

# CLIMATE CHANGE SYMPOSIUM: THREATS, CHALLENGES, SOLUTIONS FOR GREECE

UN SDSN and EIT Climate KIC Greece

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Vice-Chair, European Forest Institute

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# Greece: Where can Economic Growth Come from?

## National Account Identity

$$Y = C + I + G + X - M$$

PRIVATE  
INVESTMENT  
Greece's only  
hope!

What Kind of  
Investments  
do we need?

Consumption is Anemic

1. Unemployment
2. Low Disposable Income: high taxation, direct & Indirect
3. No wealth effect: stock market historic low; property tax

Government  
Spending is  
Non-existent  
due to  
promised  
Primary  
Surplus of 3.5%

Modest  
Increase lately.  
Limited upside  
due to "strong  
currency"

**What kind of Growth  
do we need?**

**Sustainable Growth:**

Organizing principle for  
meeting human  
development goals, **while**

sustaining the ability of  
natural systems to provide  
the natural resources and  
ecosystem services , **upon  
which**

the economy and society  
depend.

**Environmental Sustainability**

**Economic Sustainability**

**Social Sustainability**

**Sustainable development meets  
the needs of the present, without  
compromising the ability of  
future generations to do the  
same.**





- We are on course for disastrous +3C.
- We have **12 years left** until the point of no return. Most of us will still be alive then!
- Urgent and unprecedented changes are needed to reach the target. The target is affordable and feasible. The final tick box is political/policy will!

- **Transforming our world: the 2030 Agenda for Sustainable Development**

**10 OCTOBER 2018 REPORT**  
**Intergovernmental Panel on**  
**Climate Change (IPCC):**

Urgency of limiting global warming to +1.5 C.

Beyond which risk of drought, floods, extreme heat and poverty for hundreds of millions of people, will significantly increase.



# Greece Performance

Index Score: 70.6

Regional Average 76.9

Overall Rank: 48 out of 156

## ▼ CURRENT ASSESSMENT – SDG DASHBOARD



## ▼ SDG TRENDS





**SUSTAINABLE DEVELOPMENT  
SOLUTIONS NETWORK**  
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

**A Global Network of :**  
Universities & Research and Innovation Centers  
Businesses  
Civil Society Organizations  
Policy Making  
Political Institutions

To support **SCIENCE DRIVEN** implementation of **SDGs**



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

Co-Chairs  
 Prof. Phoebe Koundou  
 Prof. Andreas Papandr

Leadership Council  
 Business, NGOs,  
 Policy Making, Politici

**3000+ universities & r**  
**2000+ companies and NGOs worldwide**

**CROSS-CUTTING THEMES**

**Natural Capital Valuation & Integri**  
**Sustainable Investment Allocation**

**Climate Change: Mitigation and A**  
**Policies**

**Sustainable Development in**  
**Times of Crisis**

**THEMATIC PRIORITIES**

**Sustainable Shipping and Marine Resources**  
**Management**

**Sustainable Energy and Energy Security**

**Sustainable Water-Food-Energy Nexus**

**Sustainable Tourism and Biodiversity**

**Education and Training Courses in Sustainable**  
**Development**



Climate-KIC is supported by the EIT, a body of the European Union



# Cluster of Institutions



**ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ**  ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

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 **Research laboratory on Socio-Economic and Environmental Sustainability**

**ReSEES**

**Πανεπιστήμιο Αθηνών**  PESD

 **ICRE8**  
International Centre for Research on the Environment & the Economy



**ΜΟΥΣΕΙΟ ΓΟΥΛΑΝΔΡΗ ΦΥΣΙΚΗΣ ΙΣΤΟΡΙΑΣ**

01 — 02.04.2019

**ΣΥΓΚΛΕΙΣ**

CONVERGENCES GREECE FORUM





**WORLD HUMAN FORUM**





## Renewable Energy Best prospect industry sector for Greece

- EU renewable energy target of at least 27% by 2030.
- Greece nearly doubled its share from renewable energy sources 2004-2016

