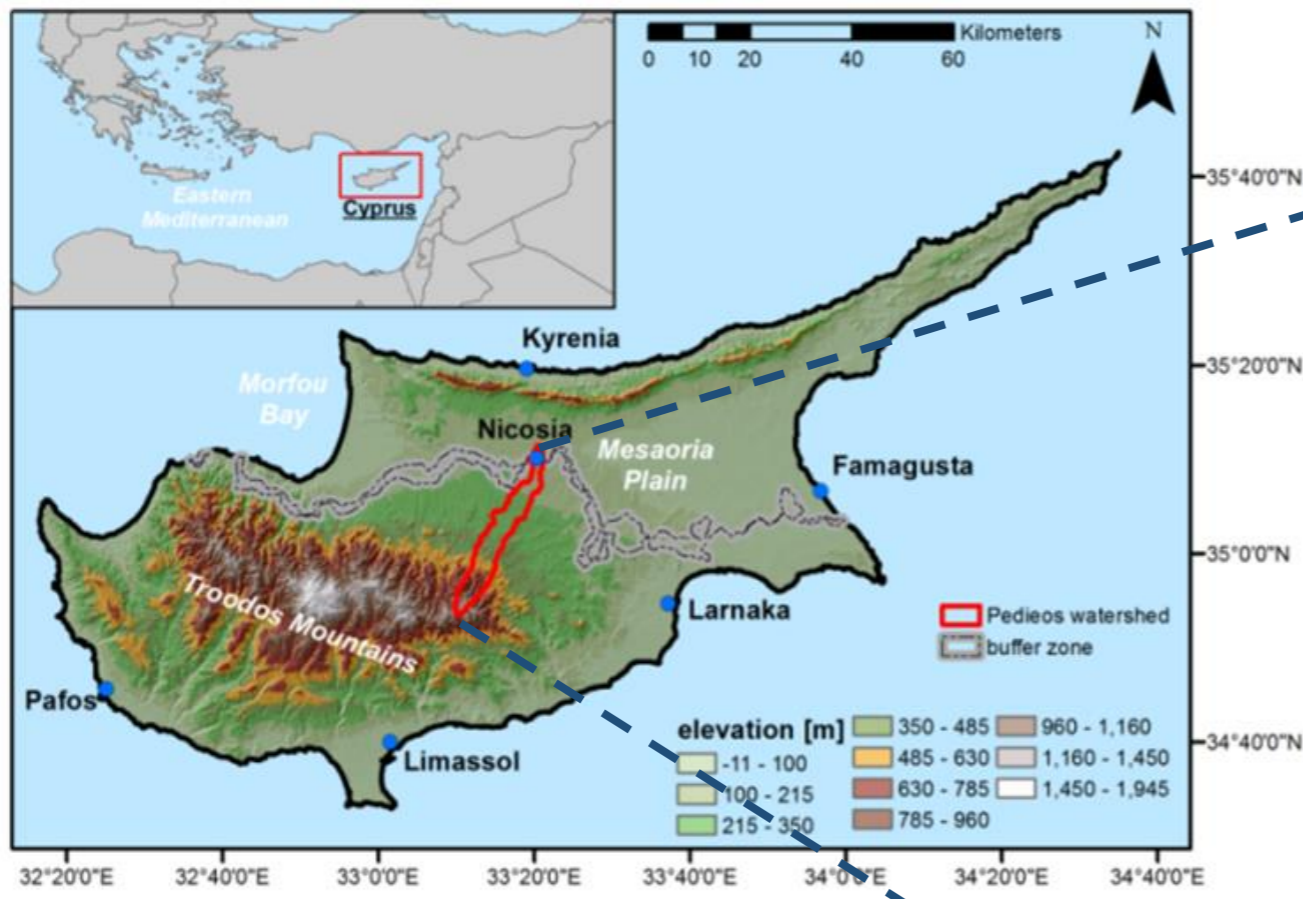
Society Environment  
Community Prosperity



