Conceptualizing the Value of CC Effects on Cultural Heritage

A Challenge and an Opportunity for Greece

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Co-Chair, UN Sustainable Development Solutions Network (SDSN) - Greece (www.unsdsn.gr)

Chair, SB International Center for Research on the Environment and the Economy (www.icre8.eu)

Vice-Chair, SB European Forest Institute (www.efi.int)

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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/Cultural 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.

Although none of the 17 SDGs focuses exclusively on culture Agenda2030 includes several explicit references to cultural aspects

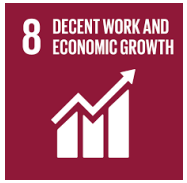
Target 4.7

Ensuring all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through:

- education for global citizenship
- appreciation of cultural diversity
- culture's contribution to sustainable development.

Target 11.4

Need to strengthen efforts to protect and safeguard the world's cultural and natural heritage.



Targets 8.9 & 12.b

Devise and implement policies to promote sustainable tourism, including through

- local culture and products
- develop suitable monitoring tools in this area.

Greece Performance:

Index Score: 70. 6 Regional Average 76.9 Overall Rank: 48 out of 156

CURRENT ASSESSMENT – SDG DASHBOARD

SDG TRENDS

A Global Network of :

Universities & Research and Innovation Centers

Businesses

Civil Society Organizations

Policy Making

Political Institutions

To support **SCIENCE DRIVEN implementation of SDGs**

SDSN GREECE

www.unsdsn.gr

Co-Chairs

Prof. Phoebe Koundou

Prof. Andreas Papandr

Leadership Council

Business, NGOs,

Policy Making, Politici

3000+ universities & r

2000+ companies and

CROSS-CUTTING THEMES

Natural Capital Valuation & Integ
Sustainable Investment Allocatio

Climate Change: Mitigation and A
Policies

Sustainable Development in Times of Crisis

THEMATIC PRIORITIES

Sustainable Shipping and Marine Resources Management

Sustainable Energy, Energy Security, WEF

Sustainable Cultural and Natural Heritage, and Tourism

Education and Training Courses in Sustainable Development

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

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

FRAMEWORK CHARACTERIZATION

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

MODELS ON INTERACTION

Dynamic, Spatial, Uncertainty

- Nature
- Society
- Economy

EMPIRICAL APPLICATION of MODELS

Estimation of Economic Value

OPTIMAL ALLOCATION based on Value/Costs (CBA)

How?

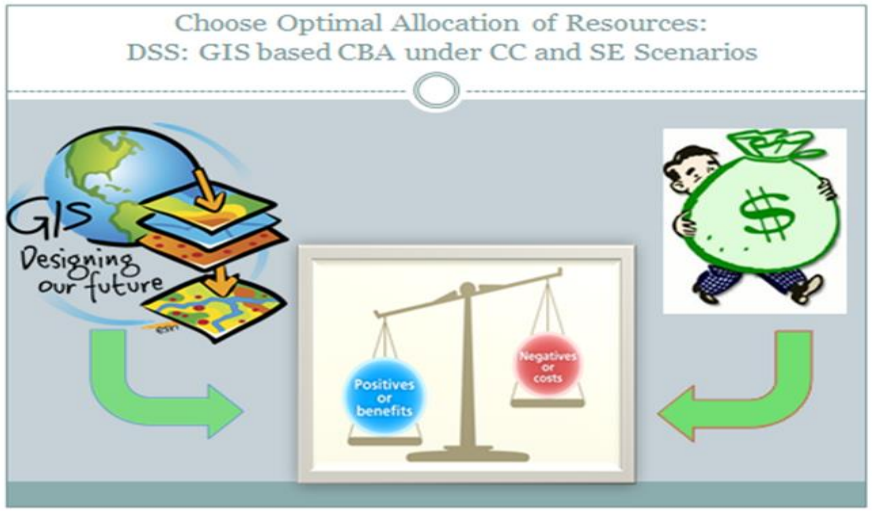
- Socio-Economic, Legal Instruments
- Technological Innovations
- Social and Institutional Innovations
- Nature Based Solutions
- Infrastructural Solutions

STRATEGIC MANAGEMENT PLANS & POLICY RECOMMENDATIONS:
Stakeholders engaged & convinced throughout the process