### Share of energy from renewable sources (in % of gross final energy consumption)

	2004	2012	2013	2014	2015	2016
EU	8.5	14.4	15.2	16.1	16.7	17
Greece	6.9	13.5	15.0	15.3	15.4	15.2

- Eurostat expects Greece to reach the 18% goal set for 2020.
- Best Prospects: Solar, Wind, Geothermal, Biomass & Biofuels

# Blue economy is thriving – and Greece is a big part of it.



## BE Represents:

- 3.5 million jobs
- GAV 174 billion / year

Greek Merchant Navy controls the world's largest merchant fleet

- BE encompasses all economic activities related to oceans, seas & coastal areas.
- BE sectors are growing steadily: total turnover of € 566 billion.
- Greece ranks among Europe's top five blue economies in spite of the previous years' economic recession.
- Blue economy significant positive impact on Greek GDP and employment.

*While the national GDP fell strongly (28.5%) between 2009 and 2016, **blue economy GVA rose (21%)**. The share of jobs covered by the **blue economy now amounts to around 9.2% (a 93% increase compared to 2009)**.*



## The Information and Communications Technology sector is one of the most promising in the Greek economy

- **Skilled Workforce** – Greek engineers are included in the Economist's global top 20 ICT human resources.
- **Attractive Funding Opportunities** - EU structural funds, PPP initiatives (automation of state processes, homeland security and ICT infrastructure for public transport system), private sources.
- **ICT Infrastructure** – Greece can cover all infrastructure needs for a major investment in ICT.
- **Research and Education** – Greece possesses an extensive network of science and technology parks and higher education centers, ICT clusters, incubators and accelerators.
- **Favorable Location** – Greece is the EU country with the best access to leading Asian ICT markets such as China, Japan and Korea.

# Our Projects, currently 100 researchers



- €100+ million of research funding from: European Commission (DG RTD, DG MARE, DG ENV, DG ENER, DG REGIO), International Organizations (World Bank, OECD, EBRD, WHO, FAO, UN), Governments in all 5 continents, etc.
- 1000+ peer-reviewed research papers & books

# Integrated and Interdisciplinary Methodology

**Aim: Allocation of scarce resources across people, over time & space, while EnvS, EconS, Social Equity achieved.**

## MODELS ON INTERACTION

**Dynamic, Spatial, Uncertainty**

- Nature
- Society
- Economy

## FRAMEWORK CHARACTERIZATION

- Natural Resources,
- Socio-Economic
- Institutional
- Stakeholders

## EMPIRICAL APPLICATION of MODELS

Estimation of Economic Value

**OPTIMAL ALLOCATION based on Value**

## How?

- Socio-Economic, Legal Instruments
- Technological Innovations
- Social and Institutional Innovations
- Nature Based Solutions
- Infrastructural Solutions

## STRATEGIC MANAGEMENT PLANS &

## POLICY RECOMMENDATIONS:

Stakeholders engaged & convinced throughout the process

# The Value of Distant Benefits & Long-Term Discount Rates

funded and endorsed by: EC DG ENV, World Bank, EPA USA

Governments Europe and Easter European Countries

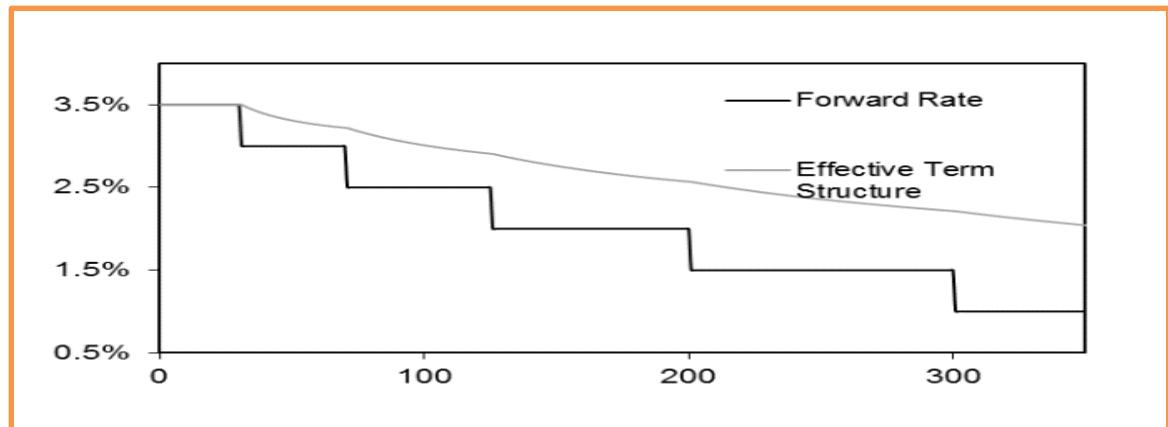
- *Humanity has the ability to make development sustainable: to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.*

