Natural Capital in Sustainability Transition: A European Perspective
SDGs, European Green Deal, EU MFF, Recovery & Resilience Plan
Job Creation and Just Transition

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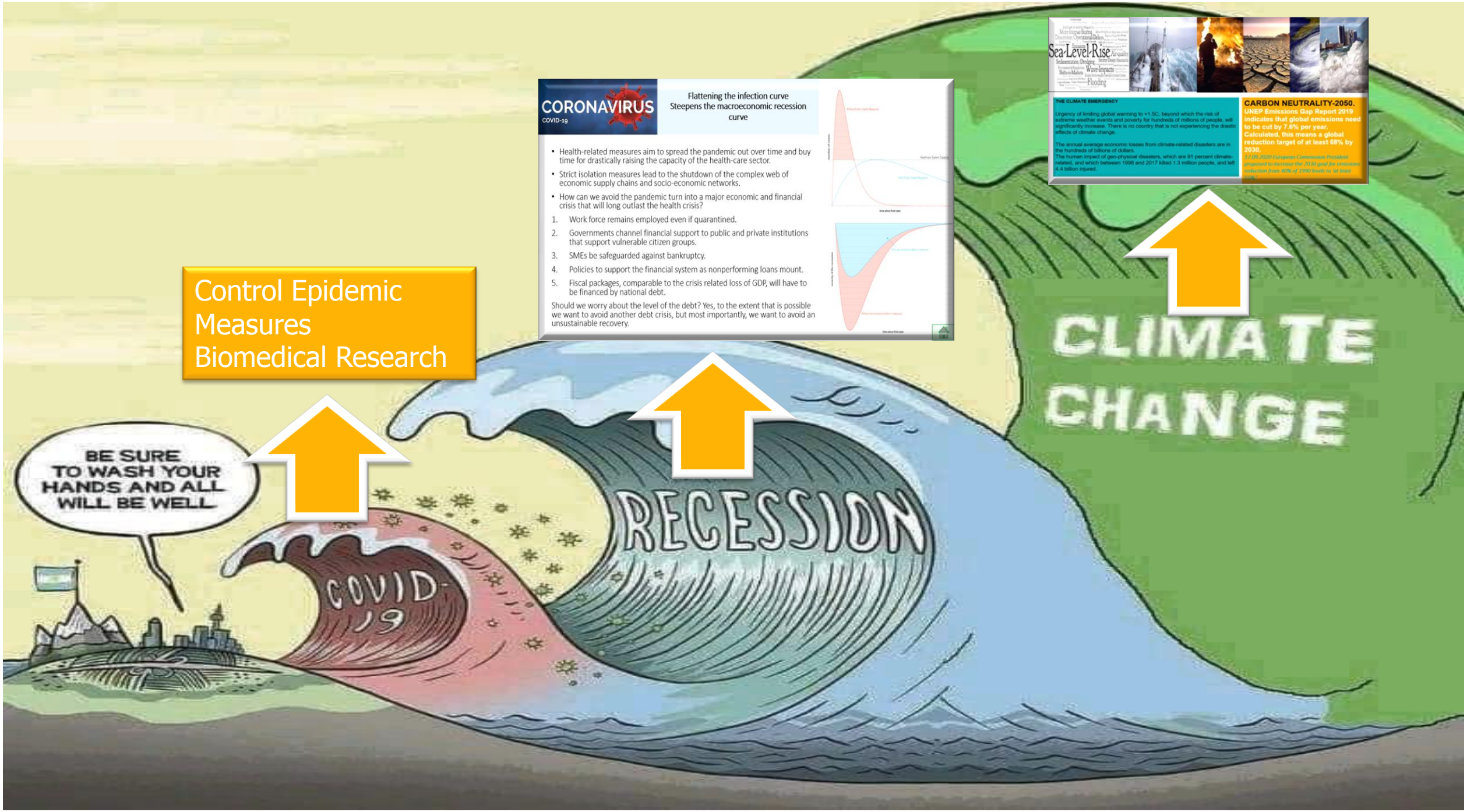
President-Elect, European Association of Environmental and Resource Economist

- Director, Cluster on Sustainability Transition
- Co-Chair, UN Sustainable Development Solutions Network (SDSN) – Greece
- Director, EIT Climate KIC Hub – Greece, ATHENA RC
- Chair SAB, European Forest Institute
- Member of Greek Prime-Ministerial Committee on Recovery and Development Plan
- Member of the Greek Ministerial Climate Change Committee, Ministry of Environment and Energy

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


CORONAVIRUS
COVID-19
Flattening the infection curve
Steepens the macroeconomic recession curve
• Health-related measures aim to spread the pandemic out over time and buy time for drastically raising the capacity of the health-care sector.
• Strict isolation measures lead to the shutdown of the complex web of economic supply chains and socio-economic networks.
• How can we avoid the pandemic turn into a major economic and financial crisis that will long outlast the health crisis?
1. Work force remains employed even if quarantined.
2. Governments channel financial support to public and private institutions that support vulnerable citizen groups.
3. SMEs be safeguarded against bankruptcy.
4. Policies to support the financial system as nonperforming loans mount.
5. Fiscal packages, comparable to the crisis related loss of GDP, will have to be financed by national debt.
Should we worry about the level of the debt? Yes, to the extent that is possible we want to avoid another debt crisis, but most importantly, we want to avoid an unsustainable recovery.
Sea-Level-Rise
THE CLIMATE EMERGENCY
Urgency of limiting global warming to +1.5C, beyond which the risk of extreme weather events and poverty for hundreds of millions of people, will significantly increase. There is no country that is not experiencing the drastic effects of climate change.
The annual average economic losses from climate-related disasters are in the hundreds of billions of dollars.
The human impact of geo-physical disasters, which are 91 percent climate-related, and which between 1998 and 2017 killed 1.3 million people, and left 4.4 billion injured.
CARBON NEUTRALITY-2050.
UNEP Emissions Gap Report 2019 indicates that global emissions need to be cut by 7.6% per year.
Calculated, this means a global reduction target of at least 68% by 2030.
17.09.2020 European Commission President proposed to increase the 2030 goal for emissions reduction from 40% of 1990 levels to "at least 55%".
Control Epidemic
Measures
Biomedical Research
BE SURE TO WASH YOUR HANDS AND ALL WILL BE WELL
COVID-19
RECESSION
CLIMATE CHANGE

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.

Sustainability Policy Framework

2015

UNITED NATIONS SUSTAINABLE DEVELOPMENT SUMMIT 2015
25-27 SEPTEMBER

193 Countries

17 SDGs

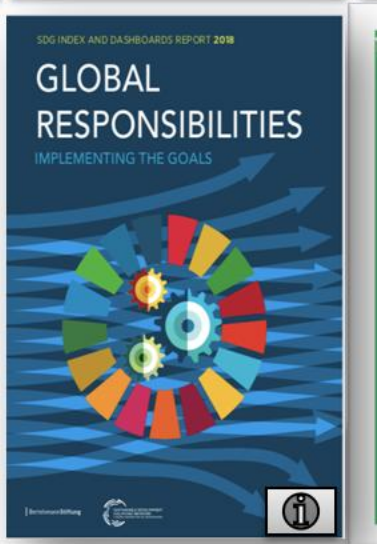
169 Targets

2015

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

197 Countries

Limiting global temperature to well below +2°C



2018

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Global Warming of 1.5°C

An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty

- Limiting global temp. to 1.5°c
- This implies zero net emissions globally by 2050

2019

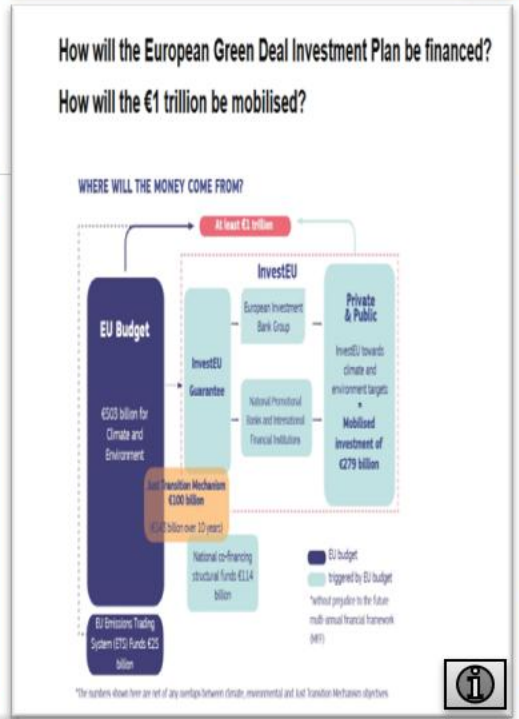
SUSTAINABLE DEVELOPMENT REPORT 2019

TRANSFORMATIONS TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS

6 Major Transformations to achieve SDGs

Dec 2019

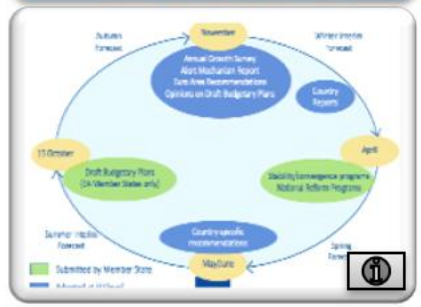
EGD Policies Overview



2020 ...