# The Pedieos River Basin Case



## A Place-Based Case Study

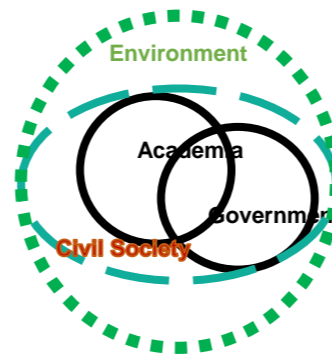
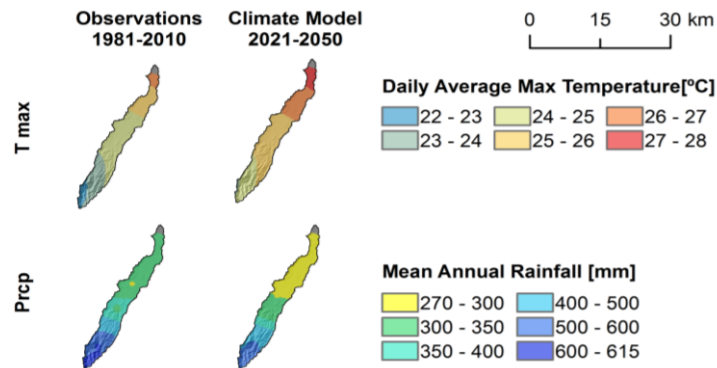


«Ιδει-Εως» (*idei – eos*) = *The one who 'sees' towards the SunRise*

