



The Cluster on Sustainability Transition

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Member of the Ministerial Climate Change Committee, Ministry of Environment and Energy

Lead Economist UN SDSN EGD Senior Working Group

Chair SAB, European Forest Institute



EAERE
European Association
of Environmental and
Resource Economists



BE SURE
TO WASH YOUR
HANDS AND ALL
WILL BE WELL

COVID
19

RECESSION

CLIMATE
CHANGE

The Pandemic of COVID-19 has proven:

- Governments' ability to take dramatic measures to mitigate an existential threat.
- People's ability to adapt to new restricted lifestyles imposed by these measures.
- National states are better equipped to respond to the epidemic compared to International Organizations (in terms of explicit imminent response).
- Timing of the enactment of measures is crucial for their effectiveness in saving lives.

COVID-19 reveals the depth of global interdependence:

- The world is only as resilient as the least resilient country and person
- Widespread social, economic and environmental vulnerability.
- This moment of clarity must be used to effectively reboot development towards the people-centric, inclusive, rights-based, participatory and green development envisioned in the 2030 Agenda.

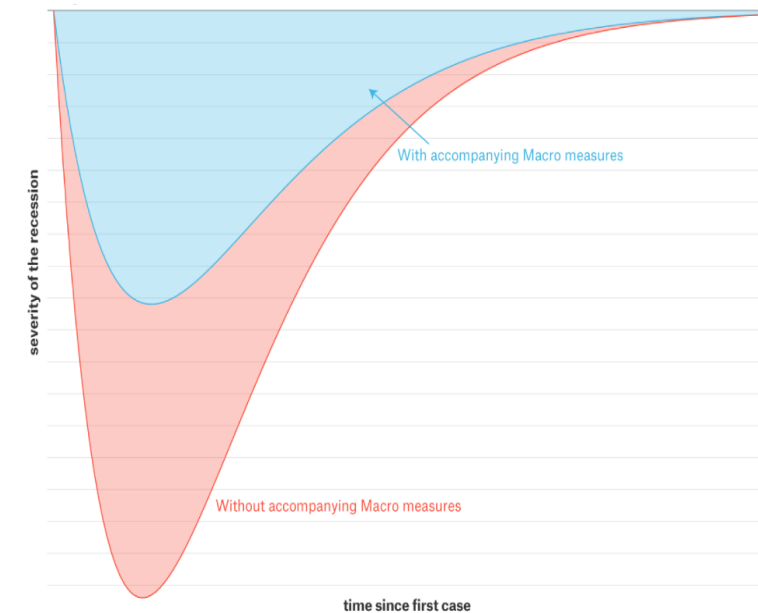
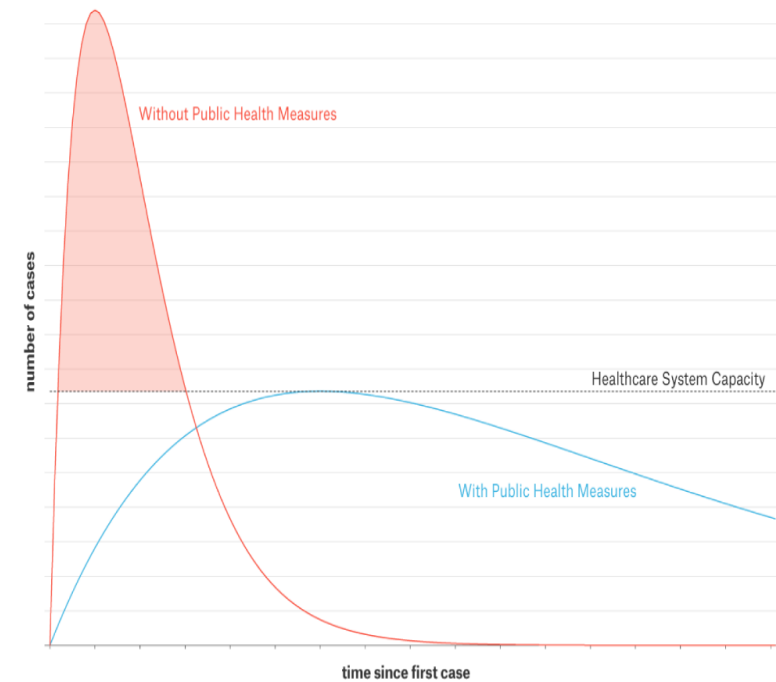




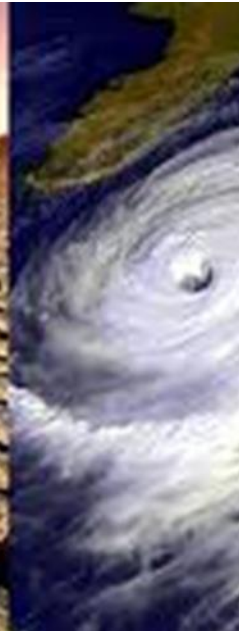
Flattening the infection curve Steepens the macroeconomic recession curve

- 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.