Flattening the infection curve steepens the macroeconomic recession curve

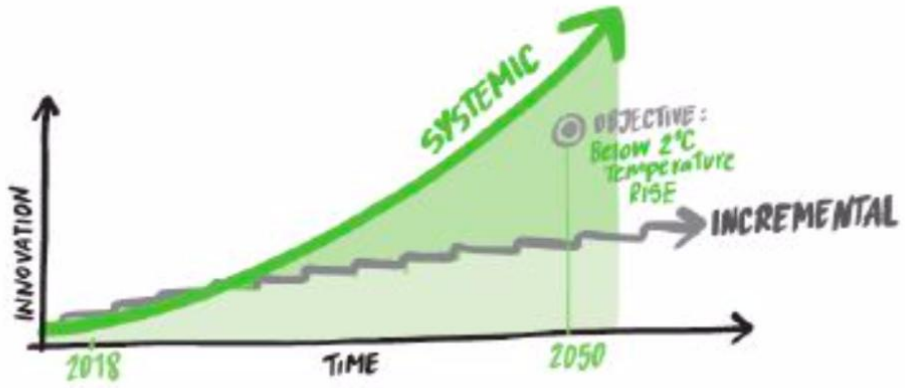
Enhanced EU MFF & Recovery Plan Next Generation EU



Senior WG for the EU Green Deal

Why Systems Innovation?

Integrated & Coordinated Interventions in economic, financial, political and social systems and along whole value chains. In systems, by means of the relations, elements are arranged in such a fashion that gives rise to a **new structure** functioning.

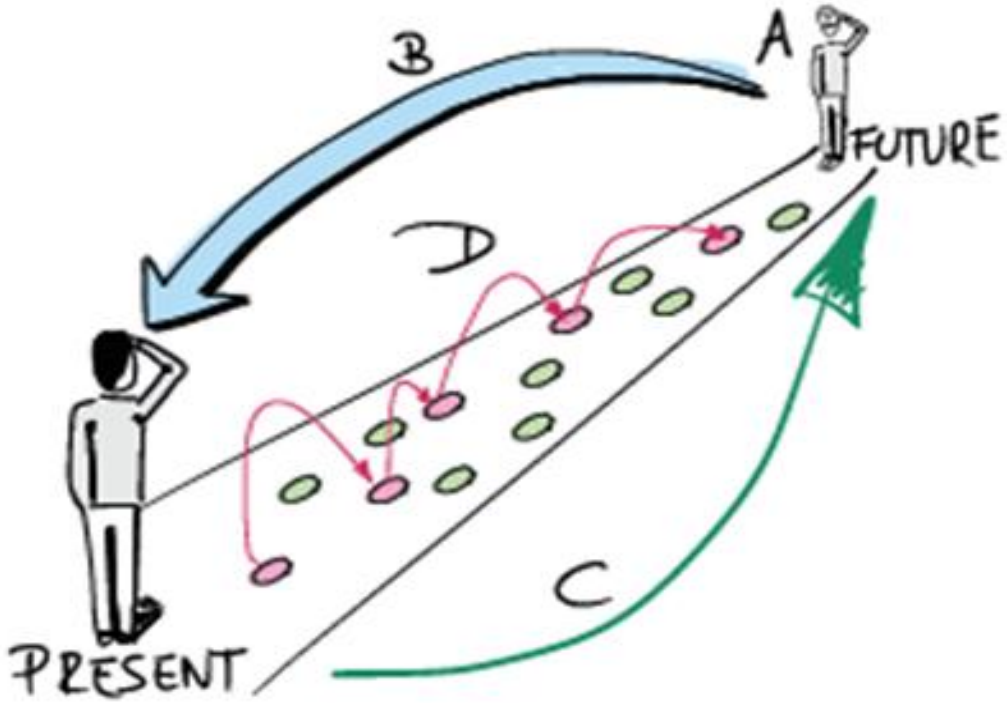


Working through gradual, incremental changes is not enough!

What is needed now is a **fundamental transformation** of economic, social and financial systems that will trigger exponential change in decarbonisation rates and strengthen climate resilience – IPCC report: "**rapid, far- reaching and unprecedented changes in all aspects of society**".

Bottom Up Mobilization:

THE CLIMAE PACT
Systems Innovation Approach
Co-Design with Stakeholders



European Economic and Social Committee

NAT/785
European Climate Pact

OPINION

Section for Agriculture, Rural Development and the Environment

European Climate Pact
(Exploratory opinion)

Rapporteur: **Dimitris Dimitriadis (EL-I)**
Co-rapporteur: **Peter Schmidt (DE-II)**

Expert: Prof. Phoebe Koundouri

Top-Down Mobilization
Green New Deals around the World

Canada
The Pact for a Green New Deal
Proposed on May 2019

USA
Green New Deal
Proposed on March 2019

South Korea
Green New Deal
Agreed on 14 July, 2020
$94.5 billion

Israel
Green recovery plan
June 2020

China
Carbon neutral before 2060
Announced on 22 September, 2020

Top-Down Mobilization

THE CLIMATE LAW – PROPOSAL

Critic

- Does not include an ambitious goal with regards to Green House Gas (GHG) emissions by 2030
- Does not address the other legislative interventions and revisions that will be required to achieve climate neutrality by 2050
- Does not allow the European Commission (EC) to impose sanctions on Member States (MS)
- Does not allow the EC to take additional measures and change policies that will correct possible deviations from the path to achieving the emission goals.
- There is no clear reference to an assessment mechanism between today and 2050
- No reference to financial mechanisms that will be required to achieve the goal of climate neutrality.
- No reference to comprehensive framework that will recognize the relationship between water, energy, food security and biodiversity (WEF Nexus)

Integrated and Interdisciplinary Methodology

Aim: Allocation of scarce natural, human, accounting capital across people, over time & space, while Environmental-Economic-Social Sustainability is achieved.

