

# *Towards the Sustainable Transformation of the Tourism Sector*

*If you can't measure it, you can't manage it, and you can't improve it!*

## ***Professor Phoebe Koundouri***

***Athens University of Economics and Business & Technical University of Denmark***

***Chair Alliance of Excellence for Research and Innovation in Aephoria (AE4RIA)***

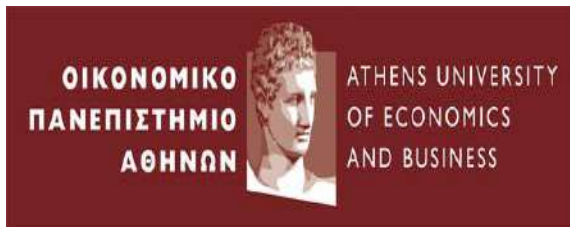
***Director Sustainable Development Unit ATHENA Information Technologies RC***

***Chair UN SDSN Global Climate Hub and UN SDSN European Hub***

***World Academy of Art & Science, European Academy of Science, European Academy of Science Technology***

***President European Association of Environmental and Resource Economists***

***President World Council of Environmental and Resource Economists***

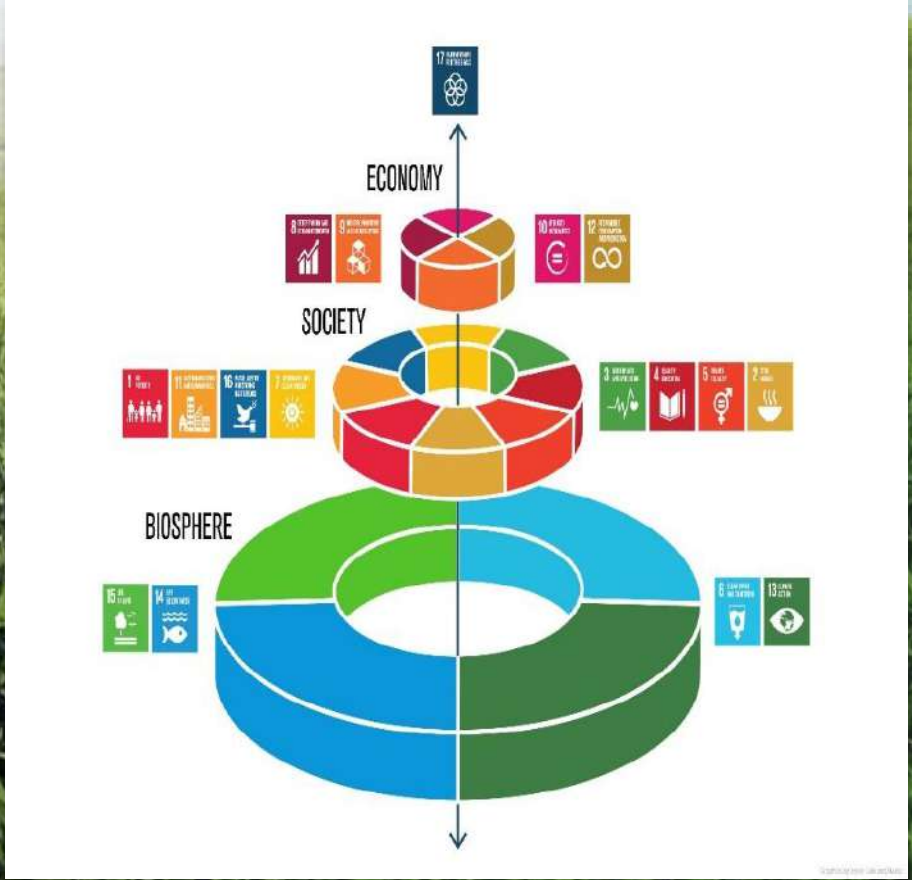


Technical  
University of  
Denmark





# SUSTAINABLE DEVELOPMENT GOALS





**200**  
PEOPLE

**100**  
PROJECTS

**150**  
CONFERENCES  
ORGANIZED

**543**  
PUBLICATIONS

**500<sup>M</sup>**  
FUNDING

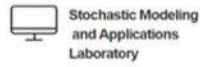


Prof. Phoebe Koundouri  
is the Founder and Scientific Chair of AE4RIA

## Research and Innovation Centers



ReSEES Laboratory



Stochastic Modeling and Applications Laboratory



Sustainable Development Unit / Athena



DTU Management Department of Technology, Management and Economics Climate and Energy Policy Division