Increased storm frequency
 More intense storms
 Downtime/Operational Delays
 Storm surge
 Emissions
 Sea-Level Rise
 Sedimentation/Dredging
 Environmental Regulations
 Shifts in Markets
 Wind impacts
 Longer ice season
 Drought
 Storms
 Impacts on Surrounding Communities
 More land area under water
 Regulatory Changes
 River Flooding
 Increased water depth
 Fishing Impacts
 Port Development
 Port Development
 Insurance Coverage
 Air Quality
 Stricter Design Standards
 Wave Impacts
 Impacts to multi-modal connections
 Flooding



THE CLIMATE EMERGENCY

Urgency of limiting global warming to +1.5C, beyond which the risk of drought, floods, extreme heat and poverty for hundreds of millions of people, will significantly increase.

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.

Sustainability Timeline

2015

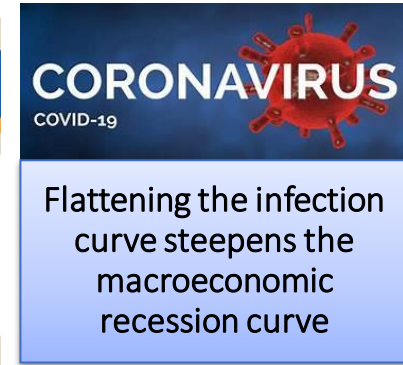
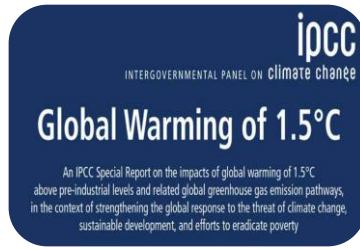
2015

2018

2019

Dec 2019

2020 ...



193 Countries
17 SDGs
169 Targets

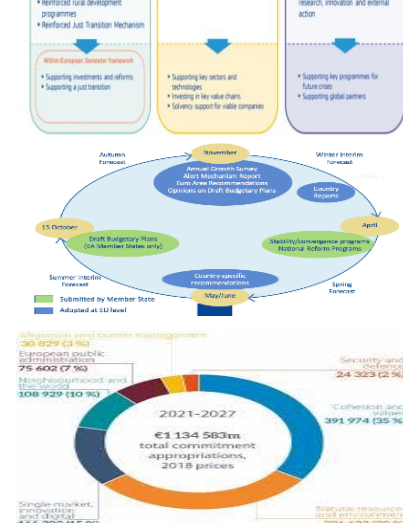
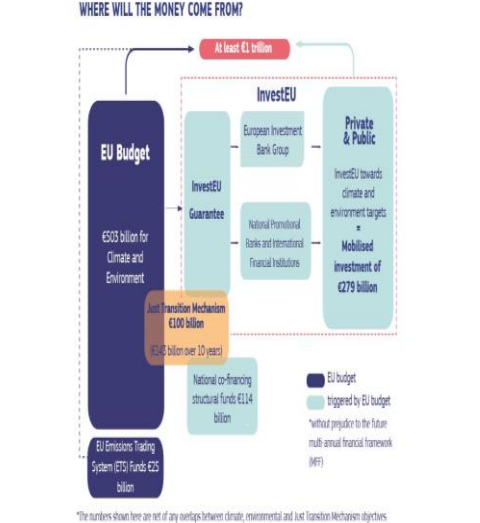
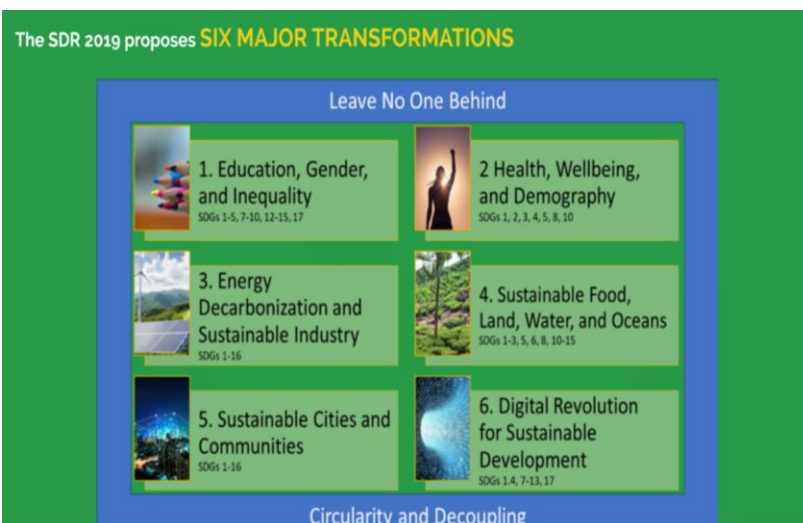
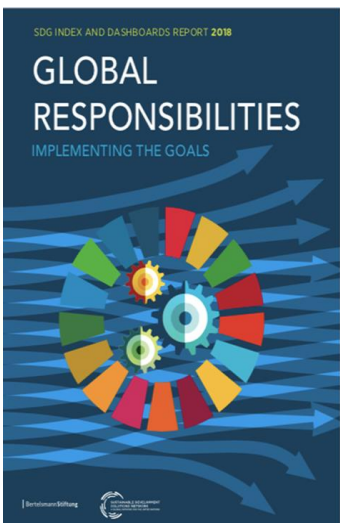
197 Countries
Limiting global temperature to well below 2°C