FRAMEWORK CHARACTERIZATION & Co-Design of Future Vision with Stakeholders

- Natural Capital
- Socio-Economic-Institutional Framework
- Stakeholders: Research&Innovation, Business, Financial System, NGOs, Civil Society

MODELS ON INTERACTION

Dynamic, Spatial, Uncertainty

- Nature
- Society
- Economy

EMPIRICAL APPLICATION of MODELS

Estimation of Economic Value

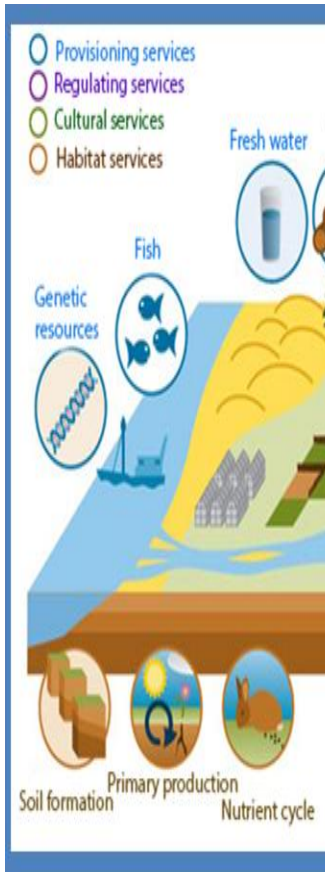
OPTIMAL ALLOCATION based on Value

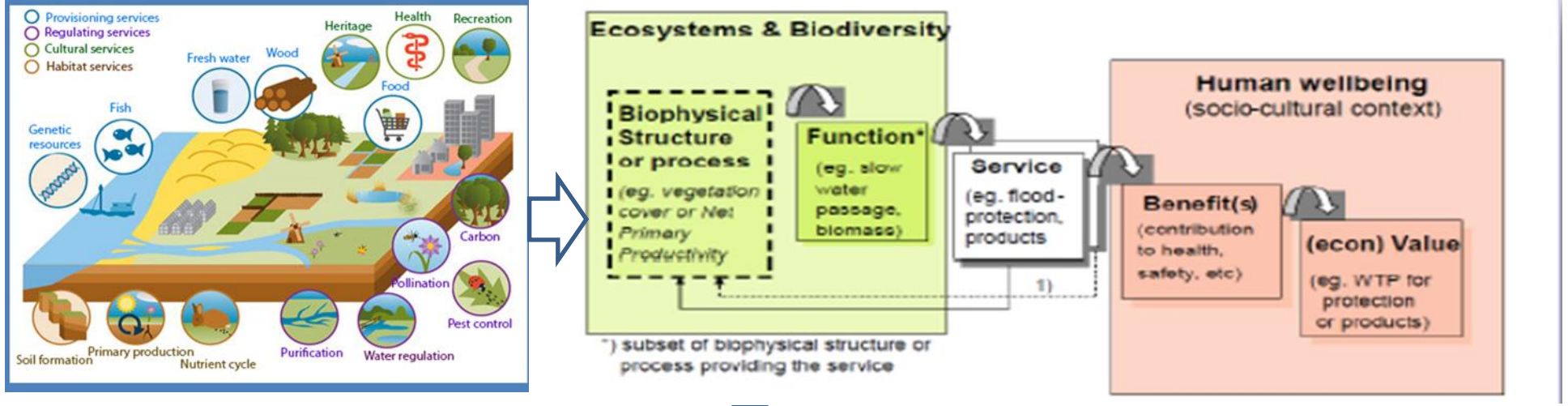
How?

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

STRATEGIC MANAGEMENT PLANS Co-Developed with Stakeholders:

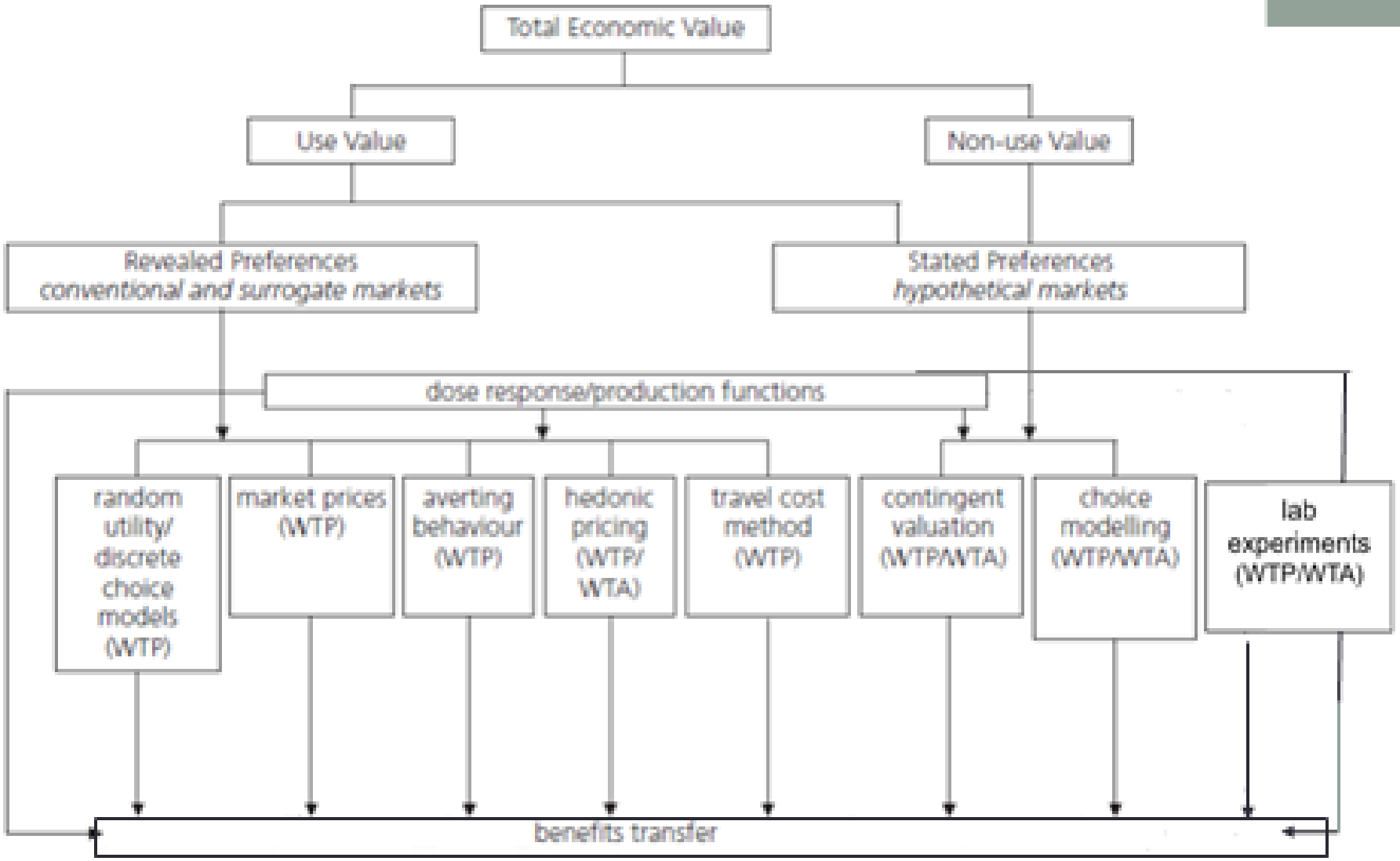
Technological & Policy Pathways Supported by Funding Portfolios





Total Economic Value per ES

- 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



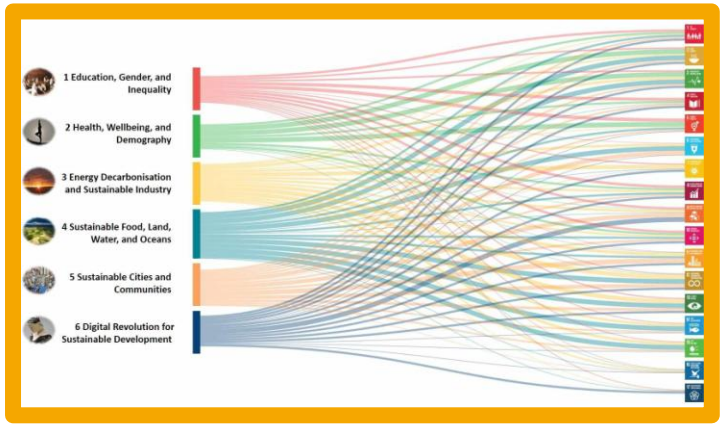
- TEV: systematic tool for considering full range of impacts on human welfare.
- TEV: reflects the preferences of individuals, which can be statistically estimated
- TEV: essential for resource allocation and policy making.