Brigaid Connect



MENA Maritime Accelerator



Black Sea Accelerator



SDSN Global Climate Hub



Climate-KIC Greece Hub

## Innovation Acceleration Hubs

## Science - Policy Networks



SDSN



SDSN Europe



SDSN Greece



Water Europe



Nexus cluster

## Scientific Associations and Academies



EAERE



WCERA



Academia Europaea



World Academy of Art and Science

WAAS



IAP



European Academy of Sciences and Arts



SDGs – ESG  
measurement

Sustainable Finance



Sustainable Pathways  
Climate Neutrality  
& Resilience



Sustainable Pathways  
for Seas and Oceans



Sustainable Pathways  
Land Use &  
WFEB Nexus



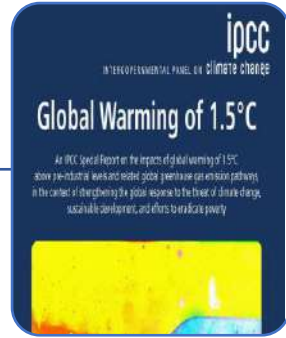
Innovation Acceleration  
Education  
Upskilling/Reskilling

# Summary Policy Framework Green-Digital Transition

2015



2018



2019



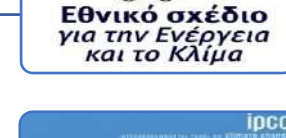
2020



Σχέδιο Ανάπτυξης για την Ελληνική Οικονομία  
TEΛΕΙΩΝ ΕΚΔΟΣΗ

"Next Generation EU"  
**Ελλάδα 2.0**  
ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ ΑΝΑΠΤΥΞΗΣ ΚΑΙ ΑΝΘΕΞΙΚΤΗΤΗΤΑΣ

2021



2022



Climate Delegated Act & Energy Prices

RePowerEU  
Independence Russian Fossil Fuels  
Supply Chain Security-Interconnectivity  
Invest Renewables

Digital Policies



2023

New Law to Reduce Methane Emissions

Fit-for-55 Policy updates

European Green Deal updates





# Just Transition: Policies, Finance, Labor Market



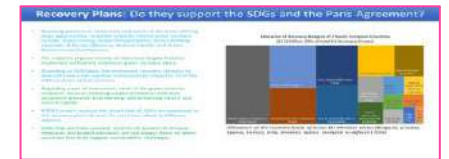
Machine Learning Textual Analysis  
Does the EGD support the implementation of the SDGs?



Which of the 6 Sustainable Development Transformations are supported by the EGD?



Are the European Recovery and Resilient Plans  
SDGs-compatible?



Does the European Semester Process facilitate the implementation of the SDGs?

Sustainable Finance: Valuing Natural and Cultural Capital

Fiscal Innovation: What are the distributional effects of Key EU climate policies?

Sustainable ESG-SDG Driven Transformation

# Timeline of Sustainability Reporting Standards

**1997**

- GRI (Global Reporting Initiative)
- Greenhouse Gas Protocol

**2005**

- Principles for Sustainable Investment (PRI)

**2010**

- Integrated Reporting (<IR>)

**2015**

- Task force on Climate-Related Financial Disclosures (TCFD)

**2023**

- CSRD into force
- First set of draft European Sustainability Reporting Standards (ESRS)

**2000**

- Carbon Disclosure Project (CDP)

**2007**

- Climate Disclosure Standards Board (CDSB)

**2011**

- Sustainability Accounting Standards Board (SASB)