Limiting global temperature to 1.5°C
This implies zero net emissions globally by 2050

6 Major Transformation Pathways to achieve SDGs

EGD Policies Overview
How will the European Green Deal Investment Plan be financed?
How will the €1 trillion be mobilised?

Flattening the infection curve steepens the macroeconomic recession curve
Recovery Plan Next Generation EU



Are We on Track ?

<https://www.sdgindex.org/>

Globally,
Sustainability
Transition has
started!
BUT...



SDR2020: Six key findings

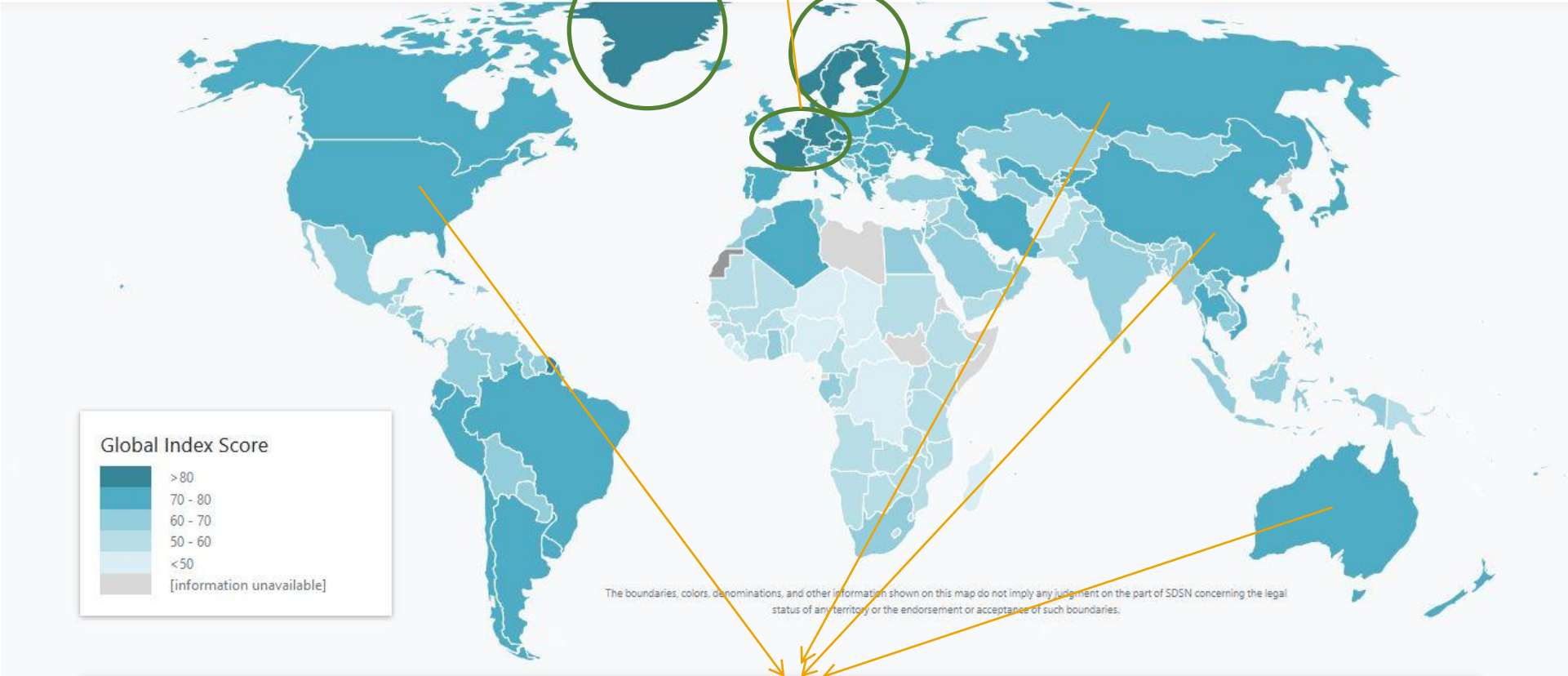
1. The highest priority of every government must remain the **suppression of the pandemic**. There can be no economic recovery while the pandemic is raging.
2. Covid-19 has **short-term negative impacts on most SDGs**. These impacts are amplified for the most vulnerable groups.
3. The SDGs and the Six SDG Transformations can help **build back better (greener, fairer and more resilient)**
4. Countries in **Asia-Pacific** have progressed most on the SDGs since 2015. They also responded **more effectively so far** to the Covid-19 outbreak
5. **Rich countries generate negative spillovers** that undermine other countries ability to achieve the goals and may increase the likelihood of future pandemics
6. The urgent need for more (not less!) global **partnerships and collaboration** (SDG 17)

