A Keynote Speech for 4th International Conference on Sustainable Development

The Challenge of Implementing Sustainable Development: Integrating Socio-Economic Values in Interdisciplinary Approaches

Prof. Phoebe Koundouri

Professor and Director of ReSEES Laboratory, School of Economics
ATHENS UNIVERSITY OF ECONOMIC AND BUSINESS (www.aueb.gr)

Director, ICRE8: INTERNATIONAL CENTER FOR RESEARCH ON THE ENVIRONMENT AND THE ECONOMY (www.icre8.eu)

Co-Chair, UN Sustainable Development Solutions Network (SDSN)- Greece (www.unsdsn.gr)
Research Professor, CCCEP, LONDON SCHOOL OF ECONOMICS (www.cccep.ac.uk/people/)
Research Professor, ATHENA Research & Innovation Center (www.athena-innovation.gr/en)
A global network of universities, research and innovation centres, civil society organizations, businesses, policymaking and political institutions, to support the science driven implementation of the Sustainable Development Goals (SDGs)
What is the United Nations Sustainable Development Solutions Network – UN SDSN?

- SDSN was launched in 2012 by UN Secretary General Ban-Ki Moon
- In order to mobilize global scientific and technological expertise
- To promote practical problem solving for sustainable development

SDSN-Global, Earth Institute, Columbia University
SDSN-Global Director, Prof. Jeffrey Sachs
• **SDSNs work on climate change**: The Paris Agreement on Climate Change, Deep Decarbonization Pathways, Low-Carbon Technology Partnerships initiative (LCTPi)

• **The SDG Academy** is a virtual platform that provides high-quality, mass online education in the field of sustainable development. SDG Academy aims at having approximately 1 million students enrolled by 2020.

• **SDSN Thematic Networks** to support SDG advocacy and implementation in key areas (examples include: The World in 2050; Forests, Oceans, Biodiversity, and Ecosystem Services; Redefining the Role of Business for Sustainable Development)

• **Solution Initiatives** promote new technologies, business models, institutional mechanisms, policies and combinations thereof that can dramatically accelerate progress towards sustainable development.
International Centre for Research on the Environment and the Economy (ICRE8)
www.icre8.eu

University of Athens Political Economy of Sustainable Development Lab (PESD)
http://pesd.econ.uoa.gr

Website: www.unsdsn.gr

Co-Chairs
Prof. Phoebe Koundouri
Prof. Andreas Papandreou

Leadership Council
Business, Politicians, NGOs, Policy Making

Youth Section
Christina Christoforou Livani
SDSN-Greece Thematic Priorities

**Natural Capital Valuation: Sustainable Investment Allocation**

**Climate Change: Mitigation and Adaptation Policies**

**Sustainable Development in Times of Crisis**
Thematic Focus Areas

- Sustainable Shipping and Marine Resources
- Sustainable Energy and Energy Security
- Sustainable Water-Food-Energy Nexus
- Sustainable Tourism and Biodiversity
- Education and Training Courses in Sustainable Development
Is “Sustainable Development” something new?

Physiocrats (18th century), Malthus (19th century), etc...

The Tragedy of the Commons, Garrett Hardin

*Science* 13 Dec 1968: Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons.

70’s Sustainability on Political Agenda
1972: United Nations Environmental Program (UNEP)
1980: World Conservation Strategy
1983: World Commission on Environment and Development (WCED)
1987: Our Common Future
Etc...