The longest river in Cyprus: beginning from the mountain of Troodos and ending in the gulf of Famagusta

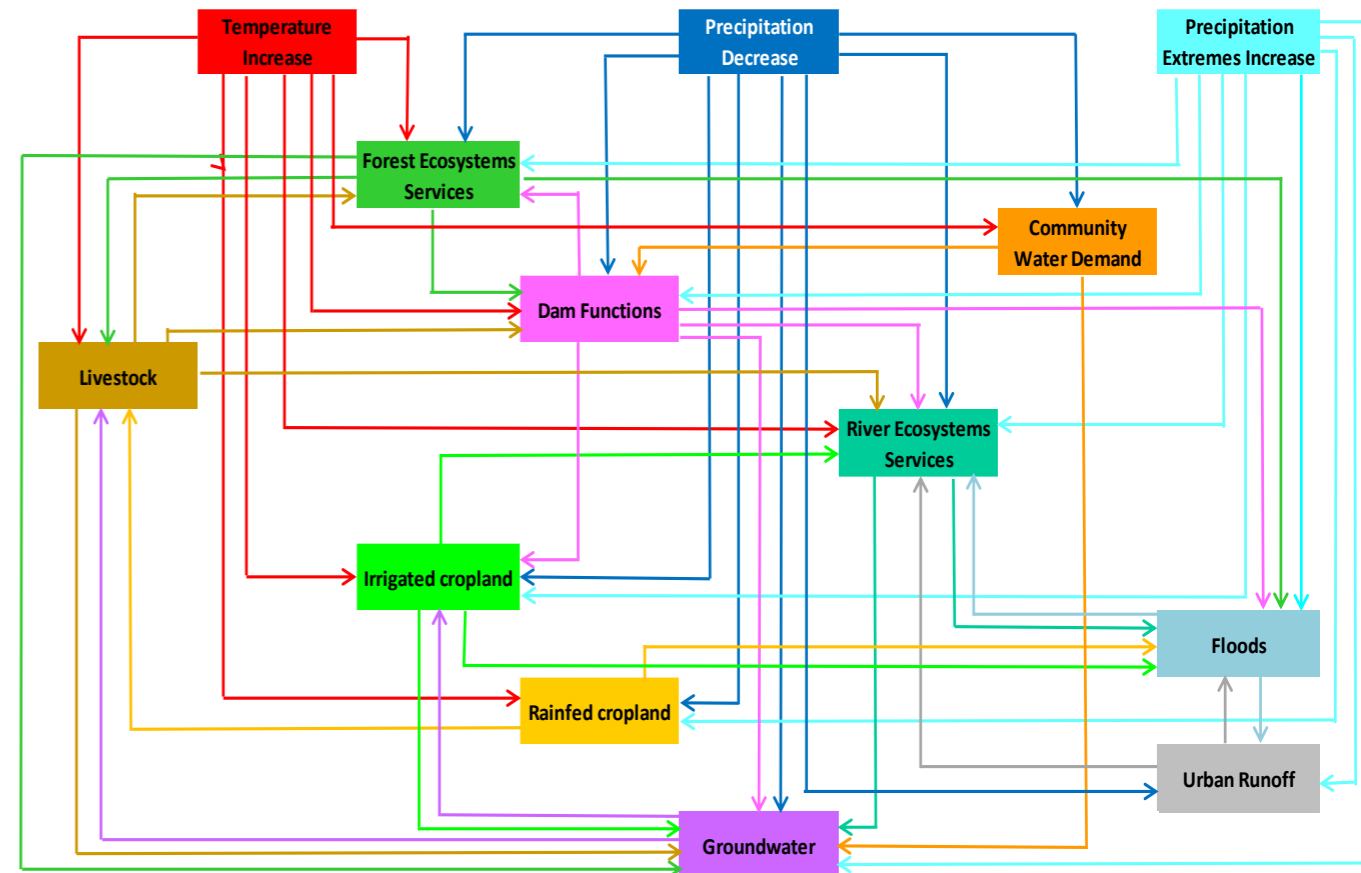
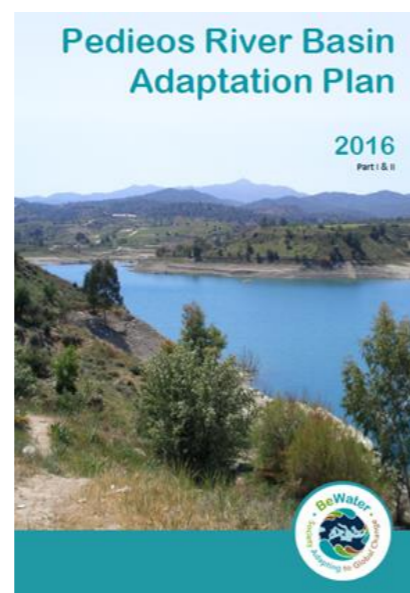
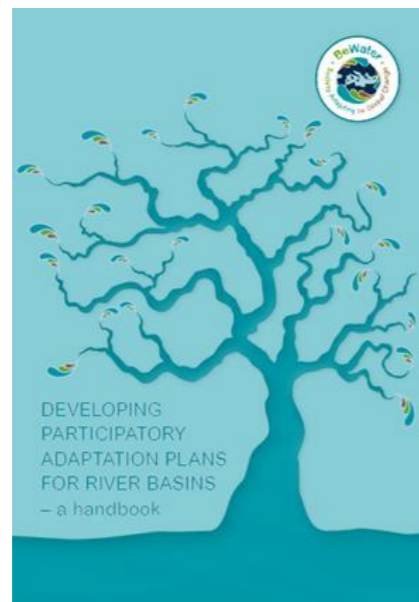
- Length of 98 km
- Watershed of 100km<sup>2</sup>