The Concept of Economic Value

Cultural heritage provides goods and services to society that are non-marketed, hence they have no explicit price, but have value

- Cultural heritage: public capital asset that provides to society a stream of services, non-marketed but can be quantified and valued.
- Estimate benefits and costs of projects in the sector of cultural heritage.
- TO SPEAK TO POLICY MAKERS: Social Cost Benefit Analysis (SCBA) of Climate Change Mitigation / Adaption policies



Case Studies on Climate Change and World Heritage

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

1 World Heritage Glaciers

2 World Heritage Marine Biodiversity

3 World Heritage Terrestrial Biodiversity

4 World Heritage Archaeological Sites

5 World Heritage Historic Cities and Settlements

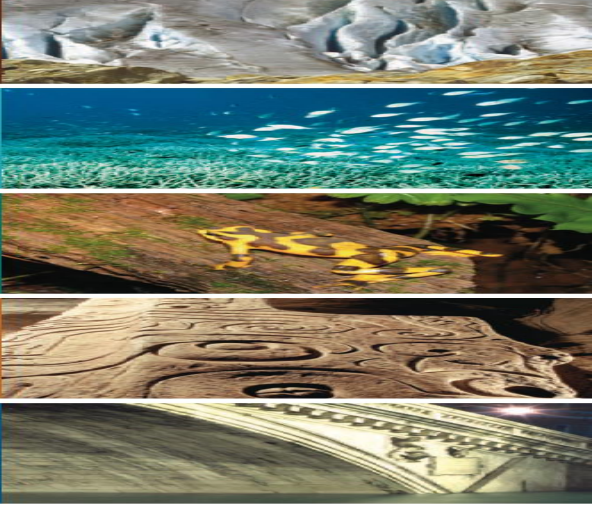
World Heritage and CC

- **World Heritage properties are affected by the impacts of climate change at present and in the future.**

- **Their preservation requires understanding these impacts to their Outstanding Universal Value and responding to them effectively.**

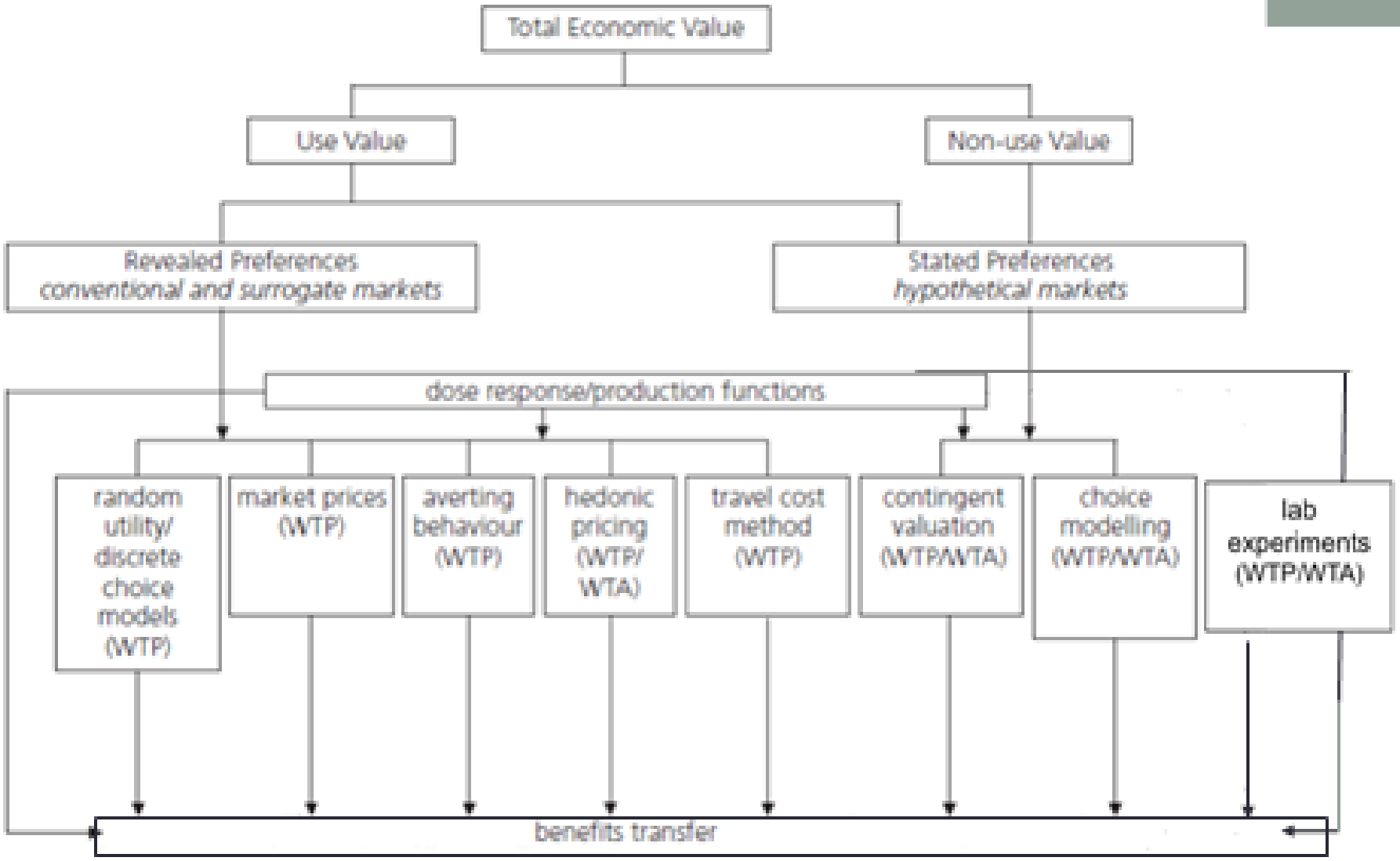
- **Economics and Econometrics enable estimation of this value!**