Right on track: Minority

Sustainable Development Report Dashboards 2019
Transformations to Achieve the Sustainable Development Goals



BertelsmannStiftung



Making Progress but not Fast Enough
2013-2019 collectively, the warmest years in modern record

GREECE

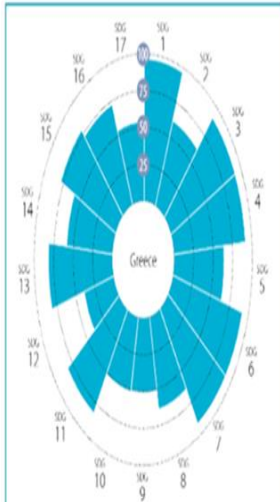
OECD Countries

OVERALL PERFORMANCE

Index score Regional average score



SDG Global rank 50 (OF 162)



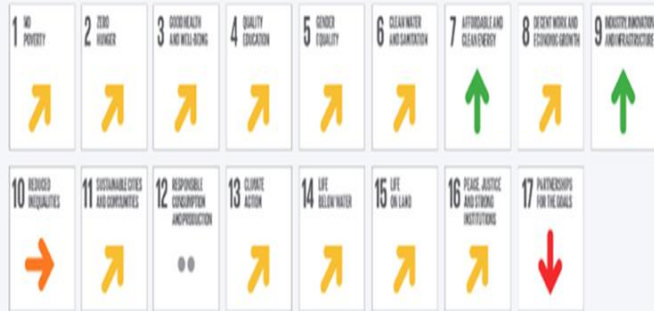
AVERAGE PERFORMANCE BY SDG

CURRENT ASSESSMENT - SDG DASHBOARD



Major challenges Significant challenges Challenges remain SDG achieved Information unavailable

SDG TRENDS



Decreasing Stagnating Moderately improving On track or maintaining SDG achievement Information unavailable

GREECE

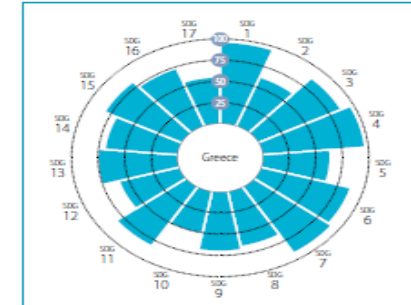
OECD Countries

OVERALL PERFORMANCE

Index score Regional average score



SDG Global rank 43 (OF 166)



AVERAGE PERFORMANCE BY SDG

SPILLOVER INDEX

100 (best) to 0 (worst)



CURRENT ASSESSMENT - SDG DASHBOARD



Major challenges Significant challenges Challenges remain SDG achieved Information unavailable

SDG TRENDS



Decreasing Stagnating Moderately improving On track or maintaining SDG achievement Information unavailable

Notes: The full title of Goal 2 "Zero Hunger" is "End hunger, achieve food security and improved nutrition and promote sustainable agriculture".
The full title of each SDG is available here: <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>



Recover Better

The way forward to a Sustainable Recovery



Senior Working Group

Pathways of technological and policy innovations for the joint achievement of EGD and SDGs and respective portfolios of financial instruments consistent with EGD budget, EU Recovery Plan, the European Semester Process and Multiannual Financial Framework

Objectives

1. Identify and promote technological and policy pathways for decarbonization by 2050 within and across EU MS.
2. Identify and promote adaptation pathways within and across EU MS.
3. Identify socially inclusive pathways that “leave no one behind”
4. Provide strategic recommendations and mobilize experts at country level & EU Level for the ongoing implementation of the EGD
5. Mobilize stakeholders to guarantee local engagement and support for these policies.