# Climate adaptation and Water management on Pedieos River Basin



Projections from Regional Climate Models statistically downscaled for the Pedieos River Basin

System-based mapping to assess impacts of climate change and water management options on Pedieos River Basin





## Pedieos, an Urban Natural Corridor of Nicosia



### Scientific Methods-

- Data flow & visualization
- Climate models (temperature, precipitation, air quality)

### Objectives -

- To support the collective development of urban-natural corridors
- To promote openness, access, sharing
  - Our effort is to **Mobilize citizen involvement**, engage communities and eventually enable social groups to participate in the reactivation, of neglected (public) spaces



Under the High-Patronage of

الجمعية العمانية للخدمات النفطية  
Oman Society for Petroleum Services

# Digital Enablers

Designing Nicosia urban space through data enabled participatory practices

For Deeper engagement of stakeholders

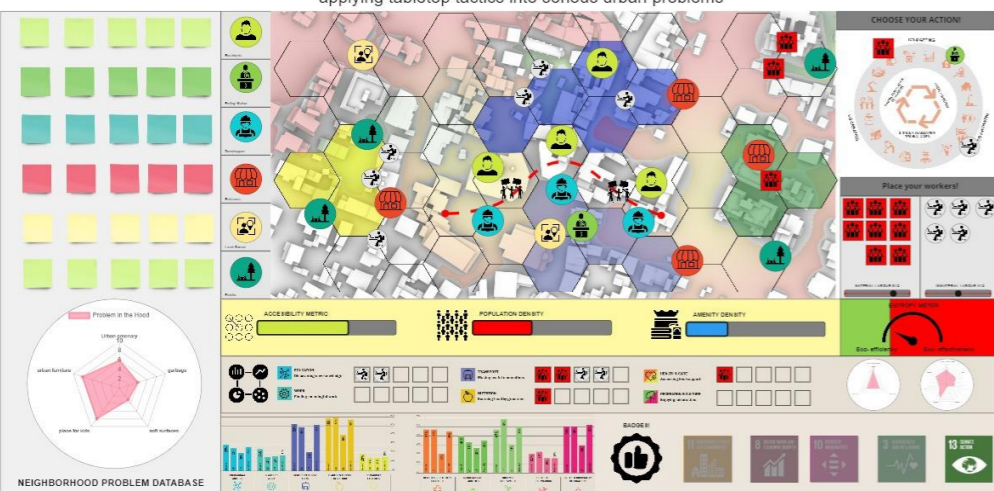


Urban furniture and green



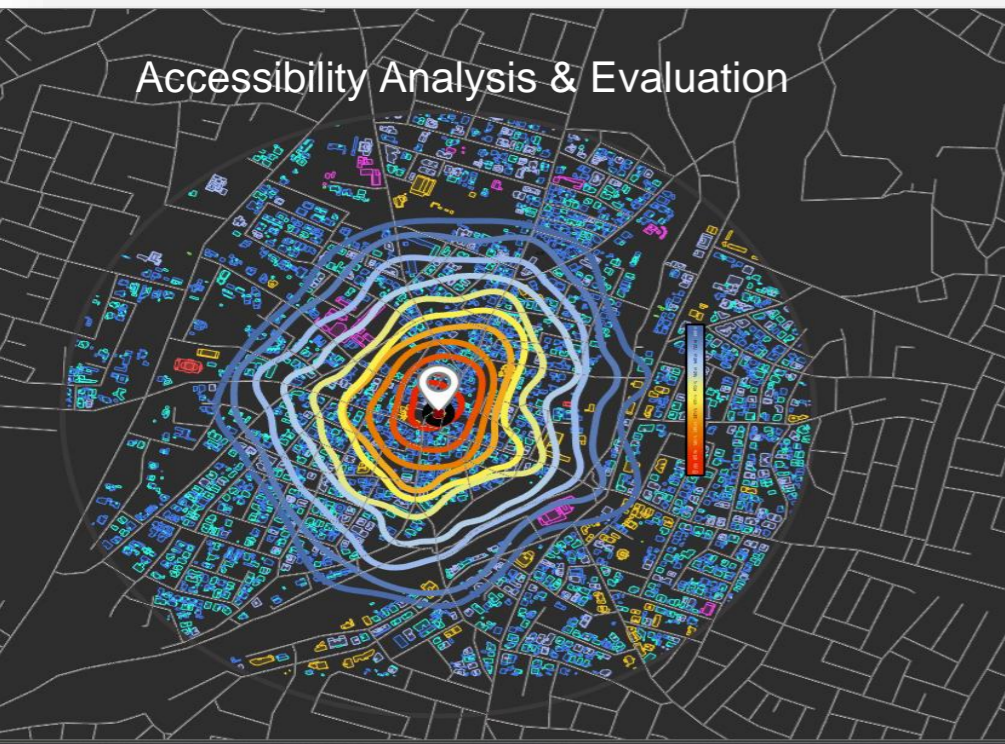
## Board Game for Stakeholder Engagement