*WCED, 1987*

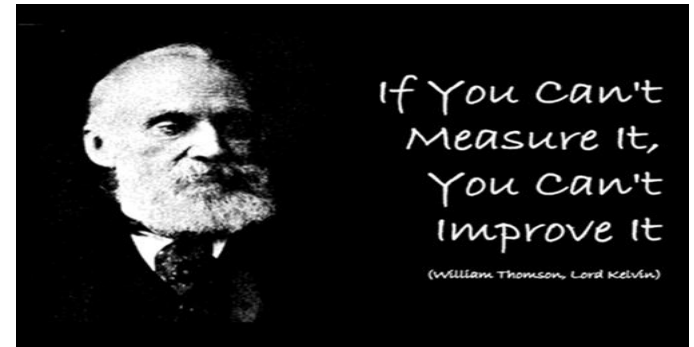
- *There is something awkward about discounting benefits that arise a century hence.. For even at a modest discount rate, no investment will look worthwhile.*

*The Economist, 1991*

Recommended Time  
Declining Schedule



# UNCERTAINTY!



- IPCC (2007) wrote:

*“In most instances, **objective probabilities are difficult to estimate.** ...a number of climate change impacts involve health, biodiversity, and future generations, and the **value of changes in these assets is difficult to capture fully** in estimates of economic costs and benefits..... The literature on how to account for **ambiguity in the total economic value** is growing, even if there is no agreed standard.”*

# Our Books



**Hundreds of Applied Projects  
Demonstrations and Implementation of Results ...**





Climate-KIC



Climate-KIC is supported by the  
EIT, a body of the European Union

**Transforming innovation  
into climate action**





Climate-KIC

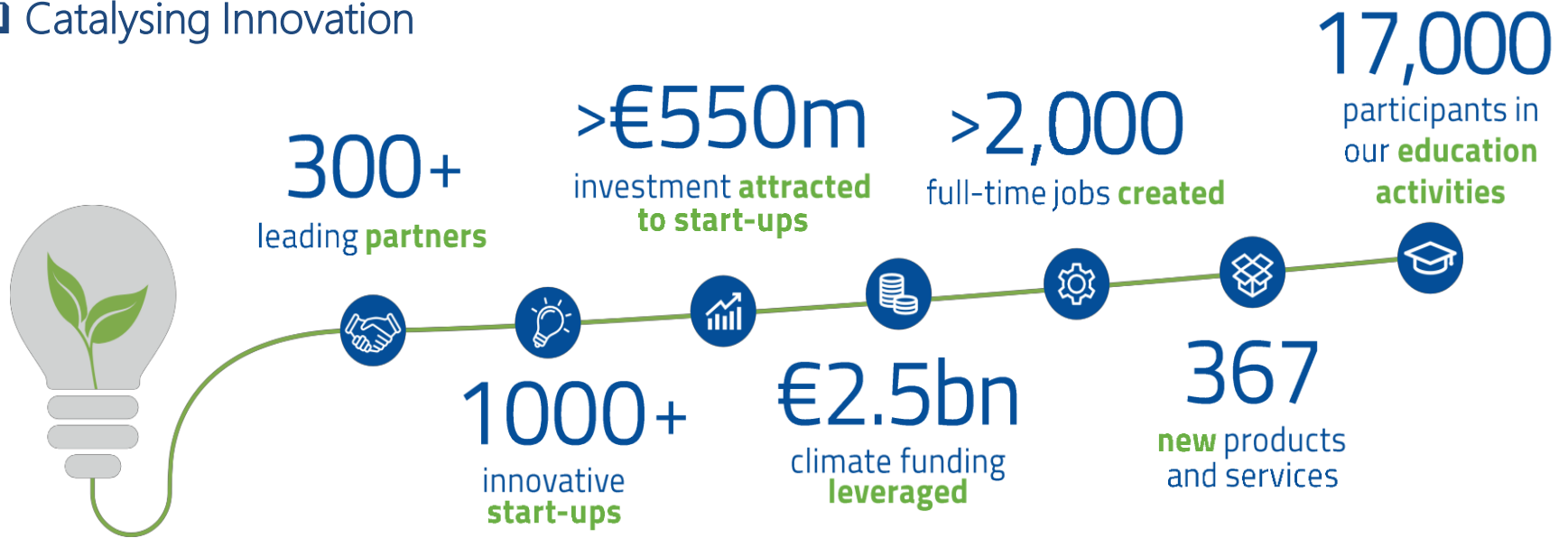
EIT Climate-KIC is a European **knowledge and innovation community** working to accelerate the transition to a **zero-carbon economy** through **whole systems** transformation.