Center for Sustainable Development
EARTH INSTITUTE | COLUMBIA UNIVERSITY


THE LANCET

The New 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.

The New Lancet Commission on COVID 19 will engage experts in public health, virology, economics, finance business, civil society, and will draw from all regions of the world.

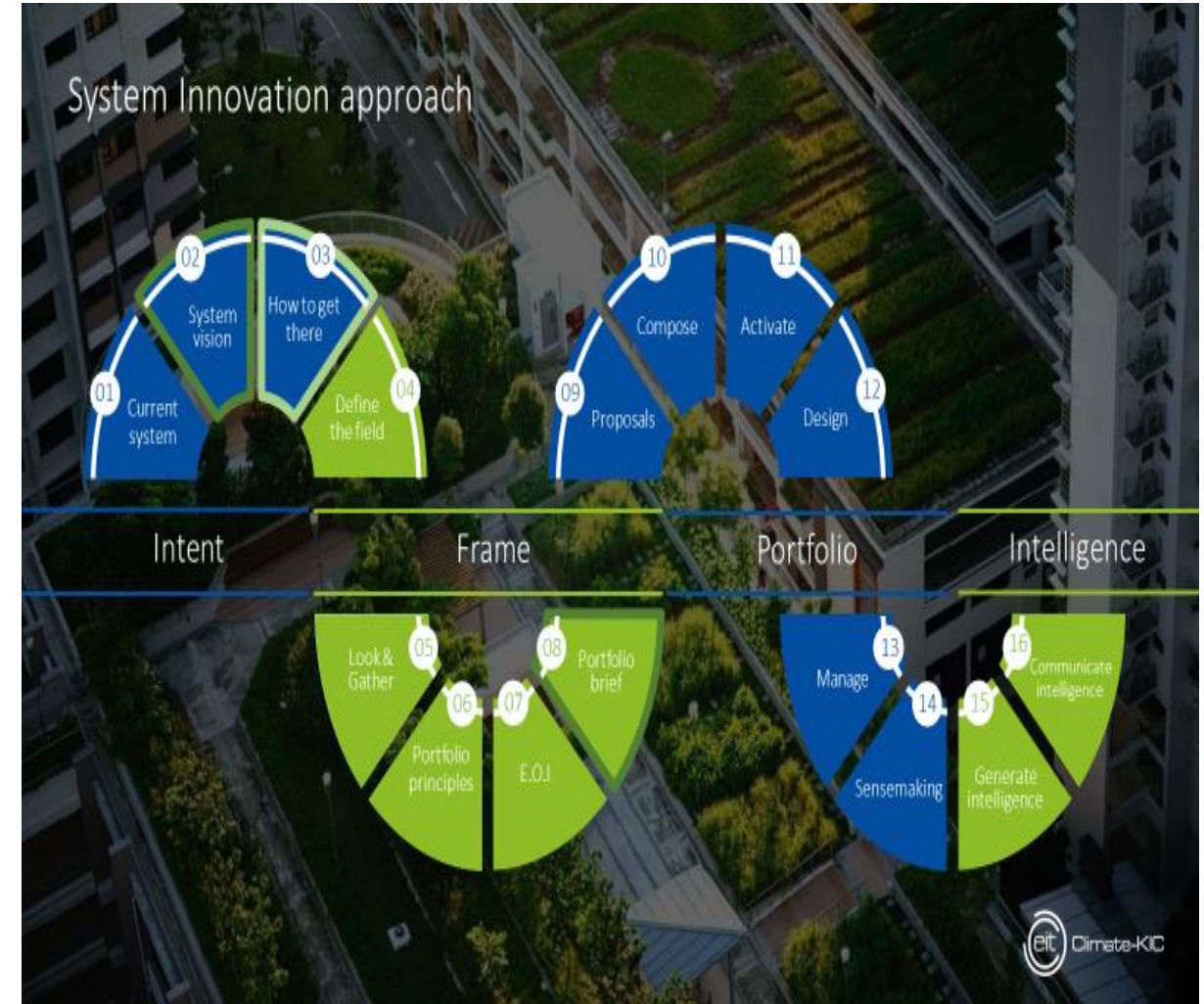
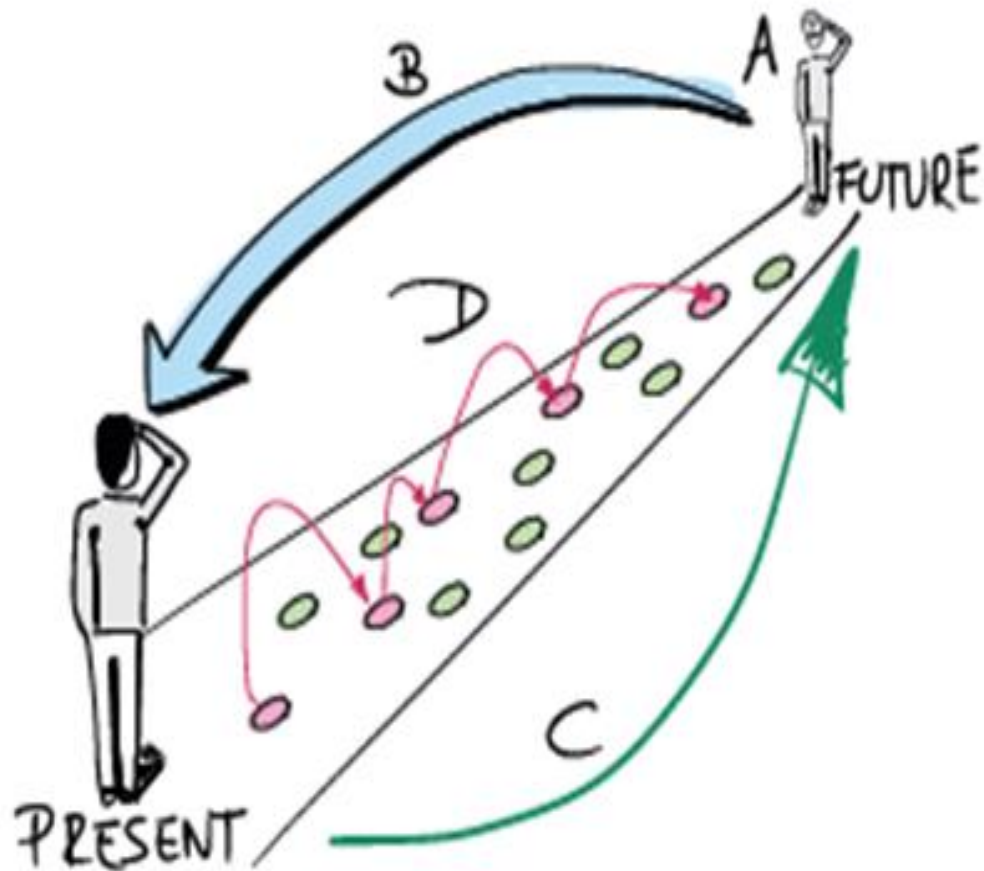
THE CLIMATE LAW – PROPOSAL