- **Cultural heritage CC adaptation:**
  - **reductions or avoidance of adverse effects from CC**
  - **exploitation of beneficial management opportunities**



Goods & Services → Benefits to Human Well-Being → Value

- Total Economic Value
  - Use Value
    - Actual Use Value
      - Direct Use Value
      - Indirect Use Value
    - Option Value
  - Non Use Value
    - Existence Value
    - For Others
      - Bequest Value
      - Altruistic Value
    - Warm Glow



- TEV: systematic tool for considering full range of impacts on human welfare.
- TEV: reflects the preferences of individuals, which can be statistically estimated
- TEV: essential for resource allocation and policy making.

Cultural Heritage Valuation Studies Classification

Type of Benefit	Type of Good				
	Single building	Group of buildings	Monuments	Archaeological areas and artefacts	Other
Protect from air pollution damages	5 - Lincoln Cathedral 3 - Nidaros Cathedral	A – Historical buildings in Neuchatel	11 - Washington D.C Monumenents		
Restore or preserve from degradation	3 - Nidaros Cathedral 5 - Lincoln Cathedral H – Northern Hotel, Fort Collins	6 - Bulgarian Monastries* 9, M - Fes Medina* 4 - Grainger City D - Historic Core of Split E- Machu Picchu* K – Stone Town of Zanizibar*		C – Prehistoric cave paintings in UK	L- Colon Theatre
Protect from urban development/ infrastructure				7 – Stonehenge 10 – Campi Flegrei Archaeological Park	
Gain access	4 – Warkworth Castle 4- Durham Cathedral			8 –Rock Paintings, Nopiming Park C – Prehistoric cave paintings in UK	12 – Art galleries in Turin
Maintain at present level	I – St. Genevieve Academy				13- Royal Theatre, Copenhagen 14 – Napoli Museui Aperti B –Performing and visual arts in Sydney F- Picture library, UK G-History (recorded heritage) Centre, UK
Reduction of congestion					J - British Museum

BRIEF PRESENTATION OF METHODS USED TO ESTIMATE THE VALUE OF HERITAGE ASSETS

Steps in the application of CVM

- **Step 1. Define the valuation problem**. Determine exactly the good or service to be valued.
- **Step 2. Design the survey.** Determine the sample of the respondents, the questionnaire, the means (mail, phone or in person interview), focus groups, pilot.
- **Step 3. Actual survey implementation**. Asking respondents about their stated WTP or WTA.
- **Step 4. Compile and analyse the data.** Data must be entered and analysed using appropriate statistical techniques.
- **Step 5. Derive WTP and report results**. Estimate the average value for individual or household in the sample, and extrapolate to the relevant population in order to calculate the total benefits from the site.