PROJECT TEAM

Chairs
Prof. Phoebe Koundouri
Prof. Jeffrey Sachs

Senior Members
Athens University Economics & Business
Enel Foundation
Fondazione Eni Enrico Mattei,
International Energy Agency
University College London
University of Rome

Members
All European SDSN National Hubs



The European Green Deal (EGD) – Overview

The policy areas that are covered from the EGD are:

- ✓ Biodiversity
- ✓ From Farm to Fork
- ✓ Sustainable agriculture
- ✓ Clean energy
- ✓ Sustainable industry
- ✓ Building and renovating
- ✓ Sustainable mobility
- ✓ Eliminating pollution
- ✓ Climate action

Six Transformations to Achieve the SDGs and Support for the European Green Deal: Senior Working Group for the Energy Transition

- Joint implementation of the European Green Deal and SDGs: country-specific and EU upscale
- Country-specific 3-D mapping:

(a) SDGs achievement (based on SDSN Indexes)

(b) European Green Deal Policies + Next Generation EU Recovery Fund + enhanced MFF

(c) European semester process recommendations

- Based on 3-D mapping, Technological Pathways, National Energy and Climate Plans, we construct recommendations for investment pathways 2020-2030 and until 2050, categorized in the Six Transformations (health, education, decarbonization, land-sea management, sustainable communities, digitalization).
- Investment Pathways are supported by portfolios of funding sources (public, private, PPP).
- Implication for Job Creation and Just Transition: country-specific and EU upscale

Who is it for?

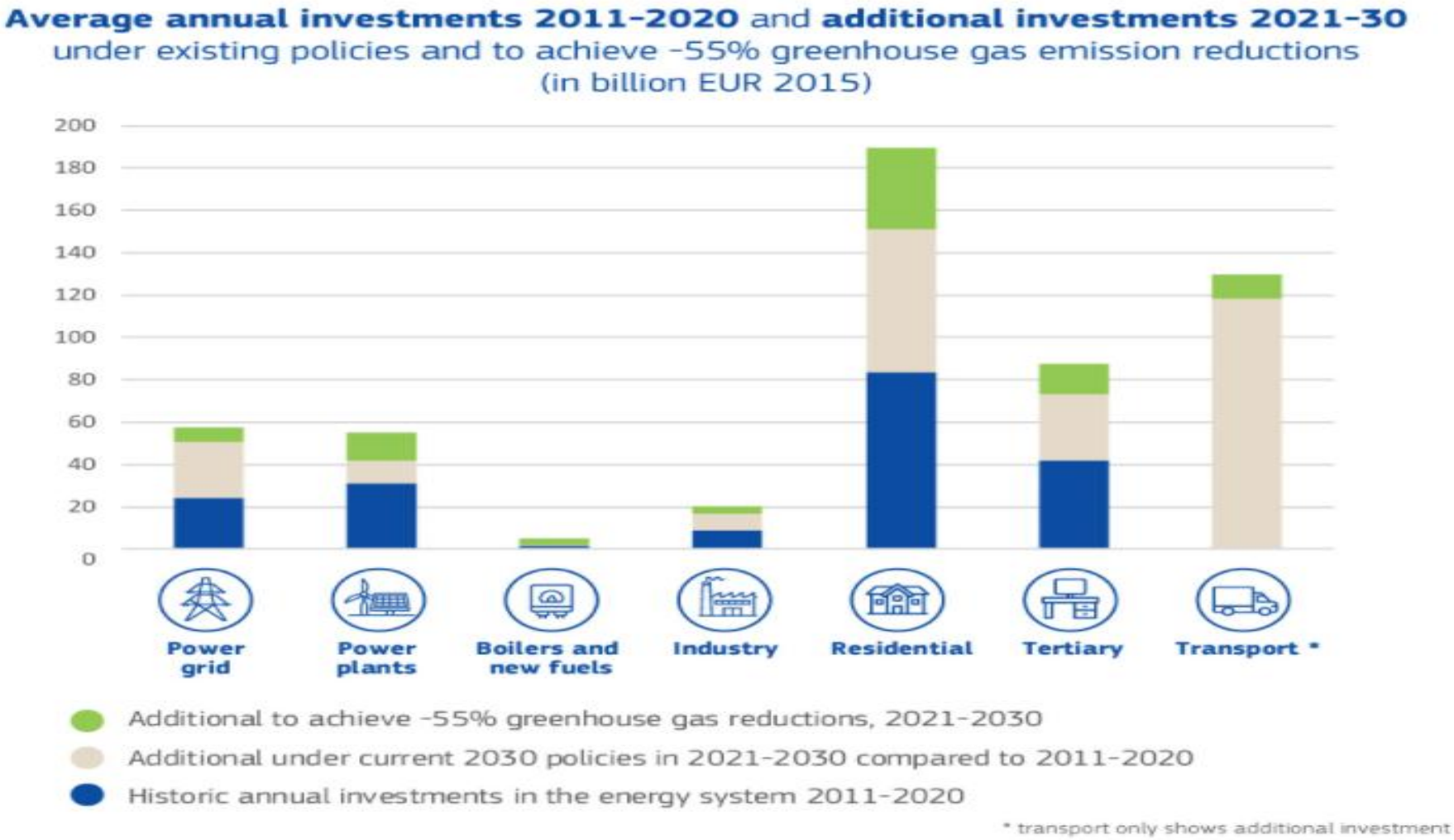
- EU MS's Politicians/Decision Makers to facilitate **identification investments and absorption of funds** at National Level and to create **cross-country alliances** for a Sustainable Recovery

- Public Sector and Business to facilitate **Public-Private Partnerships** and mobilize private resources for the Implementation of the EGD

- Create a **Climate Pact Manifesto** to engage, together with politicians and policy makers, business, the financial sector and civil society (Systems Innovation Approach)

DECARBONIZATION: National Energy and Climate Plans:

For increased GHG emissions reduction target of 55% an increase in investment of €350 billion per year is needed compared to the previous decade



Phasing out coal in the final NECPs

21 MS:

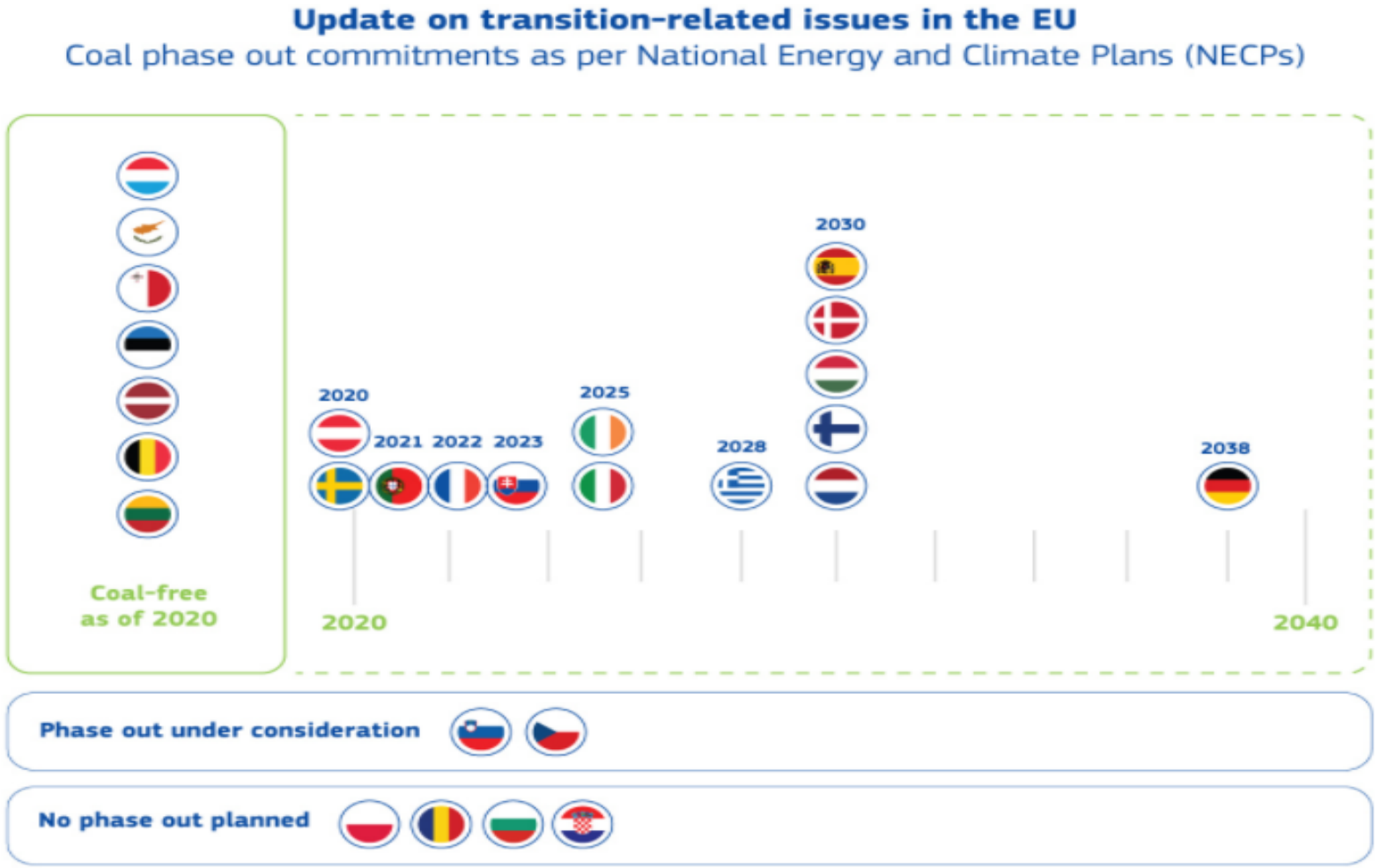
Coal-Free: Estonia, Latvia, Lithuania, Belgium, Malta, Luxembourg, Cyprus