2000: Millennium Development Goals
2015: Sustainable Development Goals, Agenda 2030
Cluster of research entities:

- **ICRE8**, private not for profit Research Center
- **ReSEES/AUEB**: Athens University of Economics and Business, Research on Socio-Economic and Environmental Sustainability (ReSEES) Laboratory
- **PESD/NKUA**: National and Kapodistrian University of Athens, Political Economy of Sustainable Development Laboratory
- **SDSN-Greece**: United Nations Sustainable Development Solutions Network
- **ATHENA**, government Research Center,

with a strong commitment to research related to Economics, Environment, Energy, (Eco-)Innovation and Sustainability, with an exceptional record in attracting research funding, achieving successful completion of influential projects with explicit policy interventions, and producing numerous academic and popular publications.
• More than 50 million euro of research funding from:
  - European Commission: DG RTD (FP4,5,6,7, H2020), DG MARE, DG ENV, DG ENER, etc.
  - International Organizations: World Bank, OECD, EBRD, WHO, FAO, UN, WWF, etc.
  - Governments in all 5 continents

• 700 published peer-reviewed research papers & books

• 500 collaborating universities & research institutions

• Research influenced policy & attracted mass media coverage all over the world
Achieving Natural Resources, Economic, Social Sustainability by developing scientific and methodologically sound approaches to recognizing, demonstrating and capturing the Total Economic Value of natural resources and other public goods important for social welfare, integrating them in sustainable management tools and policy making, while recognizing the interdisciplinary nature of the challenge.
Economics?

Allocation of scarce resources across people, over time & space in a way that social welfare is maximized.

Natural Resources, Environmental and Energy Economics?
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

Ecosystems & Biodiversity

Biophysical Structure or process (e.g., vegetation cover or Net Primary Productivity)

Function
- (e.g., slow water passage, biomass)

Service
- (e.g., flood-protection, products)

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

(econ) Value
- (e.g., WTP for protection or products)
- 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.
Stages of Interdisciplinary Analysis

- Mathematical Models of interaction between Society-Economy-Natural Resources/Environment
- Empirical/Econometric Modeling
- Empirical Models Application & Estimation

- Decision Support Tools
- Policy Recommendations

- Natural Resources, Socio-Economic, Institutional Characterization
- Data Collection

Qualitative & Quantitative Analysis of Results
CBA & other decision criteria
Market Interaction Makes Value Explicit

Price should mirror Value

We need $ for EACH

- Resource
- Individual
- Space
- Time from today till $\infty$

If You Can't Measure It, You Can't Improve It

(William Thomson, Lord Kelvin)
Methods to elicit Economic Value of non-market Goods & Services

Mathematical Modeling

Econometric Modeling

Valuation Methods

Survey

Choose Optimal Allocation of Resources:
DSS: GIS based CBA under CC and SE Scenarios
Implementing Social Welfare Increasing Sustainable Solutions

Nature Based Solutions

Infrastructural Solutions

Socio-Economic Tools
- Pricing
- Tradable permits
- Quotas
- Taxes/subsidies
- Charges
- Direct Controls
- Educational/Awareness Campaigns
- Voluntary Agreements
- Legal Instruments
- Investments

Deriving Sustainable Development Plans Using Economic Value to Allocate Resources
1) Natural Capital Valuation: Sustainable Investment Allocation

Indicative Projects

Mermaid
AquaStress
BlueBridge
Refresh
Genesis
The ARID Cluster
Tropos
Sustainable Energy and Resource Management

Innovative Multi-purpose offshore platforms: planning, design & operation

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

H2Ocean

Development of a wind wave power openses platform equipped for hydrogen generation with support for multiple users of energy

http://www.h2ocean-project.eu/

MERMAID

Innovative multi-purpose offshore platforms: planning, design and operation

http://www.mermaidproject.eu/

TROPOS

Modular multi-use deep water offshore platform harnessing and servicing Mediterranean, subtropical and tropical marine resources

http://www.troposplatform.eu/

The Ocean of Tomorrow

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

Phoebe Koundouri, Editor

Springer
Sustainable Energy and Resource Management

The BlueBRIDGE Project –
Addressing the Blue Societal Challenge
H2020. Budget: 10,000,000 euro

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

Supporting assessment of stocks and fisheries
Improving performance and sustainability in aquaculture
Monitoring fisheries & habitat degradation
SDSNN Official Launch of 3rd SDSN Mediterranean Conference
Sept. 7 – 8, 2017 | Athens, Greece

GENESIS
groundwater and dependent ecosystems

Science for Environment Policy
The public value of including scientific information in groundwater protection policies