Hedonic Pricing Method

- Assume that the good to be valued is view of Acropolis and the objective is to estimate the WTP for sea view per square meter of apartment space
- The price of an apartment depends on its size (S), floor (K), type of construction (L), area (R), level of pollution and noise (Q), sea view (yes/no) (P), etc. We can obtaining market prices for a sample of houses (observations) and we can calculate

$$P_h = f(S, R, L, K, Q_i)$$

- Taking the partial derivative of the function with respect to the particular characteristic we obtain the demand function as:

$$\frac{\partial P_h}{\partial Q_i} = P(S_i, N_i, Q_k)$$

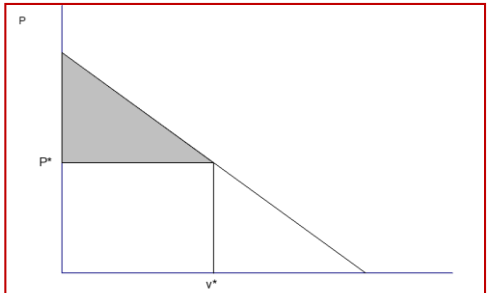
The Travel Cost Method

The total cost of a consumer's visit to a cultural or natural site consists of

- the cost of travel and accommodation
- the entrance fee
- the value of time
- any other cost involved

Using a survey of visitors appropriately designed, an estimate of the price paid (WTP) for the visit is obtained.

By inverting this function, a demand curve is obtained and the consumer surplus can be estimated



Contingent valuation case studies

	National Museum of Sculpture	Tate Modern	Mogoşoaia Palace
Location	Spain	UK	Romania
Project	Renovation of the museum with an important cultural element	Turning the redundant bankside power station into a museum of contemporary art	Restoration of Mogoşoaia Palace
Visitors (per year)	140.000	5.700.000	27.000
Valuation methodology	Contingent valuation	Contingent valuation	Contingent valuation
Economic value	**€ 42,00m**	**€ 190,00m**	**€ 8,50m**
Sites			

Brief Presentation of Methods

Hedonic pricing and Travel Cost case studies

	Culemborgerwaard and Tieler	Vara Konserthus	Nordic Watercolour
Location	Netherlands	Sweden	Sweden
Project	Remnants and historical buildings of Celtic, Batavian and Roman civilizations	Vara Konserthus' is a concert hall located in the centre of Västra Götaland	The Nordic Watercolour is a museum located on the west coast
Visitors (per year)	28.000	35.000	200.000
Valuation methodology	Hedonic pricing	Travel cost	Travel cost
Economic value	**€ 33,80m**	**€ 1,60m**	**€ 5,05m**
Sites			

Estimated Values

Study and nature of the asset	WTP (US$) [1]	WTP definition[2]	Annuity (US$)[3]	% zero WTP	% of stated income [4]
Valuing the impacts of road improvements upon Stonehenge, UK. Contingent valuation * (Chapter 7)	20-23: on-site, nationals 6-11: off-site, nationals 0.3-2: on-site, foreigners	Household, annual, 2 years, PC/CA, tax, (entry fee for foreigners)	2.3-2.7 0.7-1.3 0.02-0.1	55% 65%	0.08-0.09 0.03-0.06 0.0001-0.0004
Valuing aesthetic changes in the Lincoln Cathedral due to air pollution, UK. Contingent valuation. (Chapter 5)	1-2 per year of soiling, residents of Lincolnshire	Household, annual, DB DC, tax	1-2	<19%	0.005-0.01
Non-Moroccan values for rehabilitating the Fes Medina, Morocco *. Contingent valuation. (Chapter 9)	38-70: Fes visitors 22-31: Morocco visitors	Individual, per trip, SB DC tax	2.4-4.4 1.4-2.0	Approx. 17% Approx. 19%	n.a.