**2022**

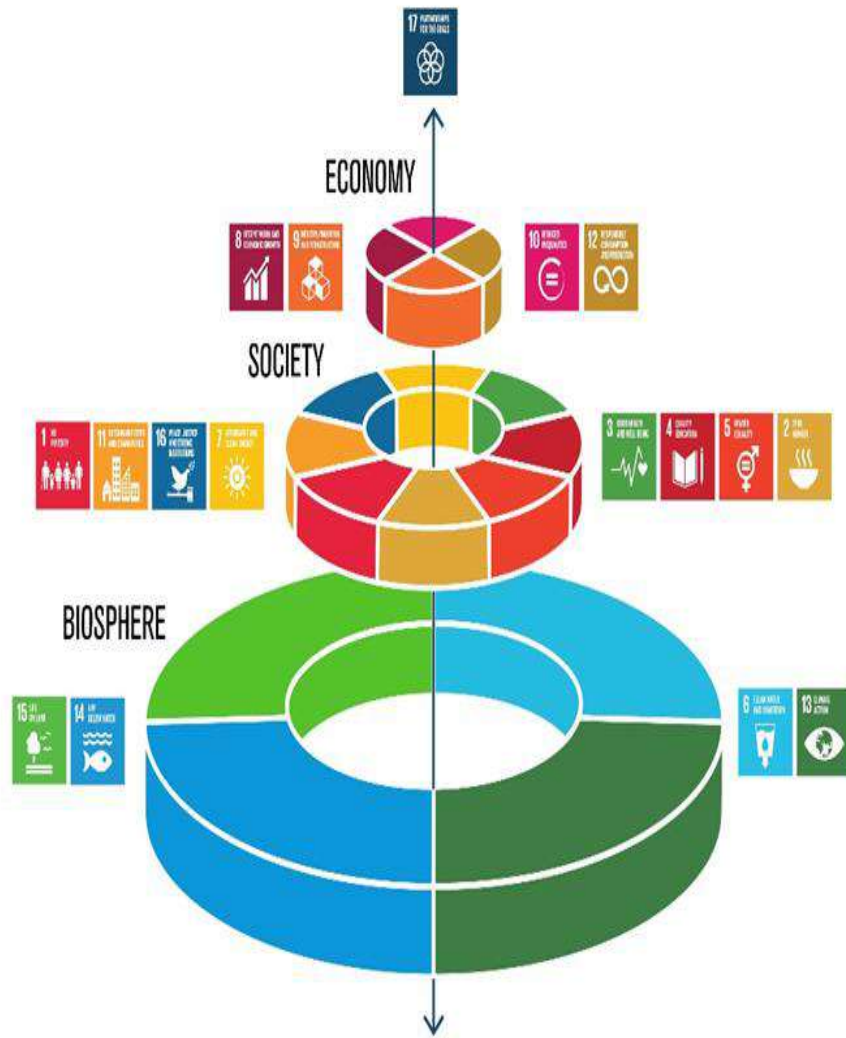
- Corporate Sustainability Reporting Directive (CSRD-Directive (EU) 2022/2464)



# Corporate ESG-SDG Footprint through Advanced Metrics

## AE4RIA matrix

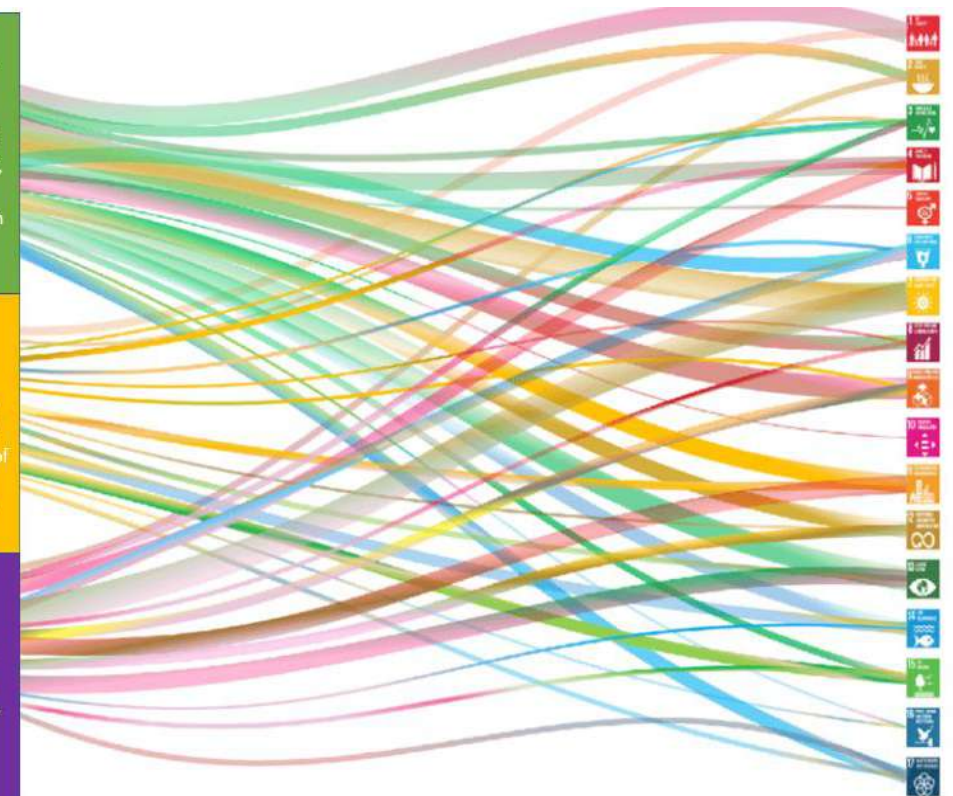
Integrate Corporate Sustainability Reporting into SDGs  
Decision Making Tools and Models to Accelerate