Greek CC
Committee

- 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 to impose sanctions on Member States (MS)
 - Does not allow the Commission 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.
- 

THE CLIMAE PACT

Systems Innovation Approach: Co-Design with Stakeholders



Cluster on Sustainability Transition

UN SDSN - ETI Climate KIC – ReSEES@AUEB

UN SDSN Greece projects



- Marine Coastal Management
- Water Food Energy Nexus
- Renewable Energy
- Climate Change
- LR Discount Rate & CBA
- Biodiversity
- Forest Management
- Waste Management
- Nuclear Energy

DMA HELIAS



Mobilizing Sustainability Transition in Greece and Europe: Our Research and Education Activities

Research & Global Initiatives



Climate Change
Committee

Deep Demonstration Projects and Innovation Acceleration

Climate KIC
Programmes

Climate KIC
Projects



Education & Training



MSc in
**Law and Economics
in Energy Markets**

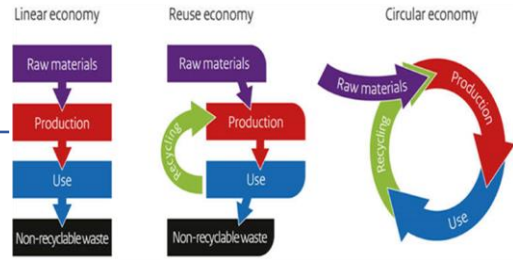
**ΟΙΚΟΝΟΜΙΚΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΑΘΗΝΩΝ** ATHENS UNIVERSITY
OF ECONOMICS
AND BUSINESS