Estimated Values

Valuing access to Durham Cathedral, UK *. Contingent valuation. (Chapter 4)	1.4	Individual, per visit, OE, fee	56 (average no.visits = 41)	36%	0.2
Valuing the preservation of Bulgarian monasteries, Bulgaria *. Contingent valuation (Chapter 6).	0.6-1	Household, annual, OE, tax	0.6-1	39%	0.1-0.2
Valuing acid deposition injuries to marble monuments in Washington, DC, USA Contingent valuation. (Chapter 11)	16: low impact 23: medium impact 33: high impact	Household, one-time only, CA, none	1.0 1.5 2.1	8% (approx.)	0.003-0.006

Estimated Values

Renovation of historical buildings in Grainger City, Newcastle, UK. Contingent valuation. (Chapter 4)	16-22	Household, annual, OE, tax	16-22	47%	n.a.
Recreational value of aboriginal rock paintings, Nopiming Park, Canada. Contingent valuation (Chapter 8)	134	Individual, annual, CB, travel cost	134	n.a.	n.a.
Valuing the right to access two Italian art museums at present charges. Contingent valuation. (Chapter 12)	28-33	Individual, annual, SB DC, donation	28-33	18% (approx.)	n.a.
Valuing visitor benefits to Warkworth Castle. UK. Contingent valuation. (Chapter 4)	4	Individual, per visit, OE, fee	4 (average no. of visits = 1)	n.a.	0.01

Estimated Values

Value of continuing current activities of the Royal Theatre in Copenhagen. Contingent valuation. (Chapter 13)	9-24	Individual, annual, OE, tax	9-24	18%	n.a.
Maintaining the Napoli Musei Aperti. Contingent Valuation (Chapter 14)	11 (users) 4 (non users)	Household, annual OE donation	11 4	34% (users) 67% (non-users)	n.a.
Damages from air pollution on the Nidaros Cathedral, Norway. Contingent valuation. (Chapter 3)	51: originality preserved 45: restoration - losing originality	Individual, annual, OE, tax and donation	51 45	9-20 % (domestic visitors) 38-49 % (foreign visitors)	n.a.

Capacity Building
Building capacities for resilient World Heritage

- UNESCO builds capacities of States Parties and other stakeholders to manage climate change impacts on World Heritage effectively and sustainably.

- The main aim of these efforts is to increase the capacity of these properties to continue to convey their Outstanding Universal Value and support sustainable development.

- Management of resilient World Heritage properties requires designing and implementing appropriate adaptation measures, complemented by activities that contribute to disaster risk management, climate change mitigation and sustainable development.

United Nations
Educational, Scientific and
Cultural Organization

Internal Oversight Office

Evaluation Office

IOS/EVS/PI/174

May 2019

EVALUATION OF UNESCO'S STANDARD-SETTING WORK OF THE CULTURE SECTOR – PART VI – 2001 CONVENTION ON THE PROTECTION OF UNDERWATER CULTURAL HERITAGE

Interreg
Balkan-Mediterranean
RECONNECT

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Reconnect

Regional cooperation for the transnational ecosystem sustainable development

Develop strategies for sustainable management of Marine Protected Areas (MPAs) and Natura 2000 sites.

hcmr
ΕΛΚΕΘΕ

ICRE8
International Centre for Research on the Environment & the Economy

REGIONAL MARINE PARK
N. KARPATHOS - SARIA - ASTAKIDONISION

University of Cyprus
Department of Biological Sciences

IBER
INSTITUTE OF BIODIVERSITY AND ECOSYSTEM RESEARCH-BAS

DEPARTMENT OF FISHERIES AND MARINE RESEARCH (DFMR)

UNIVERSITETI I TIRANES

Expected outcomes of RECONNECT

- Interactive maps integrating cultural variables, essential biodiversity variables, socio-economic variables
- Best – practice protocols for study areas monitoring
- Citizen-science data uploaded in a platform, mobile/tablet app for dissemination