The EIT Climate-KIC is part of the European Institute of Innovation and Technology (EIT) and the EIT Community.

The EIT is a body of the European Union and a global innovation leader, delivering world class solutions to societal problems

# ETClimate KCEurope is Building a Movement of Climate Action

- ❑ Convening networks of expertise
- ❑ Leveraging Grants Smartly & Effectively
- ❑ Developing People & Capacity
- ❑ Catalysing Innovation





Greece



Climate-KIC is supported by the EIT, a body of the European Union

# Transforming innovation into climate action





# EIT Climate - KIC Core Programs

# Accelerator



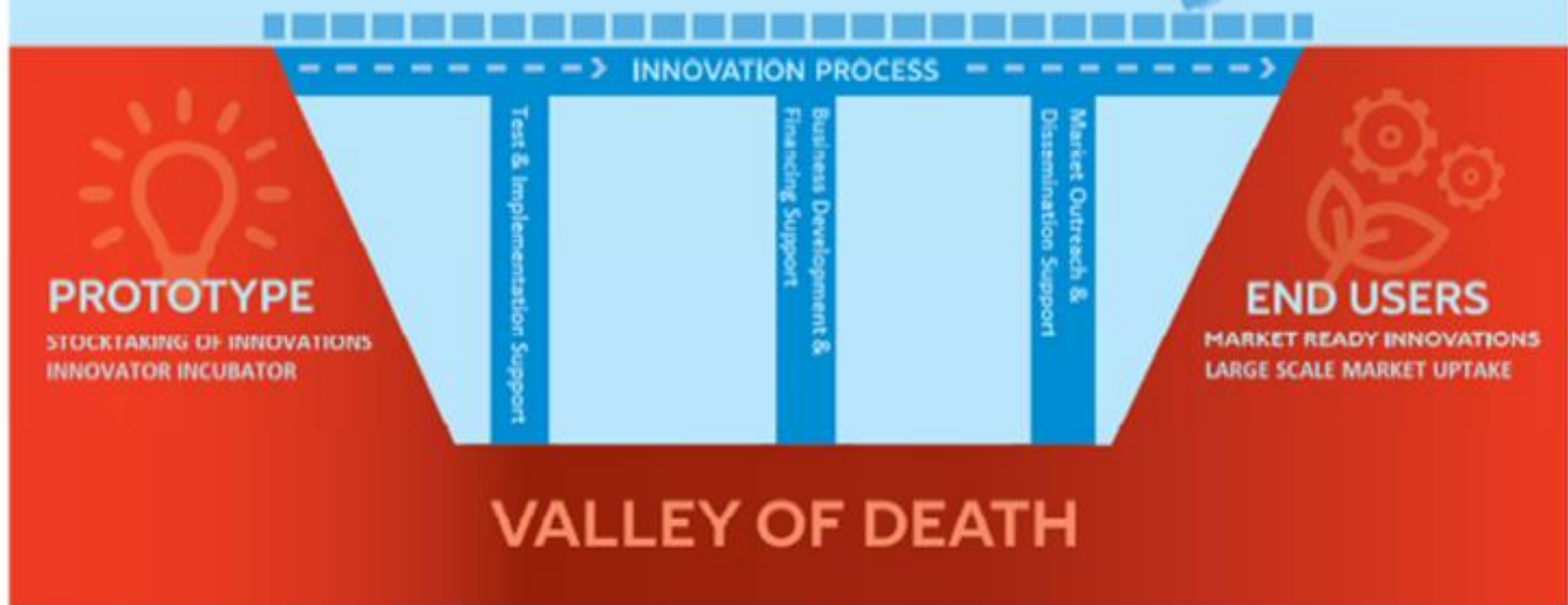
- Offers structured **business and commercial support** to European start-ups in the new climate economy.
- It is a **real-world business school** for clean tech entrepreneurs
- **Offers coaching, training, technology validation and office space**
- Selected start-ups benefit from funding, exposure to customers, partners and investors as well as access to an extensive relevant international network