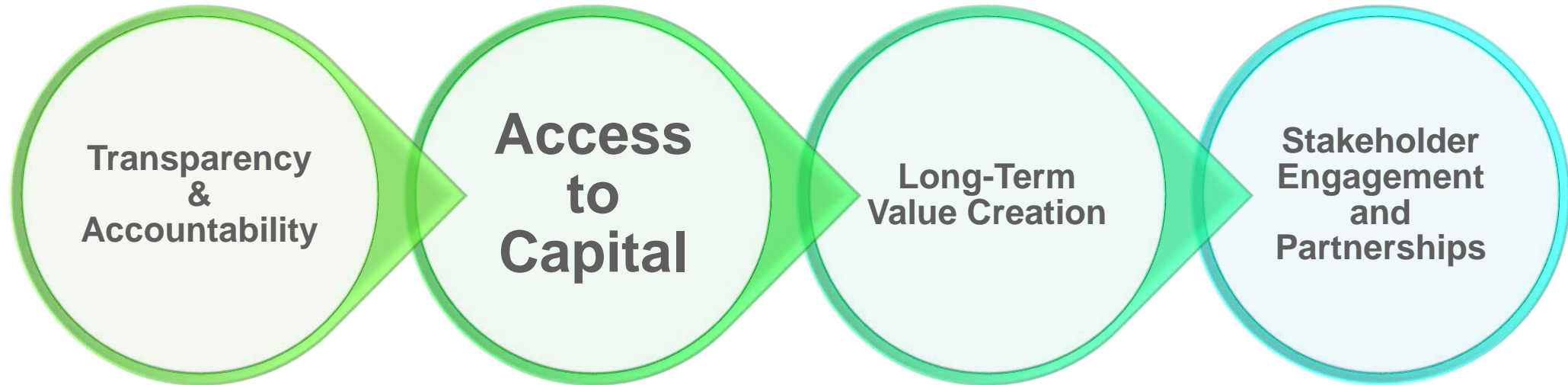
**Environment**  
Company's impact (at supply chain level) on the natural environment and its response to the challenge of climate change (greenhouse gas emissions, energy consumption, generation and use of renewable energy, biodiversity and habitat, impact on water resources and deforestation, pollution, efficient use of resources, the reduction and management of waste)

**Social**  
Company's interaction with workers, other stakeholders and the communities in which it operates and the role of the Company in society including: workplace policies ethical/responsible sourcing and social aspects and labour standards of the supply chain, and engagement with and contribution to the broader community through social projects and charitable donations.

**Governance:**  
The ethical conduct of the Company's business including its corporate governance framework, business ethics, policies, code of conduct and the transparency of non-financial reporting.