Or

Committed to phasing-out coal

Considering coal phase out: Slovenia and Czechia

Not planned phase out: Poland, Romania, Bulgaria, Croatia



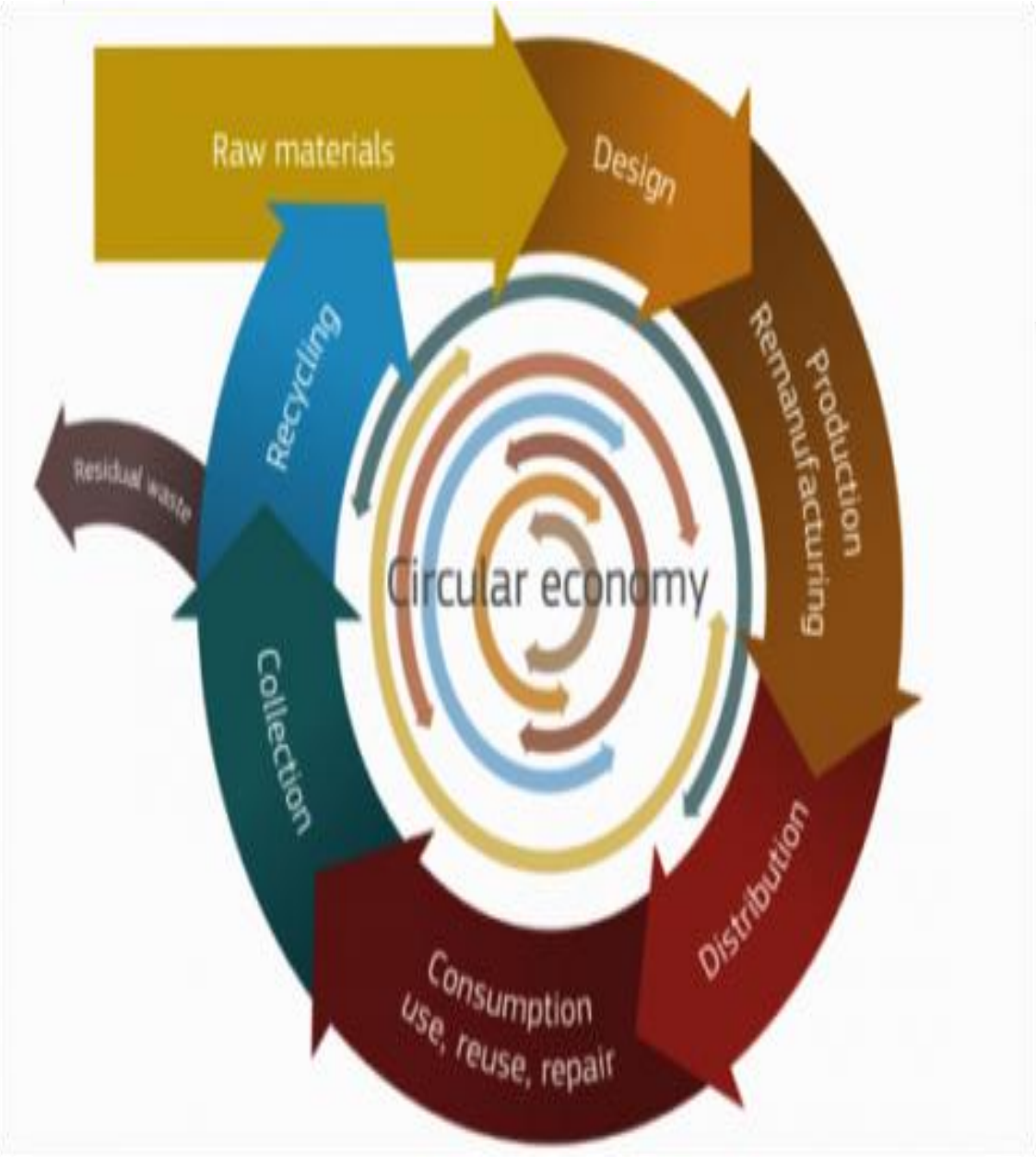
Technological Pathways

National plans should cover the period to at least 2050 and should aim to equitably reach net zero emissions by 2050 and net negative emissions in the second half of the century.

EC Annual Sustainable Growth Strategy 2021, 17 September 2020

Reforms and Investments to create European flagships:

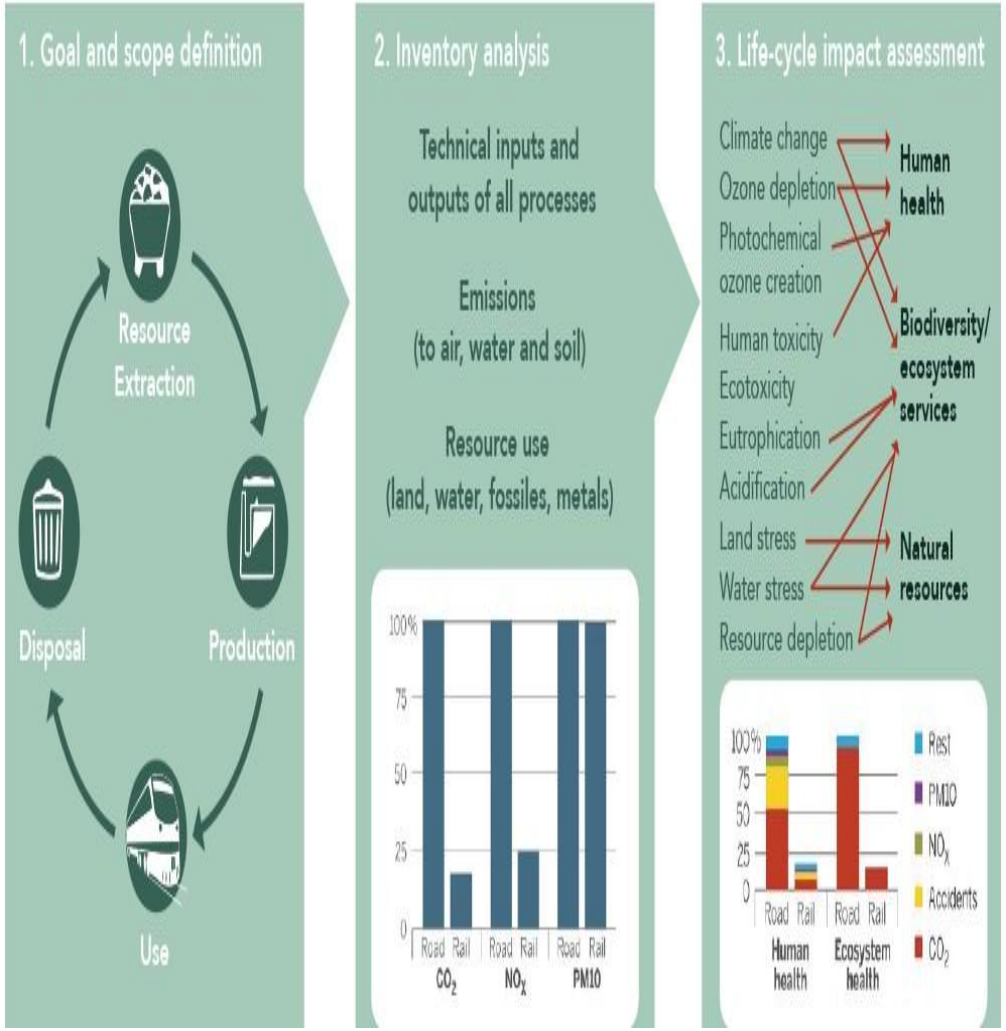
- **Power up**: lay the foundation for **hydrogen** lead markets in Europe and the related investments
- **Renovate**: improve the energy and resource efficiency of buildings
- **Recharge and Refuel**: promote future-proof clean technologies
- **Connect**: provide universal access to rapid broadband services
- **Modernize**: EU-ID and key digital public services
- **Scale up**: increase cloud capacities and develop powerful, cutting edge, and sustainable processors
- **Reskill and Upskill**: focus investments and reforms on digital skills and educational and vocational training for all ages