- **Cyrus:** A Demokritos spin-off working on **hydrogen technologies** and designing non-mechanical high-pressure H<sub>2</sub> compressors using metal hydrides
- **Citipost:** Innovative **waste and data management** platform focusing on smart cities and sustainability through recycling
- **Cargoshare:** An automated freight **brokerage services platform** which results in reduced emissions by freight ships traveling empty
- **Parity:** A two-sided **Financing Platform**, that makes **Greentech** investing accessible to retail investors and small funds
- **Trustporter:** **Shipping & transportation** matching to transfer goods or transport people, with people travelling along the requested routes anyway
- **Enaleia:** Educate, motivate, organize and track the **fishermen**, so as to be able to collect plastic from the sea through their bi-catch.
- **Shallows:** **Zero-footprint architecture** based on natural raw materials, using biological mechanisms as a living creature with a highly efficient life-cycle regarding sustainability, energy consumption and CO<sub>2</sub> emissions

**FROM PROTOTYPE TO MARKET READY INNOVATION  
ADAPTING TO: FLOODS, DROUGHTS & EXTREME WEATHER**

**BRIGAIID**  
Bridging the Gap for Innovations  
in Disaster Resilience

**BRIGAIID: BRIdging the GAP for  
Innovations in Disaster resilience  
DG RTD, Budget: 9,000,000 euro**



*Figure 1.1: BRIGAIID's conceptual approach with three types support for innovations*



SHARE AND DISCOVER CLIMATE INNOVATIONS

# INNOVATIONS FOR CLIMATE CHANGE ADAPTATION

the EU reference marketplace where end-users and innovators can meet

Share your innovation

Show Innovations ▾ | All Hazards ▾ All Topics ▾ | View by Most Recent ▾



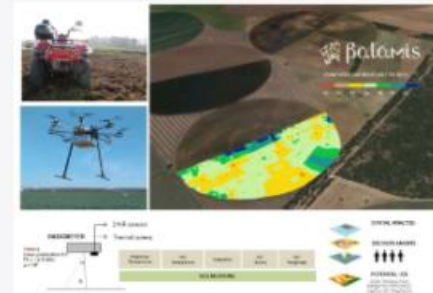
Disasters and ICT | Water Safety  
**MyFloodRisk (for business)**

TRL 5



Disasters and ICT | Urban Areas  
**3C for Cities**

TRL 6



Agriculture | Disasters and ICT  
**ARIEL, soil moisture retrieval by  
microwave remote sensing**

TRL 5

## Pioneers into Practice

- Climate-KIC's professional mobility program Operates in over 16 locations across Europe
- Professionals from industry, small companies, universities, municipalities, governance, are offered an innovative blend of e-learning, workshops, coaching and placements by Host organizations active in the field of sustainability.
- Practical experience through 4 - 6 week placements
- 1 day International Workshop