# Corporate SDG Footprint unlocking Transformational Finance



- Building Trust with Investors & Stakeholders

- Increasing salience of corporate sustainability for Institutional Investors
- To support corporate path to sustainability

- Enhancing firm viability and stability whilst pursuing Climate Goals

- Leveraging dialogue with Governments, NGOs, Academia



# A Holistic Approach in line with CSRD for businesses to create value and move beyond compliance-based codes

## Mapping

- Mapping the value Chain of Company - Products and Services
- Mapping the Stakeholders
- Materiality Assessment By Stakeholder

## Measurement

- ESG KPIs in accordance with Sustainability Reporting Standards (2023, 2024)
- Map ESG KPIs across the Value Chain
- MAP ESG KPI's to SDGs Indicators
- Set Targets

## Assessment & Monitoring

- ESG/SDG Dashboards – Level of Implementation of SDGs and trends to 2030/2050
- Monetization of externalities/ intangible assets
- Design Hybrid Metrics [to](#) Optimize for Value

# Transformative Participatory Approaches: National Living Labs and Systems Innovation



## Head



## Team



**Our transformative and participatory approaches seek to bridge the gap between science, policy and society, by supporting key actors to utilize model outputs to make sustainable decisions.**

## Methodologies

- Transformative Living Labs
- System Innovation and Transition Management
- Innovation Pathways
- Foresight methods such as Backcasting
- key actions and policy recommendations
- Living Lab Modeler Tool

## Supporting Projects

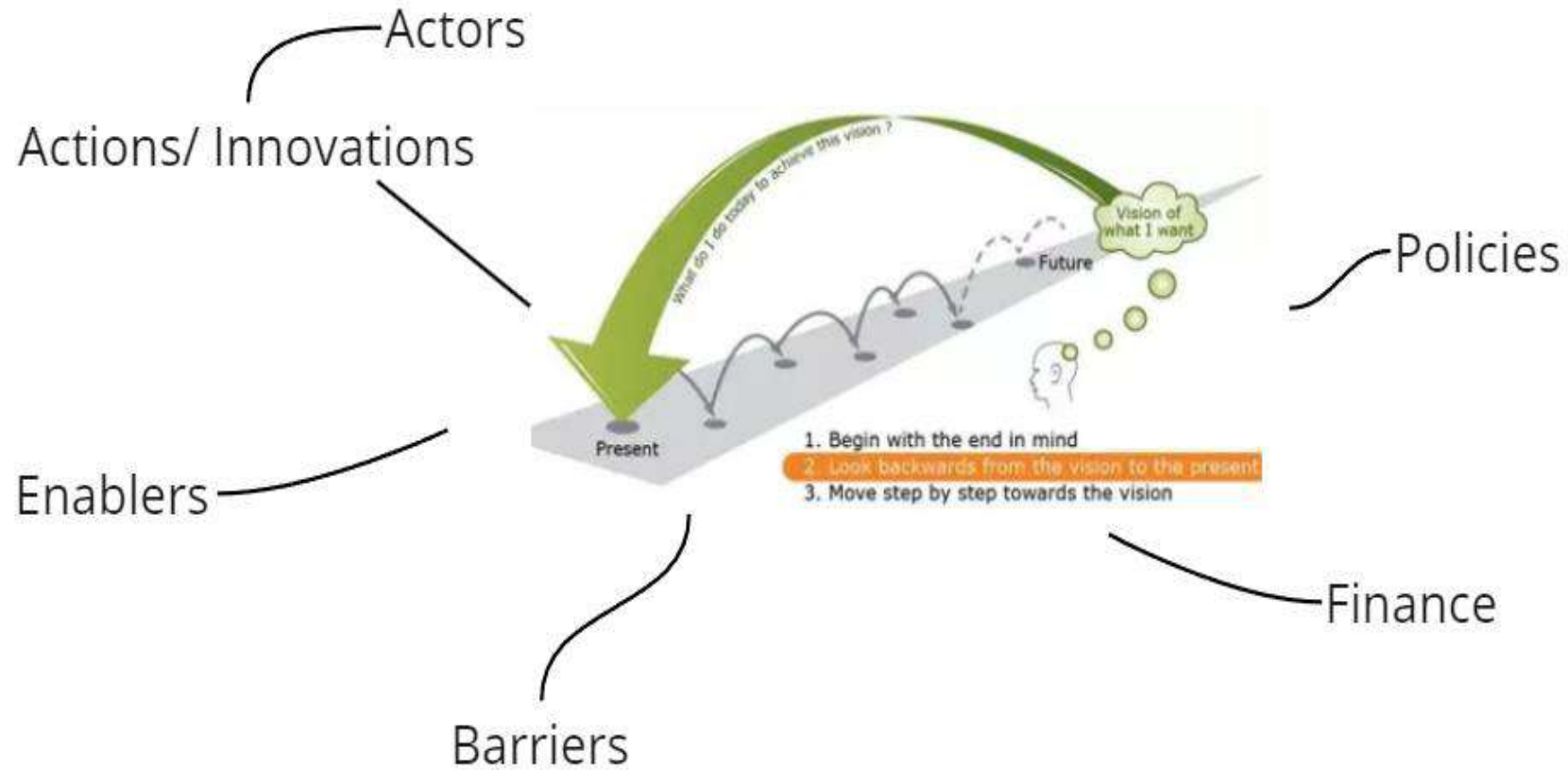
The screenshot shows a project page with the following details:

- System Mapping**: It seeks to activate community recovery phase, set system mapping, provide new indicators, and support local authority planning challenges.
- SUSTAINIS**: Grant agreement, Duration: 24 months, Budget: € 264,000, Coordinator: Countries: Bulgaria, Serbia; Implementation period: 2023-2025; Budget: € 264,000. Find more at: <https://www.sustainis.eu>
- Erasmus + | CATALYST: European VET Excellence Centre for Leading Sustainable Systems and Business Transformation**: The CATALYST project "European VET Excellence Centre for Leading Sustainable Systems and Business Transformation" is designed with strong science and innovation to contribute to realization of the European Green Deal and the new industrial and SME strategies. The main goal is with the establishment of United CATALYST Centre of Vocational Excellence in Sicily to give support, create an educational offer to boost personal and organizational development, and to enhance transformation in SMEs, enabling and inspiring them to rethink and redesign their business models, co-creating and sharing between educational and business organizations.
- Challenge owners**: Port, Ministry of Sicily; Implementation period: 2023-2025; Budget: € 264,000. Find more at: <https://www.catalyst-project.eu>



# Innovation Pathways

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**Technological, Social, Financial and Policy Innovations**

# Education, Training, Upskilling and Reskilling



## Mission

To support the green and digital transition by educating and training people, building skills ecosystems, which will also be aligned with national, regional, local and sectoral green strategies.

Head

Team



## Supporting Projects

**SDGs measu**

EDSN Greece in collaboration with the University of Economics and Business Education, Research, Infrastructure and Innovation (URRI) will participate in the project which is coordinated by the University of Economics and Business Education, Research, Infrastructure and Innovation (URRI). The report is expected to be completed by the end of 2022.

Duration: Start date: 10 May 2022

**Circular Economy**

**INTERNATIONAL ECONOMIC FORUM**

**an awareness-intention intervention**

- fostering problem-owners (firms, investors, citizens, regulators, universities, etc.) to a deeper understanding in the **circular thinking**.
- testing on a defined ground entrepreneurs a **multi-scale virtual experiment**

Countries: Italy, Greece, Bulgaria  
Implementation period: 2019

**EIT HEI INITIATIVE**

**Innovation Capacity for Higher Education**

**Accelerating Innovative Startup Development**

**EIT Accel**

**ERASMUS+ | TICHE Academy: Training Innovation for Circular and Holistic economies**

TICHE (Academy) Training Innovation for Circular and Holistic economies

Erasmus KA2 project: Cooperation Partnership for innovation in VET

The primary goal of Cooperation Partnerships is to allow organizations to increase the relevance of their activities to develop and reinforce their networks of partners, to boost capacity to operate jointly at transnational level, boosting internationalization of their activities through exchanging or developing new practices and methods as well as sharing and co-creating ideas. They aim to support the development, transfer and/or implementation of innovative activities as well as the implementation of joint initiatives promoting cooperation, peer learning exchanges of experience at European level. Results should be reusable, transferable, up-to-date, if possible, have a strong transdisciplinary dimension. Selected projects will be showcased through the results of their activities at local, regional, national level and transnational level.