State of the art methodology

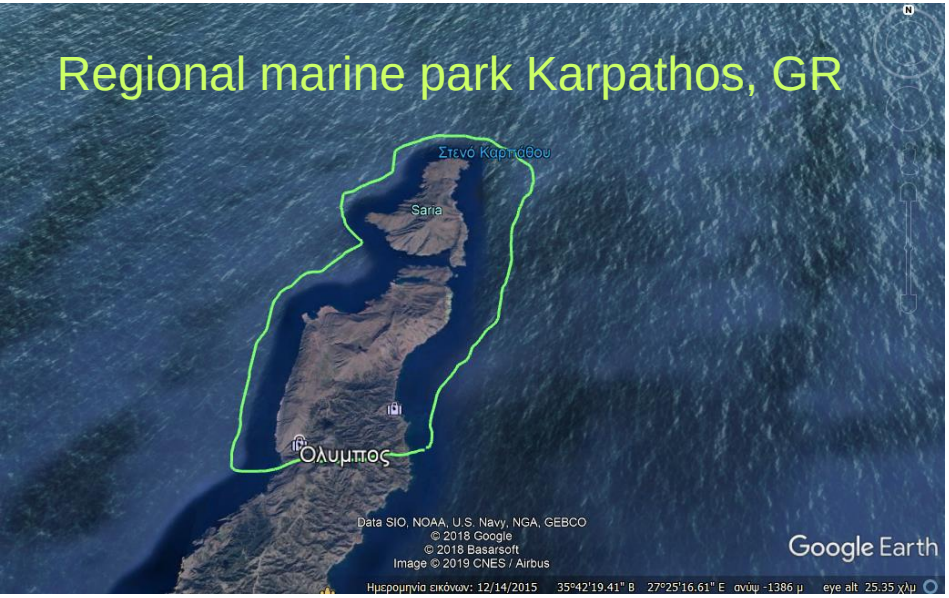
- Socio-economic valuation of Ecosystem Services from *Posidonia Oceanica*

- Including **Cultural Ecosystem Services** of *Posidonia* to protect archaeological remains

- Method Choice Experiment: Estimate Willingness-To-Pay for ecosystem and cultural services

- Information to policy-makers:
    - Trade offs and synergies from diverse stakeholders groups
    - Amount of entrance fee based on Willingness-To-Pay

Study areas


Regional marine park Karpathos, GR
Στενό Καρπάθου
Saria
Όλυμπος
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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Ksamil bay, Stillo &Togo islands (MPA), ALB
Aliko
Διβρη
Αχαράβη
Κασσιόπη
Ksamil Ba
Εξαμίλι Αγίων Σαράντα
Livadhja
Mursi
Tongo Island
Stillo cape
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Cape Greko (MPA), CY
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Πρωταράς
Αγ. Νάπα
Konnos
Cape Greco
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Gradina – Zlatna Ribka, BU (NATURA 2000)
St Ivan
Ostrovi
St Petar
Sozopol
Sozopol
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Example of choice cards – Cyprus study area RECONNECT

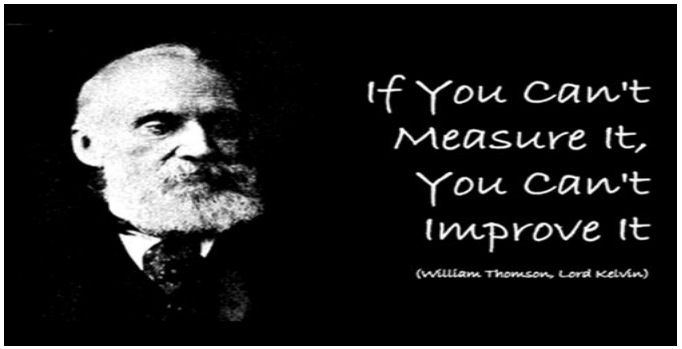
Choice block CE2A			
Attributes	**Choice A**	**Choice B**	**Choice C**
Fish abundance	Increase by 20%	Increase by 40%	No change in the management practices of the protected Posidonia meadows
Seawater clarity/quality	Increase by 60%	Increase by 90%	
Cultural benefits	Posidonia protects underwater antiquities at 60% of the marine protected area	Posidonia protects underwater antiquities at 90% of the marine protected area	
Carbon sequestration	Increase of CO^2 captured by Posidonia meadows by 5%	Increase of CO^2 captured by Posidonia meadows by 25%	
Trade-off among beach-line protection from erosion and cleaning beach from Posidonia banquettes	> 3 times cleaning /year (status quo) equivalent to high loss of protection	1 - 2 times cleaning/ year – equivalent to medium loss of protection	
Restrictions to fishing	Fishing restriction only in the Red zone of the Cape Greko	Increase of fishing restriction to include the Neutral zone of Cape Greko	
Increase of tourist product	30% increase in tourism	15% increase in tourism	
Voluntary tax	25 Euros / year	75 Euros / year	
Which choice do you prefer?			