<https://pioneers.climate-kic.org>

# Climathon



A global movement dedicated to solving the toughest climate challenges cities face today

This is manifested in a 24-hour hackathon taking place simultaneously in major cities around the world

Citizens, city officials and partners connect under a shared vision for a healthier city and try to find innovative solutions

In 2018, 4 Climathons took place in Greek cities under the auspices of EIT Climate-KIC Hub Greece (Athens, Piraeus, Heraklion, Larissa)



# Snapshot of Selected Research and Demonstration Projects

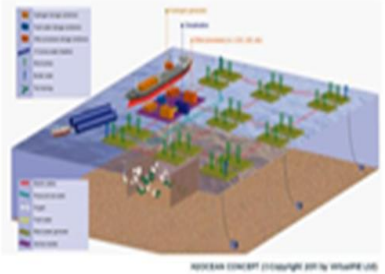
 <p>Research laboratory on Socio-Economic and Environmental Sustainability</p> <hr/> <p><b>ReSEES</b></p>	 <p><b>SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK</b> A GLOBAL INITIATIVE FOR THE UNITED NATIONS</p>  <p><b>SDSN</b> GREECE <a href="http://www.unsdn.gr">www.unsdn.gr</a></p>  <p><b>ICRES</b></p>  <p><b>PLSD</b></p> <p>Hosting Institutions</p>	 <p><b>ATHENA</b></p> <p>Research &amp; Innovation Information Technologies</p>
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# Innovative Multi-purpose offshore platforms: planning, design & operation

OCEANS of TOMORROW, EC-DG Research-FP6; Budget: 20,000,000



Development of a wind-wave power open-sea platform equipped for hydrogen generation with support for multiple users of energy  
<http://www.h2ocean-project.eu/>



Innovative multi-purpose offshore platforms: planning, design and operation  
<http://www.mermaidproject.eu/>



Modular multi-use deep water offshore platform harnessing and servicing Mediterranean, subtropical and tropical marine resources  
<http://www.tropisplatform.eu/>



**MERMAID ASSESSMENT TOOL**  
 Decision making process for the Socio Economic Assessment of MUOP on different Mermaid Sites

- Web based analysis platform
- Open Source Technologies
- Can take advantage of cloud based technologies
- Formalized language that enables correct workflow from data collection to results production and interpretation
- Automated assessment
- Capability of producing alternative scenario with / without Socio - Economic Externalities
- Technical & Legal Feasibility assessment / Environmental Impact Assessment interactive questionnaires

PHOEBE KOUNDOURI - ICREL, AUEB, L.I.E.  
 IRANIS KAVANIDIA, ELIOCHIA MALLI - MAGGIK team, UGA, ATHENA, GR

Environment & Policy 56

Phoebe Koundouri Editor

## The Ocean of Tomorrow

Investment Assessment of Multi-Use Offshore Platforms: Methodology and Applications - Volume 1

Springer



## The BlueBRIDGE Project – Addressing the Blue Societal Challenge EC DG Research & Innovation H2020. Budget: 10,000,000 euro

Building Research environments fostering Innovation, Decision Making,  
Governance and Education to support Blue Growth

<i>Supporting assessment of stocks and fisheries</i>	<i>Improving performance and sustainability in aquaculture</i>	<i>Monitoring fisheries &amp; habitat degradation</i>
A diagram illustrating the marine food web. It is divided into three horizontal layers: "Secondary consumers" at the top showing larger fish, "Primary consumers" in the middle showing smaller fish, and "Primary producers" at the bottom showing seaweed and other marine plants.	A photograph of an aquaculture farm, showing several circular pens or cages floating in the water, with a boat nearby.	A photograph of an underwater habitat, showing a rocky seabed covered with vibrant orange and red coral or anemones.