Countries: Portugal, Greece, Croatia  
Implementation period: 2019  
Find more at: <https://www.erasmusplus.eu/en/innovation-south-east-europe/water>

**Evaluation Study on the implementation of Cross Cutting Issues in Horizon 2020**

Tender: DG RTD

Duration: 10 months (November 2021 – August 2022)

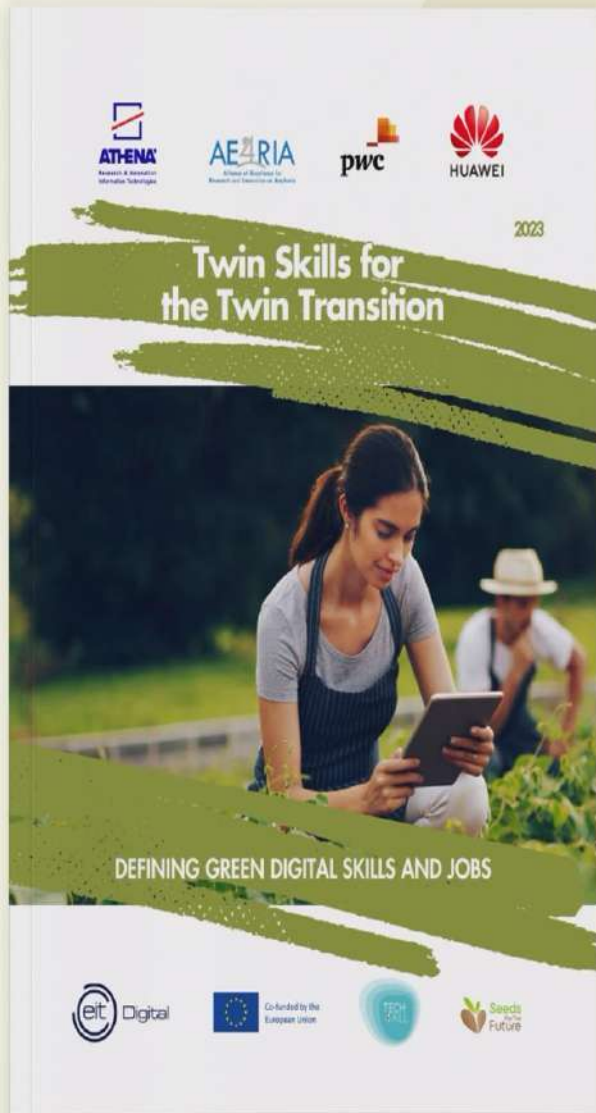
Budget: 249 850euro

Prof. Theodor Kordouml, ATHENA RC is a senior expert in Sustainable Development, Climate Change and Biodiversity Case Study.

Xaris Papageorgiou, ATHENA RC is a senior expert in Social Sciences and Humanities and Interdisciplinarity Case Studies.

Dr. Conrad Landis, Senior Researcher, Adjunct Lecturer, AUEB





**DOWNLOAD  
THE REPORT**



*85% of Jobs that will exist in 2030  
haven't been invented yet!*

***Prof. Phoebe Koundouri***

Prof. Athens University of Economics and Business

Prof. Technical University of Denmark

Director Athena ICT RC, Sustainable Development Unit

President European Association of Environmental Resource Economists

Chair World Council of Environmental Resource Economists Associations

Chair SDSN Global Climate Hub and SDSN Europe

03.12.2023



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# RESULTS: The New Set of Green Digital Skills



Table 1 Top Green Digital Skills and Occupations (Jobs)