Sustainable tourism – the nexus where diverse disciplines meet

- Tourism that promotes:
  - socio-cultural integrity
  - natural resources conservation
  - adaptation of cultural heritage to CC
  - community resilience

- Opportunities for:
  - diving tourism in Underwater Cultural Heritage sites
  - cultural tourism in archaeological parks

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."*

FUTURE GENERATIONS

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

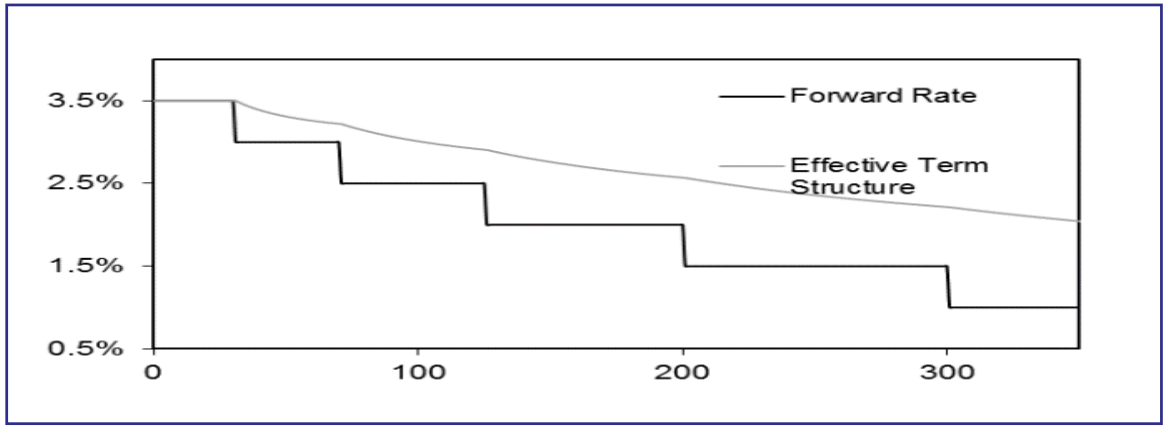
- *Humanity has the ability to make development sustainable: to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.*

  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



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Climate-KIC

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

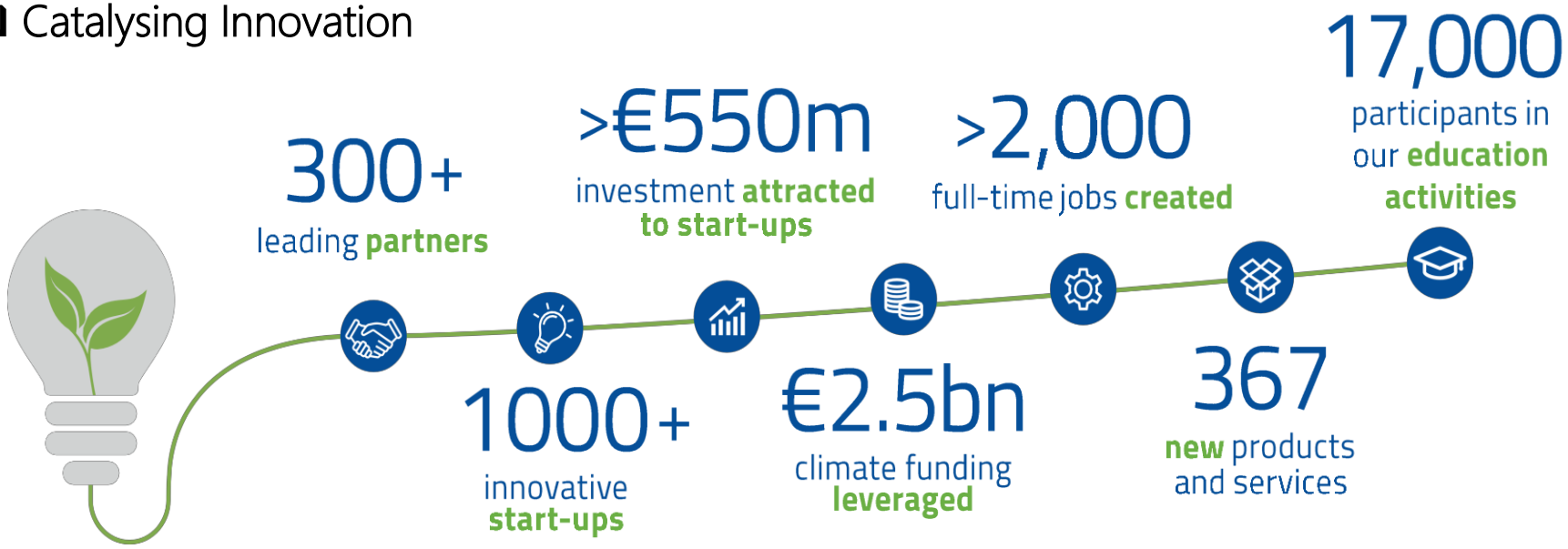
Transforming innovation into climate action