GLOBAQUA

# Managing the effects of multiple stressors on biodiversity and functioning of aquatic ecosystems

<http://www.globaqua-project.eu>, Budget: 10,000,000 euro



## Ecosystems & Biodiversity

**Biophysical Structure or process**  
(eg. vegetation cover or Net Primary Productivity)

**Function<sup>\*)</sup>**  
(eg. slow water passage, biomass)

**Service**  
(eg. food-protection, products)

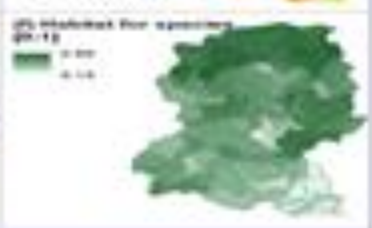
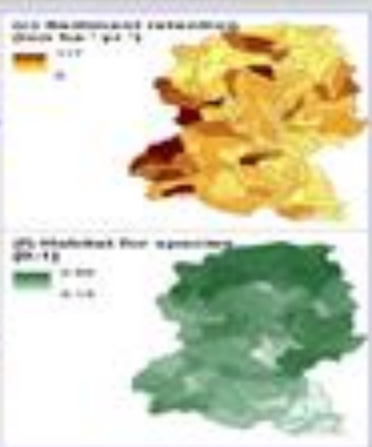
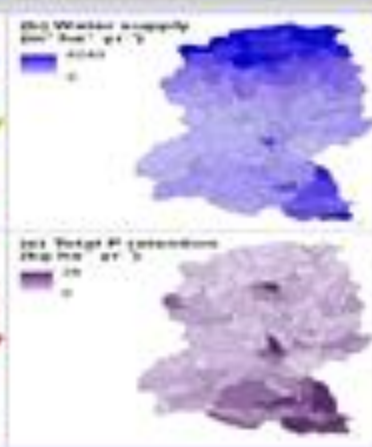
## Human wellbeing (socio-cultural context)

**Benefit(s)**  
(contribution to health, safety, etc.)

**(econ) Value**  
(eg. WTP for protection or products)

<sup>\*)</sup> subset of biophysical structure or process providing the service

Adapted from Haines-Young & Pollock, 2001 and Muller (et al.) 2009





<http://www.theseusproject.eu/>

## Innovative technologies for safer European coasts in a changing climate

European Commission

FP7, THEME 6 - Environment, including climate

Budget: (6,530,000 €)





**DAFNE**

A Decision-Analytic Framework to explore the water-energy-food Nexus in complex and transboundary water resources systems of fast growing developing countries

EC DG RTD, Budget: 5,000,000 euro

**Aim:** To establish a Decision-Analytic Framework for Participatory and Integrated Planning

Omo River Basin



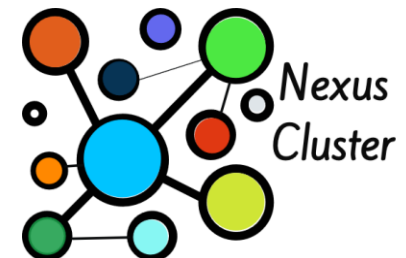
**2 Case Studies**

Zambezi River Basin



**European Cluster of WEF Nexus Projects**

**Budget: 100 million euro**





OpenAIRE

Coordination  
OpenAIRE  
Connect



OpenAIRE is the European online network that makes research output openly accessible to all.

It is all about sharing, reusing and linking research information.

## Our Vision

An SDG E-library for  
Greece, Europe, Global

An Open Science  
directory of all past **20  
years** completed and  
ongoing projects,  
research publications,  
data and related models  
relevant to the 17 SDGs

## immediate & long-term benefits to:

Research Communities  
Research Organizations  
Funders, industry, Policy  
Making and... society

## Education and Training

International, Regional, National  
Conferences, Workshops, Training  
Seminars & Research, Policy,  
Business Events



**Coordinator**  
The course is coordinated by Phoebe Koundouri, Professor of Economics and Econometrics, Athens University of Economics and Business (School of Economics) and London School of Economics (LSE), Scientific Director of ICRES, SDSN-Greece chair.



## Coming Soon:

- MSc Energy Economics and Law, Athens Uni Econ & Business
- Greek Sustainability Report
- Sustainability Summit, with the Economist, 16-17 Oct. 2019

## Our Ongoing Projects



## Institutional Support