EC, FP7, Budget: 9.170.600 €

WP 1 Co-ordination of core studies
WP 2 GWR: flow characterisation
WP 3 Pollutant input and leaching
WP 4 GWR
WP 5 Integrated modelling
correspondence
precipitation
parameterization
verification
Soil to groundwater

WP 6 Groundwater systems management

WP 7 Integration, uptake, e-mining and dissemination

This focus valley region in Northwestern Finland, which covers about 80 km², is a popular area for tourism and recreation, as well as mining. In the last few years, however, there have been indications of increased environmental degradation due to mining activities. This has led to increased awareness and concern among local communities and environmental organizations. Despite efforts to implement best management practices, challenges persist in ensuring sustainable development. Thus, it is crucial to incorporate scientific information into decision-making processes to address these issues effectively.
2) Climate Change: Mitigation and Adaptation Policies

Indicative Projects

- Decision Making Under Uncertainty: The Example of Climate Change
- MSP Cyprus
- GLOBAL IQ
- GLOBAQUA
- BRIGAID
BRIGAID: Bridging the Gap for Innovations in Disaster resilience
http://brigaid.eu/
Aim: To effectively bridge the gap between innovators and end-users in resilience to floods, droughts, and extreme weather.
Climate Innovation Window: Interactive Platform

Interactive medium between innovators and stakeholders

SHARE AND DISCOVER CLIMATE INNOVATIONS

INNOVATIONS FOR CLIMATE CHANGE ADAPTATION

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

Share your innovation
GLOBAQUA: Managing the effects of multiple stressors on aquatic ecosystems with water scarcity.
http://www.globaqua-project.eu/

Budget: 9.990.594 €
Funding: European Commission, 7th Framework Program
Managing the effects of multiple stressors on biodiversity and functioning of aquatic ecosystems

http://www.globaqua-project.eu, Budget: 10,000,000 euro
Innovative technologies for safer European coasts in a changing climate

European Commission
FP7, THEME 6 - Environment, including climate
Budget: (6,530,000 €)

http://www.theseusproject.eu/
The Economic Valuation of Climate Change Effects on Coastal Ecosystems: A Choice Experiment
3) Sustainable Development in Times of Crisis

Indicative Projects

- SESAME
- DAFNE
- SMI RES Science and Management of Intermittent Rivers and Ephemeral Streams
- interreg
- aqua librium
- CIGESMED
- simra Social Innovation in Marginalised Rural Areas
– 4-year project (2016-20)
– 26 partners
– Funded by the European Union (Horizon 2020)
– € 5,9m

– Advance understanding of social innovation and innovative governance in:
  • Agriculture
  • Forestry
  • Rural Development

– Boost them in marginalized rural areas across Europe and around the Mediterranean, including non-EU countries

http://www.simra-h2020.eu/
**WP-1** Scientific coordination

**WP-2** Theoretical and operational approaches to social innovation in marginalised rural areas

**WP-3** Holistic analysis and categorisation of social innovations

**WP-4** Building an integrated set of methods to evaluate social innovation

**WP-5** Evaluation of social innovation case studies in marginalised rural areas

**WP-6** Policy analysis and responses

**WP-7** Communication, dissemination and innovation actions

**WP-8** Administrative coordination
**Sustainable Governance and Decision Support Systems**

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

Tools to facilitate social understanding of the impact and support comparative analysis of the alternative through negotiations

(Negotiation Simulation Lab)
Sustainable Governance and Decision Support Systems

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

2 Case Studies

Zambezi River Basin

Omo River Basin
Innovations and Management for Sustainable Development

The Value of Distant Benefits & Long-Term Discount Rates

• 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

FUNDED BY VARIOUS GOVERNMENTS: UK, FRANCE, USA, NORWAY, SWEDEN, HOLLAND

FUNDED BY THE WORLD BANK FOR CYPRUS, MOLDOVA, UKRAINE
Innovations and Management for Sustainable Development

CBA - Ramsey Formula extended for Risk & Uncertainty
(papers by Dasgupta, Gollier, Koundouri, Weitzman and others)

In an Uncertain Environment persistent shocks on:

- the growth rate of consumption
- short-term interest rates

Estimate Theory Consistent DDR trajectory
- Using Historical Data
- Without Structural Model
- Using univariate time series regime switching models

DDR for higher PV of Long-Run effects!