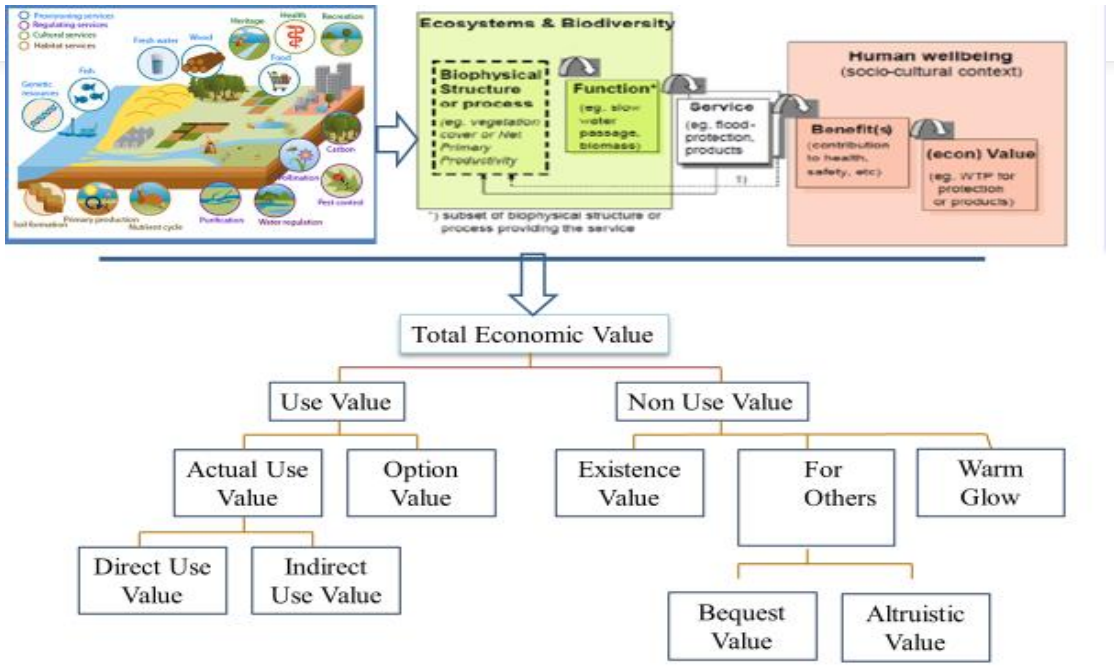


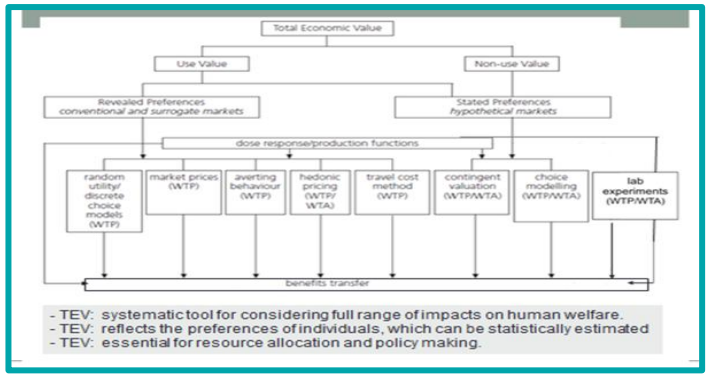
CIRCULAR ECONOMY

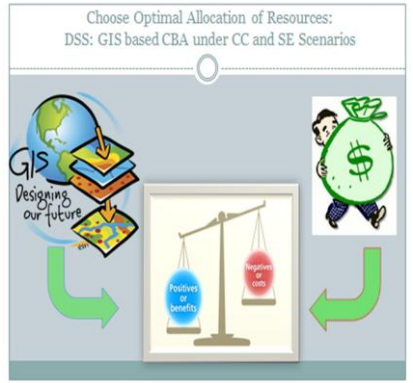
- Savings of 600 billion euro for EU Business, 8% of their annual turnover, Relevant for SMEs
- Creation of 580,000 jobs in innovative design and business models, research, recycling, re-manufacturing and product development
- Reduction of EU carbon emissions by 450 million tones by 2030
- Reducing Environmental Footprint: Optimize waste management will boost recycling and reduce landfill
- Public-Private Partnerships best model for financing the transition to CE.

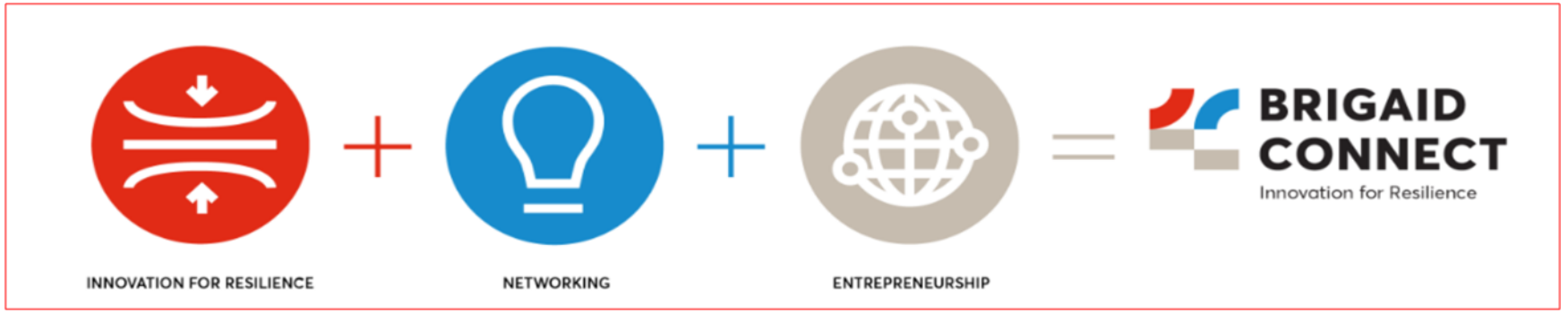
Measuring Socio-Economic Benefits of CE
Life Cycle Analysis (LCA) and Total Economic Valuation











Climate Change Adaptation Infrastructure

1. Adaptation programmes (early warning systems, making infrastructure resilient, improving dryland agriculture, or managing water resources) **generate a triple dividend**: avoided losses due to climate change, economic benefits from the investment programmes and social and environmental benefits.