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

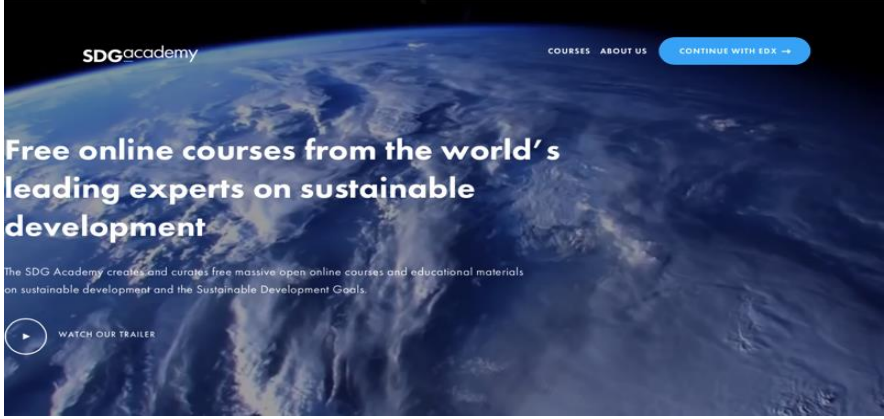
EIT Climate-KIC Europe is Building a Movement of Climate Action

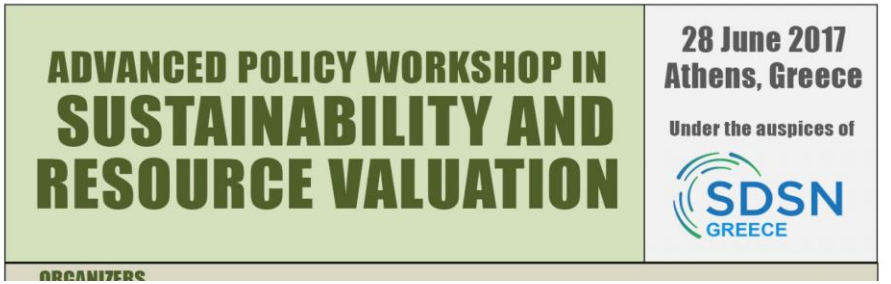
- ❑ Convening networks of expertise
- ❑ Leveraging Grants Smartly & Effectively
- ❑ Developing People & Capacity
- ❑ Catalysing Innovation

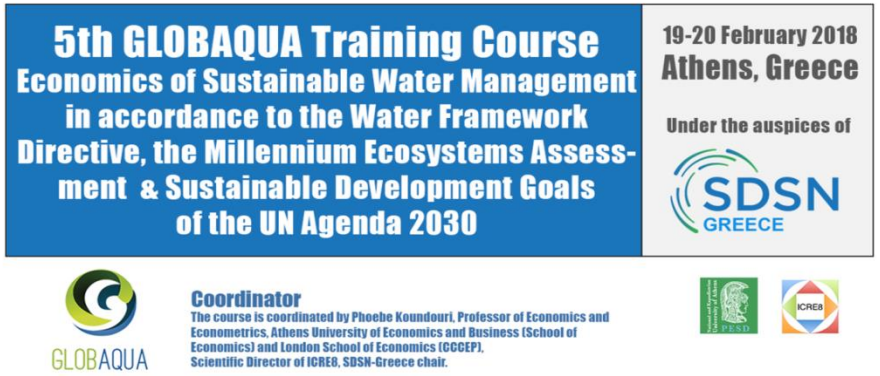


Education and Training

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







Coming Soon:

- **MSc Energy Law and Economics**
- **Greek Sustainability Report**
- **Sustainability Summit, with the Economist, 16-17 Oct. 2019**

Our Ongoing Projects

Institutional Support