Example: Climate Change Mitigation

DDR implies double social cost of CO2 emissions
**Recommended Schedule of Discount Rates Provided**

Adopted in: UK, USA, France, Norway, Etc.

<table>
<thead>
<tr>
<th>Country</th>
<th>Method</th>
<th>SDR%</th>
<th>LR(T&gt;40) SDR Declining?</th>
<th>Risk &amp; Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU Area</td>
<td>SRTP</td>
<td>3</td>
<td>Declining</td>
<td>sensitivity scenario analysis monte carlo simulations</td>
</tr>
<tr>
<td>Sweden</td>
<td>SRTP</td>
<td>3.28-3.5</td>
<td>Mentioned, Not adopted</td>
<td></td>
</tr>
<tr>
<td>Moldova</td>
<td>SRTP/SOC</td>
<td>4.63+9 (RP)</td>
<td>Declining</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>SRTP/SOC</td>
<td>2.5+1.5 (RP)</td>
<td>Declining</td>
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<tr>
<td>Cyprus</td>
<td>SRTP/SOC</td>
<td>2.5+1.5 (RP)</td>
<td>Declining</td>
<td>Sensitivity Analysis</td>
</tr>
<tr>
<td>Ukraine</td>
<td>SRTP/SOC</td>
<td>5+7 (RP)</td>
<td>Declining</td>
<td>Sensitivity Analysis</td>
</tr>
</tbody>
</table>
Education and Training

International, Regional, National Conferences, Workshops, Training Seminars & Research, Policy, Business Events
EAERE 23 in Numbers

- 1200 members from 80 countries
- 2000 submissions
- 700 peer-reviewed papers presented
- 10 Policy Sessions
- 9 Thematic Sessions
- 38 posters
- 800 registered participants
- 274 referees

- 9 sponsors
- 10 exhibitors
- More than 60,000 euros attracted from sponsorship and exhibitors
- More than 30 volunteers
RDA FISHERIES & ACQUACULTURE Datathon

ICRE8 Workshop
19 June 2017
Athens, Greece
RDA/BB FISHERIES & ACQUACULTURE Datathon

To fuel new thinking in the holistic analysis of satellite, environmental, biological and socio economic data and the interactions between fisheries, aquaculture and the marine spatial planning.

Copernicus, EMODnet, BlueBRIDGE, FAO, Eurostat, Natura2000 are among the relevant datasets that will be made available.
ADVANCED POLICY WORKSHOP IN SUSTAINABILITY AND RESOURCE VALUATION

28 June 2017
Athens, Greece
Under the auspices of SDSN GREECE

ORGANIZERS
Political Economy of Sustainable Development Lab (PESD), Department of Economics, National and Kapodistrian University of Athens
in collaboration with Athens University of Economics and Business and International Centre for Research on the Environment and the Economy (ICREB)
5th GLOBAQUA Training Course
Economics of Sustainable Water Management in accordance to the Water Framework Directive, the Millennium Ecosystems Assessment & Sustainable Development Goals of the UN Agenda 2030

19-20 February 2018
Athens, Greece

Under the auspices of SDSN GREECE

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 (CCCEP), Scientific Director of ICRES, SDSN-Greece chair.
Contextualizing the SDGs for the Mediterranean Region:

Regional priorities for the Mediterranean: How do they translate to SDGs?