ΚΕΝΤΡΟ ΕΠΙΜΟΡΦΩΣΗΣ ΚΑΙ ΔΙΑ ΒΙΟΥ ΜΑΘΗΣΗΣ



Europe's Main Climate Innovation Initiative

C-KIC – DEEP DEMONSTRATION PROJECTS



Europe's Main Climate Innovation Initiative

C-KIC – PROGRAMMES

Accelerator

EIT Climate-KIC Accelerator is the only EU acceleration programme focused on climate impact by cleantech commercialisation

Transforming ideas into climate-positive businesses

- €550m+ raised investment
- 1000+ private sector partners
- 2500+ cleantech startups
- 33 startups supported by business angels

Pioneers Into Practice

A bold new opportunity to combine as a wonderful community of like-minded people and work in another country on something you care about. Worldwide at whatever stage of your career you're at.

Placement (all expenses covered), Participation in an educational quest (two workshops and online thing), Training based on innovative methodologies developed within the KIC.

- Mentorship for improving ideas and skills.
- Participation in solving challenges in the real environment.
- Participate in international workshops.
- Develop international professional network.

Climathon

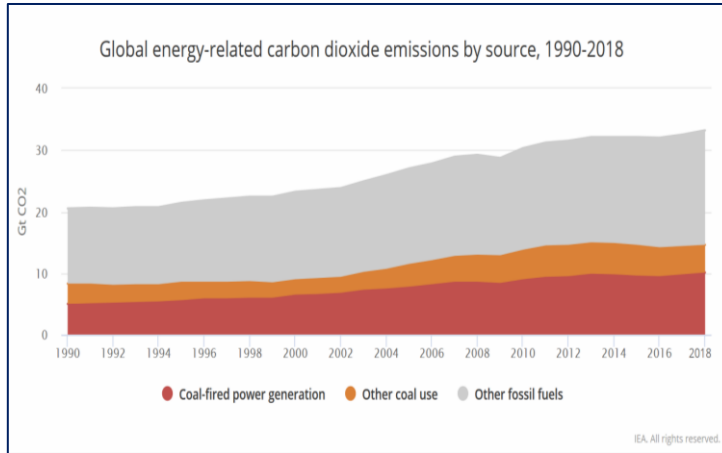
Climathon Cities 2019

- 113 cities
- 46 countries
- 6 continents
- +50000 participants

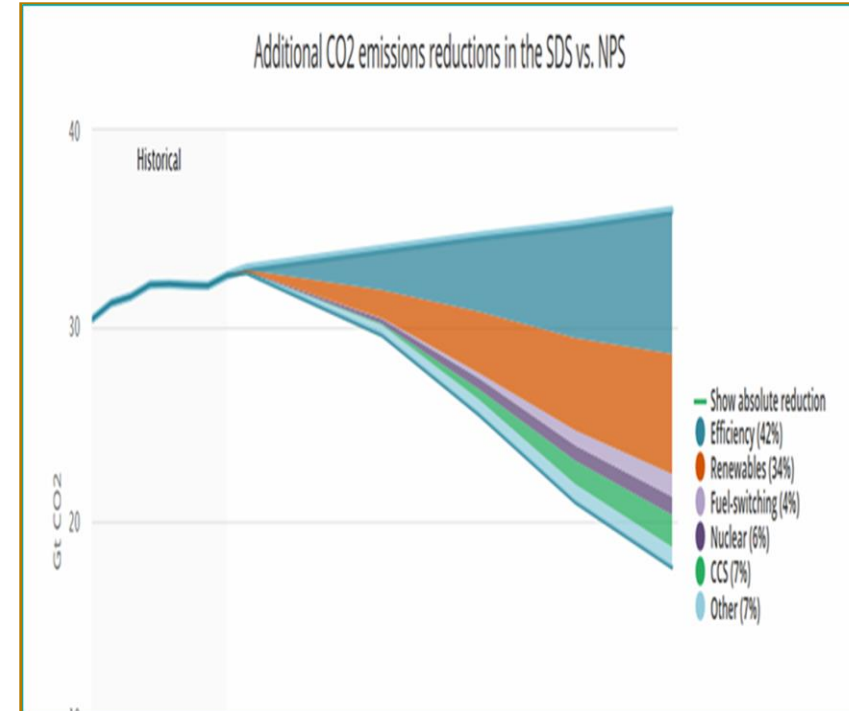
Climathon: Cities. Making. Solutions.