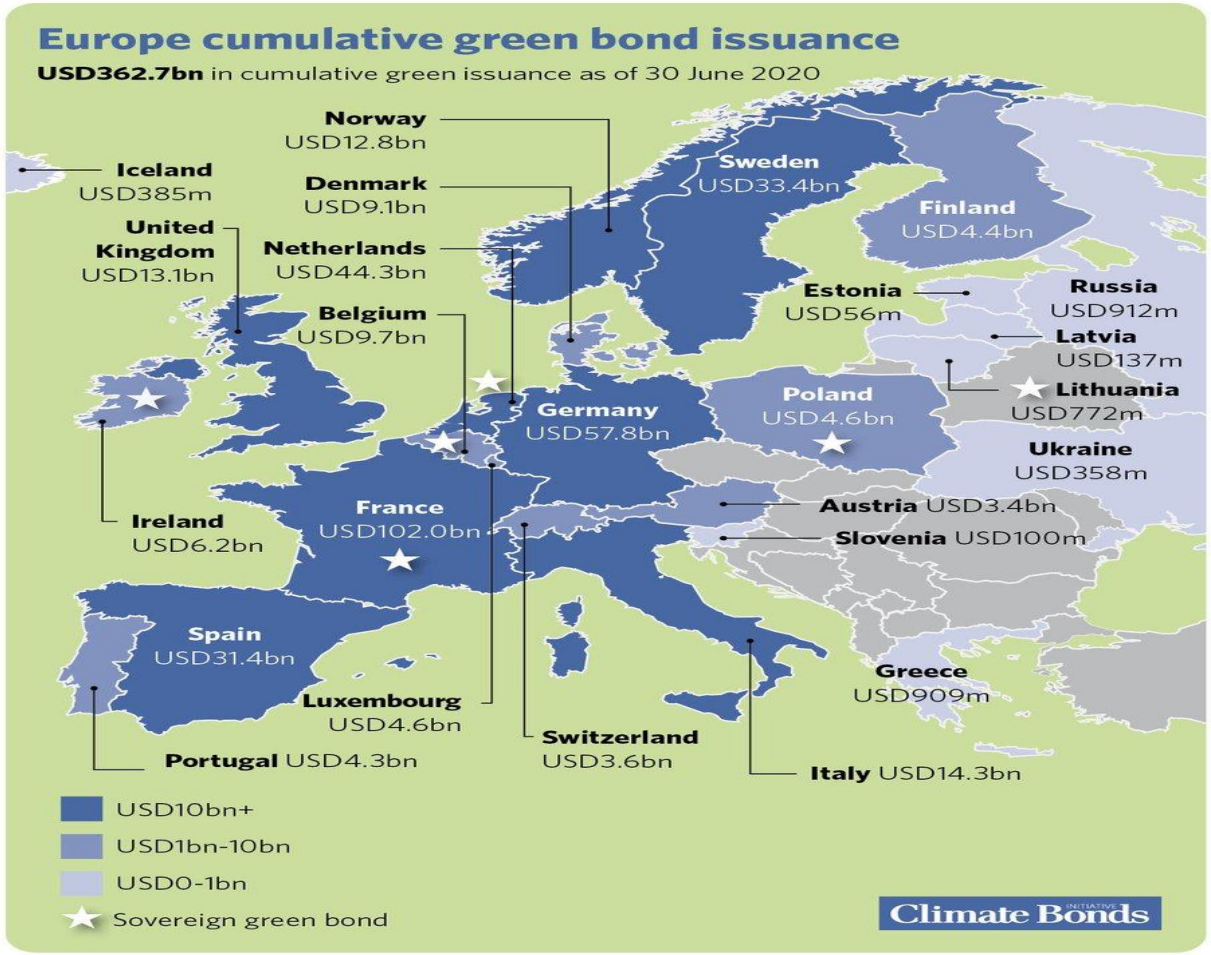
1. **Vulnerability indexes (VIs)** should be developed: geographical/regional vulnerability; sectoral/economic vulnerability; and social vulnerability.

1. Just Transition (Mitigation & Adaptation) Fund

Efficiency-Equity-Sustainable Finance

Measures to counterbalance the regressive effects of decarbonization policies:

- Lump-sum transfers
- Reduction in income tax/ VAT or electricity tax
- Targeted energy efficiency measures
- Job retraining programs
- Compensation funds for low-income groups



SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

Center for Sustainable Development
EARTH INSTITUTE | COLUMBIA UNIVERSITY

TASK FORCE JOBS BASED GREEN RECOVERY

THE LANCET

Lancet Commission on COVID 19 engages global leaders to promote best practices in the control of the pandemic, the social protection of basic needs and the recovery of the global economy.

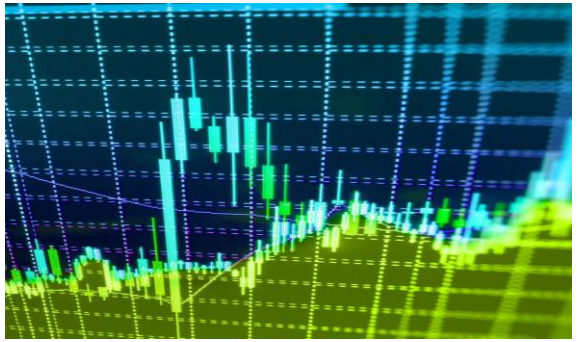
Lancet COVID-19 Commission Statement on the occasion of the 75th session of the UN General Assembly, *The Lancet COVID-19 Commissioners, Task Force Chairs, and Commission Secretariat*

Co-chairs:

- **Prof. Phoebe Koundouri**, President Elect of European Association of Environmental and Resource Economics
- **Dr. Ismail Serageldin,** Founding Director Bibliotheca Alexandria, ex Vice President World Bank
- **Dr. Min Zhu**, Deputy Managing Director IMF

THE LANCET COVID-19 COMMISSION

TASK FORCE JOBS BASED GREEN RECOVERY



Task Force: Job-Based Green Recovery

Economic recovery plans should support the transition towards sustainable and inclusive societies based on the SDGs and the Paris Climate Agreement.

Public investment should be oriented towards sustainable industries and the digital economy and should spur complementary private investments.

*A major goal of the recovery should be an **unprecedented commitment to reskilling and upskilling people**, including the skills to prepare workers for the digital economy.*

*The **EU Green Deal**, long-term budget (2021–27), and new recovery fund marks an exemplary framework for long-term recovery, including mid-century goals on climate safety, energy transition, and circular economy, with a comprehensive €1·8 trillion budget.*

*EGD can serve as an exemplar for other regions. In general, recoveries should be **smart** (based on digital technologies), **inclusive** (targeting lower-income households), and **sustainable** (featuring investments in clean energy and reduced pollution).*