1. Ensuring sustainable development in marine and coastal areas
2. Promoting resource management, food production and food security through sustainable forms of rural development
3. Planning and managing sustainable Mediterranean cities
4. Addressing climate change as a priority issue for the Mediterranean
5. Transition towards a green and blue economy
6. Improving governance in support of sustainable development
Regional strategies for sustainable development

**Strategic Plans for the Region**

**Mediterranean Strategy for Sustainable Development (MSSD)**

- Under the auspices of UNEP-MAP.
- A strategic guiding document for all stakeholders and partners to translate the 2030 Agenda at the regional, sub-regional and national levels.
- An adaptation of international commitments to regional conditions, in the context of the 2030 Agenda and its SDGs.
Where do the Mediterranean countries stand relative to the SDGs?

- 2017 SDG Indicator Dashboard and report.

- The report generates “rough grading” for all countries to draw attention to the most urgent SDG-related challenges facing each country for each SDG.
<table>
<thead>
<tr>
<th>Country</th>
<th>2017 Global SDG Index Score</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>81.9</td>
<td>Cyprus</td>
<td>70.6</td>
</tr>
<tr>
<td>Slovenia</td>
<td>80.5</td>
<td>Israel</td>
<td>70.1</td>
</tr>
<tr>
<td>France</td>
<td>80.3</td>
<td>Albania</td>
<td>68.9</td>
</tr>
<tr>
<td>Hungary</td>
<td>78.0</td>
<td>Russia</td>
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</tr>
<tr>
<td>Belarus</td>
<td>77.1</td>
<td>Algeria</td>
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<tr>
<td>Croatia</td>
<td>76.9</td>
<td>Tunisia</td>
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<td>Jordan</td>
<td>66.0</td>
</tr>
<tr>
<td>Moldova</td>
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<td>Bosnia &amp; Herzegovina</td>
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</tr>
<tr>
<td>Romania</td>
<td>74.1</td>
<td>Lebanon</td>
<td>64.9</td>
</tr>
<tr>
<td><strong>Greece</strong></td>
<td><strong>72.9</strong></td>
<td>Egypt</td>
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<td>Syria</td>
<td>58.1</td>
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<td>Bulgaria</td>
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<td>Iraq</td>
<td>56.6</td>
</tr>
</tbody>
</table>
### European – Mediterranean Countries 2017 SDG Index Score

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**AVERAGE Global Index Score for European Mediterranean Countries:** 73.1

Open-Access to Scientific Information

www.openaire.eu

EC-DG Research-FP6
Budget: 12,000,000
Open Access evolution in Europe
http://vimeo.com/openaire/2014

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

It manages diverse research outputs across all disciplines, promotes and shares the results, effortlessly.

It is all about sharing, reusing and linking research information.
– Funded by the European Union (Horizon 2020)
– ~ € 2m
– Provide technological and social bridges
– Deliver services enabling uniform exchange of research artefacts
  ▪ Literature
  ▪ Data
  ▪ Methods
  ▪ with semantic links between them and
  ▪ across research communities and content providers in scientific communication
– Introduce and implement the concept of Open Science as a Service (OSaaS)
CASE STUDY: SDSN Greece

- Official website: www.unsdsn.gr

- Mapping of Greek universities and research centers
  - >50 public and private universities
  - 18 research centers
  - NGO's

- Collaboration with critical strategic partners:
  - Ministry of the Environment
  - Greek Universities and Research Centers
  - Athens Resilient Office, Municipality of Athens
  - WWF, Greece
  - Foundation for Economic and Industrial Research
  - Hellenic Federation of Enterprises
  - Etc.
Our Vision

An SDGE-library for Greece

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

A data source towards the implementation of the SDGs

immediate & long-term benefits to:
research communities
research organizations
funders, industry and...
society
We’re growing…

- SDG Open Science directory for Greece
- SDG Open Science directory for SDSN-Mediterranean
- SDG Open Science directory for the global SDSN
SDSNGREECE e-library

**Literature**
- Journal articles (OA and non-OA)
- White papers
- Pre-prints

**Datasets**
- Databases (SDG Indices, economic data, geophysical data, GIS data)
- Files

**Projects**
- Greek coordinators
- Greek partners
- Greek area as a case study
Emails: pkoundouri@aueb.gr; director@icre8.eu; p.koundouri@lse.ac.uk; phoebe.koundouri@unsdsn.gr