EU Policy <sup>10</sup>	Sector (NACE Rev. 2)	Green Digital Skills	Green Digital Occupations
<b>Corporate Sustainability Reporting (ESG)</b>	All sectors	advising on environmental issues	environmental education officer
EU Taxonomy Regulation		analysing and evaluating information and data	environmental expert
EU Sustainable Finance Disclosure Regulation (SFDR)		complying with environmental protection laws and standards	green ICT consultant
EU Sustainable Investment Plan		computer use	natural resources consultant
Corporate Sustainability Reporting Directive (CSRD)		database and network design and administration	nature conservation officer
EU Action Plan on Financing Sustainable Growth		environmental sciences	sustainability manager
<b>Environmental and Energy Policies</b>			
European Green Deal	Agriculture, Forestry and Fishing	analysing and evaluating information and data	electric meter technician
EU Biodiversity strategy for 2030	Construction	complying with environmental protection laws and standards	electrical transmission system operator
Circular Economy Action Plan	Energy Supply	computer use	electricity distribution technician
Waste Framework Directive	ICT	database and network design and administration	energy assessor
Air Quality Directive	Manufacturing	designing electrical or electronic systems or equipment	energy systems engineer
Water Framework Directive	Transport and Storage	disposing of non-hazardous waste or debris	environmental education officer
Renewable Energy Directive	Water and Wastewater Treatment	electricity and energy	geothermal technician
Energy Efficiency Directive		environmental protection technology	green ICT consultant
EU Emission Trading System (EU ETS)		handling and disposing of hazardous materials	hazardous waste inspector
Just Transition Fund		maintaining electrical, electronic and precision equipment	irrigation technician
Connecting Europe Facility (CEF)		monitoring environmental conditions	recycling specialist
Fit for 55		operating agricultural or forestry equipment	smart home engineer
		using precision measuring equipment	smart home installer
<b>Industry Policies</b>			
EU Industrial Policy	Construction	analysing and evaluating information and data	acoustical engineer
Green Deal Industrial Plan	Energy Supply	analysing scientific and medical data	botanist
EcoDesign	Health and Social Care	complying with environmental protection laws and standards	ecologist
Critical Raw Materials Act	ICT	computer use	energy assessor
Chips Act	Manufacturing	database and network design and administration	energy systems engineer
	Mining and Quarrying	designing electrical or electronic systems or equipment	environmental education officer
		electronics and automation	green ICT consultant
		maintaining electrical, electronic and precision equipment	smart home engineer
		using precision measuring equipment	smart home installer



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# Recommendations for Universities and TVET



## **Financial Sector:**

- Mainstream ESGs
- Enhance skills in ESG and SDG metrics

## **Energy:**

- technical knowledge for application of energy-efficiency measures
- technical knowledge for application of renewable energy technologies
- • upgraded skills for emergent energy markets

## **Manufacturing:**

- raw material collection
- pre-processing
- production
- distribution
- trade (marketing)
- sustainable business and product development

## **Agricultural and Food:**

- advanced wastewater treatment practices
- improved packaging
- improved sensors and process control (to reduce waste and improve productivity)
- food irradiation
- water and wastewater reduction using closed loop/zero emission systems
- use of information and communication technology (ICT) in agriculture
- technical knowledge for new practices like organic farming and agroforestry

# Recommendations for Universities and TVET



## **Green Skills:**

- **Renewable Energy Expertise:** Proficiency in designing, installing, and maintaining renewable energy systems, such as solar panels, wind turbines, and hydropower systems.
- **Energy Efficiency:** Skills related to improving energy efficiency in buildings, industries, and transportation, including energy auditing and retrofitting.
- **Circular Economy Knowledge:** Understanding of circular economy principles, sustainable materials management, and waste reduction strategies.
- **Environmental Regulations:** Knowledge of EU environmental regulations and compliance requirements, including emissions standards and waste management.

## **Digital Skills:**

- **Data Analytics:** Proficiency in data analysis and interpretation for optimizing energy consumption, predicting equipment failures, and enhancing energy efficiency.
- **Internet of Things (IoT):** Skills related to IoT device deployment and management for monitoring and controlling energy systems remotely.
- **Cybersecurity:** Understanding of cybersecurity measures to protect critical energy infrastructure and data.
- **AI and Machine Learning:** Knowledge of AI and machine learning algorithms for optimizing energy production, consumption, and grid management.





SUSTAINABLE DEVELOPMENT  
SOLUTIONS NETWORK  
A GLOBAL INITIATIVE FOR THE UNITED NATIONS  
Global Climate Hub



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**UN SDSN Global Climate Hub Report:  
Modelling Net Zero Pathways**

**EU27, UK, Western Balkans, South East Asia**

AE4RIA

<https://ae4ria.org/>

UN SDSN GLOBAL CLIMATE HUB

<https://unsdsn.globalclimatehub.org/>

PROF. PHOEBE KOUNDOURI

<https://phoebekoundouri.org/>