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

ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

SDSN GREECE

Cluster for Sustainability Transition

Transforming Research and Innovation into Climate Action

Director: Professor Phoebe Koundouri

OUR PROJECTS

UN SDSN GREECE
ReSEES, AUEB
EIT Climate-KIC HUB Greece

Cluster for Sustainability Transition
Research, Deep Demonstration & Education

Research & Global Initiatives

BRIGAID

OpenAIRE

simra
Social Innovation in Marginalised Rural Areas

AMAre

COASTAL
Collaborative Land-Sea Integration Platform

eit Climate-KIC

SMI RES
Science and Management of Intermittent Rivers and Ephemeral Streams

Interreg
Balkan-Mediterranean
RECONNECT

BlueBRIDGE

MERMAID

GENESIS
groundwater and dependent ecosystems

TROPOS

GLOBAQUA

THESEUS

DAFNE

H2Ocean

Euro-limpacs

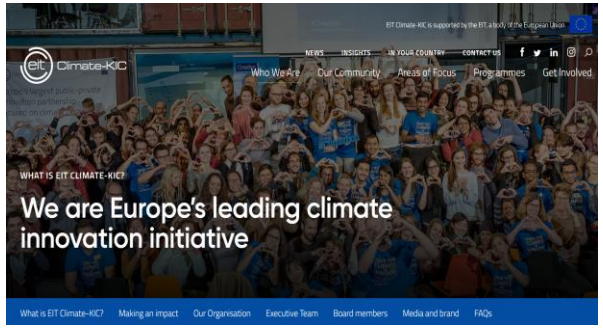
CIGESMED

AquaSTRESS

BANK OF GREECE

Climate Change Committee

Deep Demonstration & Innovation Acceleration

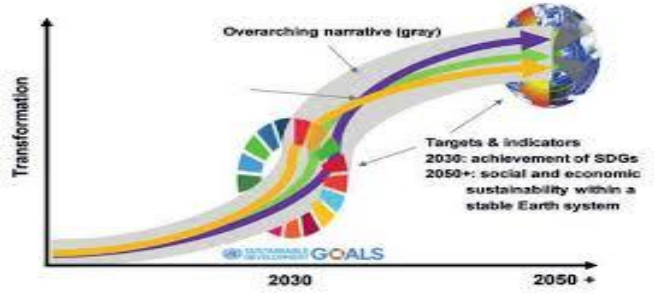


Education & Training

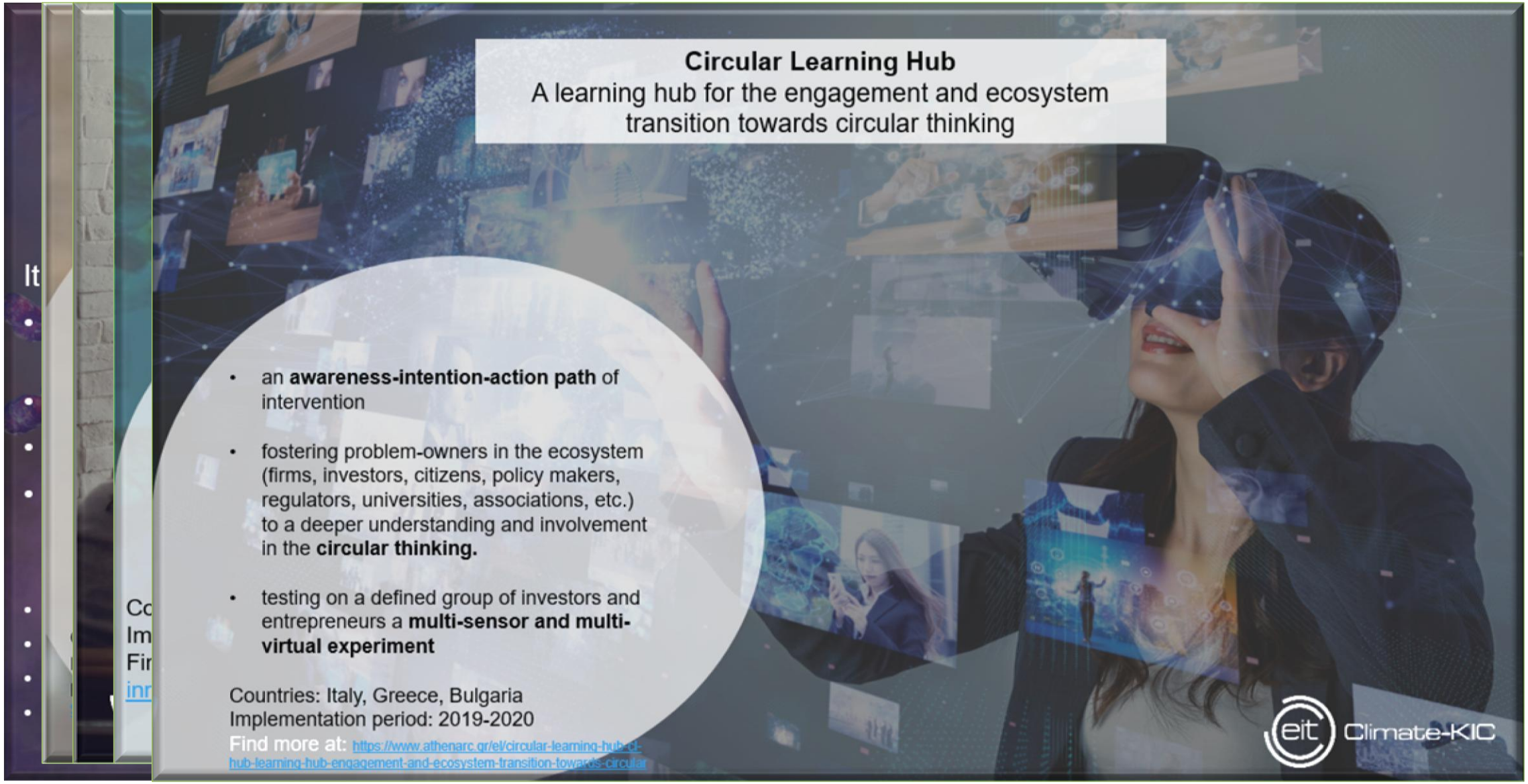
MSc in
Law and Economics in Energy Markets

ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

ΚΕΝΤΡΟ ΕΠΙΜΟΡΦΩΣΗΣ ΚΑΙ ΔΙΑ ΒΙΟΥ ΜΑΘΗΣΗΣ



Projects Circular Economy & Climate Change



Blue Growth

4-Seas Initiative

An initiative led by the regional networks SDSN Black Sea and SDSN Mediterranean and the national networks SDSN Greece, SDSN Italy, SDSN Spain, SDSN France, SDSN Turkey and SDSN Russia

GLOBAL ROUNDTABLE FOR SUSTAINABLE SHIPPING AND PORTS

- Aims at bringing together **researchers and technology developers, shipbuilders, shipowners, ports, policy makers and politicians**, from across the globe, to work on technological and policy innovations, related to zero emissions shipping, to target net-zero emissions by 2050.
- Find more at: http://www.unsdsn.gr/global-roundtable-for-sustainable-shipping-2

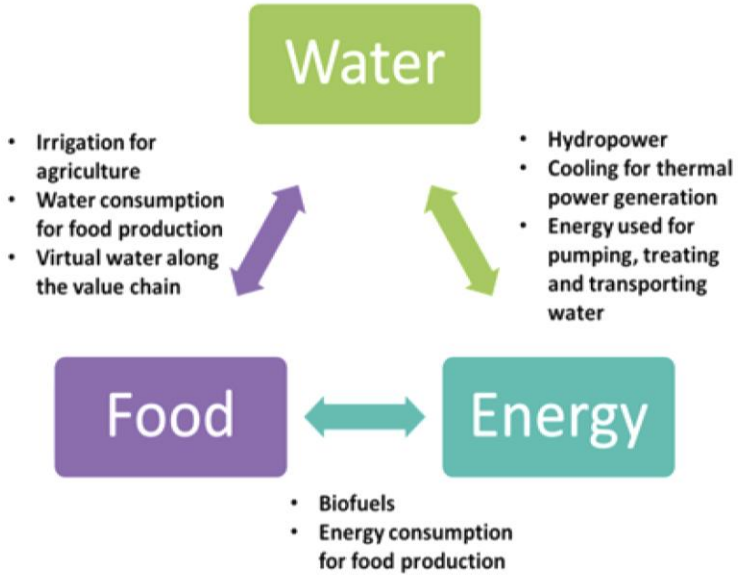
Projects Water-Food-Energy Nexus and Smart Agriculture

AWESOME - mAnaging Water, Ecosystems and food across sectors and Scales in the sOuth MEditerranean

- a decision-analytic platform based on a multi-level, integrated WEF model to better understand multi-sectoral WEF tradeoffs and to capitalize on potential synergies, also exploring the interdependencies and feedbacks across a hierarchy of spatial scales,
- from the macroeconomic development of the Mediterranean region and national scale, to regional planning at river basin scale, down to the single farm.

Implementation period: 2019-2023

Budget: €1,7 million



Greek Start-ups

Climate-KIC

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

Cargo Share

citipost #greencity

CYRUS

ENALEIA redefining fishing

PARITY

UNISCRAP PBC. Social & Environmental Impact

Inteligg

Solmeyea

trustporter

swallows

EarthFund Global

New international non-profit organization founded by pioneers in renewable energy & sustainability in the US and Greece. Partners with **Global Green** on a 10 Year Climate Mission.

THE MISSION

EMPOWER COUNTRIES TO MEET & EXCEED THEIR NATIONAL CLIMATE, CLEAN ENERGY & SUSTAINABILITY GOALS

HOW DO WE DO IT?

- INNOVATIVE EDUCATION PROGRAMS
- BREAKTHROUGH TECHNOLOGIES
- RELIABLE CAPITAL

3 PILLARS OF CHANGE

- COMMUNITY-FOCUSED HOLISTIC CLIMATE SOLUTIONS
- COOPERATION & PARTNERSHIPS ACROSS ALL SECTORS
- GROUND-BREAKING TECHNOLOGY

earthindex

EarthFund supports emerging technologies such as EarthIndex, the world's first clean energy platform designed to accelerate a country's ability to rapidly scale to 100% clean energy by 2030.

To achieve this, EarthIndex works with world-class technology companies, such as ESRI, and advisors from Google and EIT-Climate-Kic Silicon Valley, to develop a country/state level solution to change the game in clean energy development, starting in Greece and in California.

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