applying tabletop tactics into serious urban problems

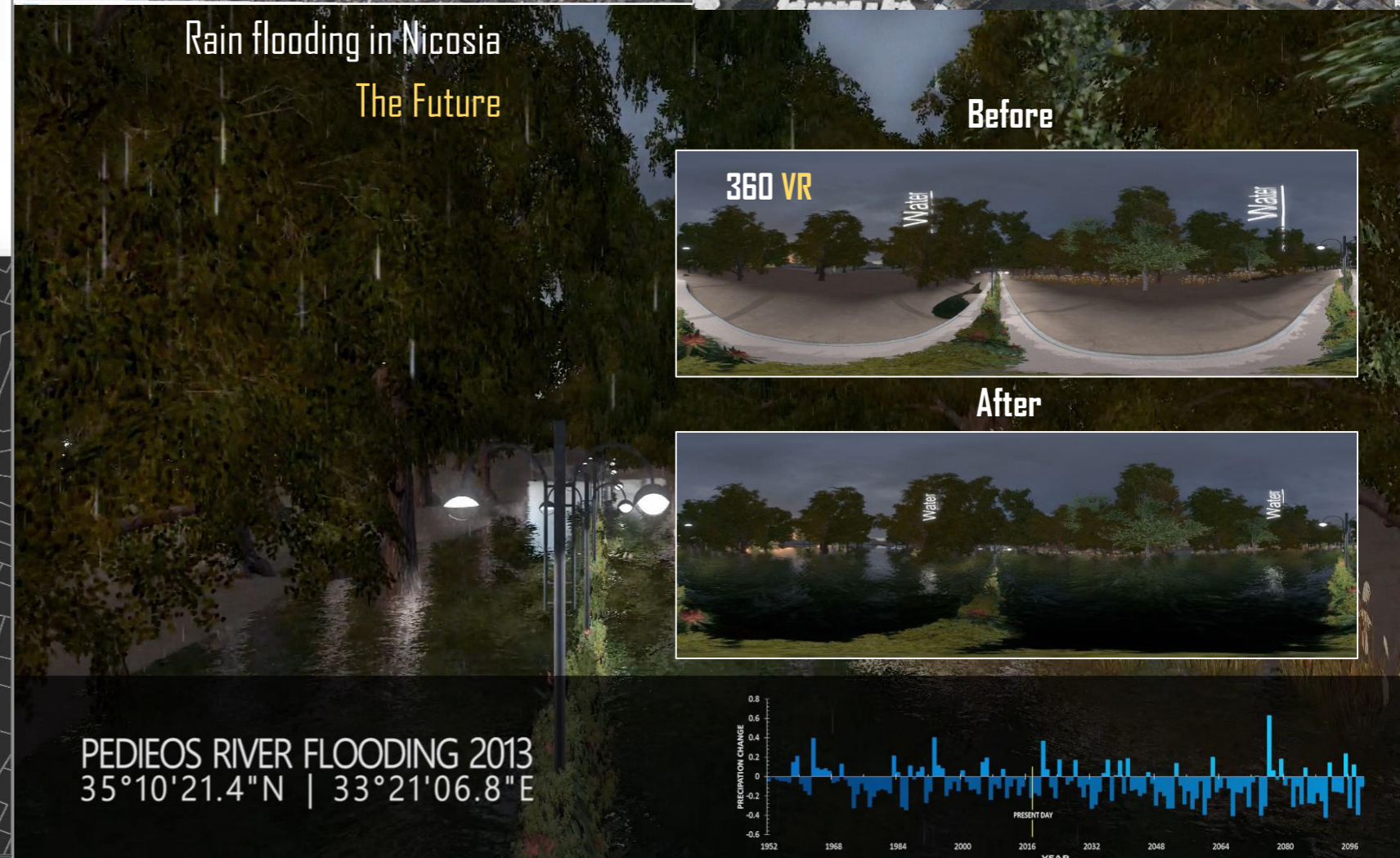


The goal of this pipeline is to create a seamless transition between computational tools and collaborative practices infused with data along the process. The game acts as a collaborative medium, dictating the rules of conduct in order to engage competing stakeholders

## Accessibility Analysis & Evaluation



## Rain flooding in Nicosia The Future



PEDIEOS RIVER FLOODING 2013  
35°10'21.4"N | 33°21'06.8"E





# URBAN SUSTAINABLE DEVELOPMENT SOLUTIONS VALUING ENTREPRENEURSHIP



**300**

TRAINING FOR YOUTH GRADUATES AND WOMEN



**60**

ENTREPRENEURIAL IDEAS IDENTIFIED AND SUPPORTED



**500K €**  
BUSINESS ACCELERATION SERVICES



**30** ENTREPRENEURS LAUNCHED NEW CREATIVE PROJECTS



**240K €**  
RAISED BY EARLY STAGE INVESTORS AND SPONSORS



**240K €**  
U-SOLVE GRANTS



**300** TRAINING FOR PUBLIC AUTHORITIES AND BROKERS



**6** URBAN HUBS INITIATED



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Oman Society for Petroleum Services

## GOAL

Create a model of urban development based on innovation and creativity

## WHY

Address sustainable development challenges through behavioral changes

## THEMATIC PRIORITIES

Sustainable Energy

**7** AFFORDABLE AND CLEAN ENERGY



Urban & Transport Planning

**11** SUSTAINABLE CITIES AND COMMUNITIES



Waste management

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION



## Beneficiaries



**420**  
Young and Women Entrepreneurs



Local Urban Areas



**30**  
Start Ups in Urban Environments

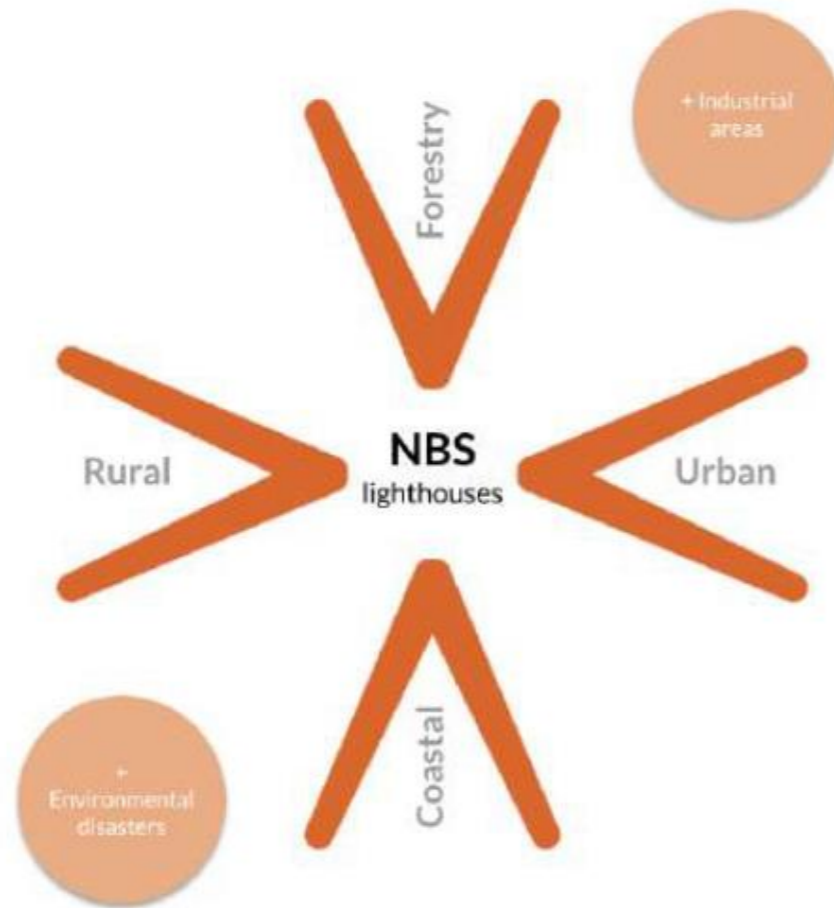
## FOCUS

**Creative Sector**

Place of ideas implementation/ pilots :  
Strovolos Municipality / Pedieos (urban part)



## Lighthouses of transformative nature-based solutions for inclusive communities



**NBS Lighthouse:** ‘metaphor’ for set of local arrangements & instruments

**Foundation:** Concerted & Networked group of multiple actors committed with enhancing NBS contributions towards interlinked ecological, social and economic targets.

**How:** Testing new governance models and co-creation approaches and tools on small scale but big-picture projects that can be upscaled over time.

**CY Pilot:** Pedieos River bank (urban/rural-forest)

### Lighthouse Composition

Living Knowledge Labs    Assessment cases    Pilot cases

### International Observers

Ongoing assessment for prioritizing citizen and stakeholder perspectives on how they value NBS

Innovation and  
Entrepreneurship



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RESEARCH • TECHNOLOGY • INNOVATION

## -Links-

<https://www.cyi.ac.cy>

<https://www.cyi.ac.cy/index.php/research/innovation-and-entrepreneurship/overview.html>