SUPPLY SIDE:

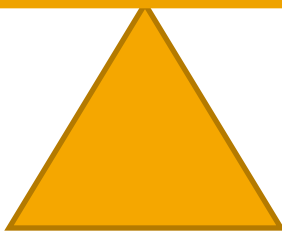
Aggressive de-carbonization will be needed beyond 2030 to keep temperature increases below 1.5 C



Now-2050: Global power demand will grow by 62%, equating to 1.5-2% per year.



DEMAND



SUPPLY

Special Edition of the IEA's (with IMF) annual World Energy Outlook, 18 June 2020



International
Energy Agency

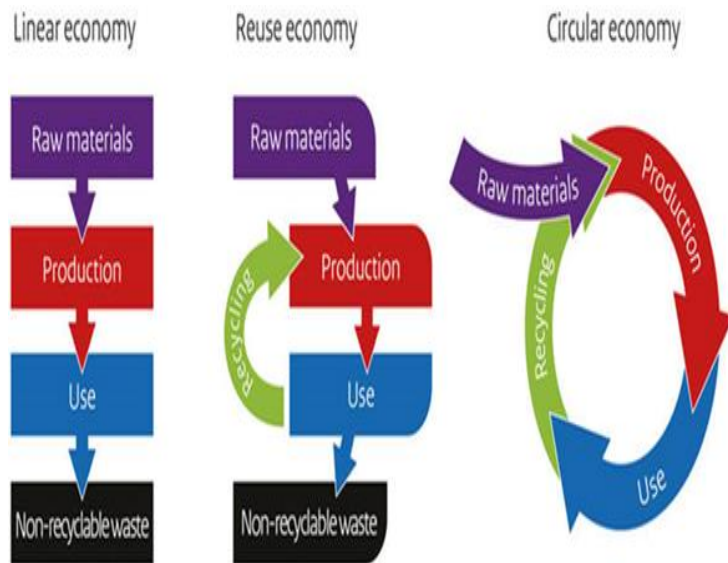
- **A set of targeted energy-related sector investment of 1 trillion a year over three years would:**
 - **Boost economic growth by 1.1 percentage points a year**
 - **Save or create 9 million jobs a year**
 - **Ensure 2019 was the definite peak of energy-related greenhouse gas emissions**
- The \$1 trillion in annual investment required: public and private sources and is equivalent to about 0.7% of global GDP.

The clean energy investment push will need to be done on a major scale given the size of today's economic shock. Policies with existing legal and institutional structure are the easiest to scale up.

Wind and **solar** are cost-competitive in large parts of the global energy system, but their continued growth still needs supportive policy frameworks (especially in the case of **offshore wind**, which is now ready for massive investment).

Accelerating wind and solar PV can be pillars of post-pandemic stimulus efforts

Important emerging technologies for clean energy progress – **lithium-ion batteries and hydrogen electrolyzers** – have the potential to be the coming decade's breakout technologies.



Circular economy: based on principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.

By 2050 CE:
 56% cut in EU emissions from heavy industry
 45% cut global emissions from steel, cement, plastic and aluminum products.

CE a win-win situation:

- Savings of 600 billion euro for EU Business, 8% of their annual turnover
- Creation of 580,000 jobs in innovative design and business models, research, recycling, re-manufacturing and product development
- Relevant for SMEs
- Reduction of EU carbon emissions by 450 million tonnes by 2030
- Reducing Environmental Footprint: The less products we discard, the less materials we extract. Optimize waste management will boost recycling and reduce landfill

THE ECONOMIC BENEFITS

What are the macroeconomic impacts of shifting to a new economic model?

The circular economy has been gaining traction with business and government leaders alike. Their imagination is captured by the opportunity to gradually decouple economic growth from virgin resource inputs, encourage innovation, increase growth, and create more robust employment. If we transition to a circular economy, the impact will be felt across society. The slider below illustrates some of the potential macroeconomic benefits of shifting to a circular economy.

THE OPPORTUNITY FOR COMPANIES

How will companies benefit from the circular economy?

Businesses would benefit significantly by shifting their operations in line with the principles of the circular economy. These benefits include the creation of new profit opportunities, reduced costs due to lower virgin-material requirements, and stronger relationships with customers. The sliders below expand on these and more benefits.

THE OPPORTUNITY FOR INDIVIDUALS

What does the circular economy mean for individuals?

The circular economy will not only benefit businesses, the environment, and the economy at large, but also the individual. Ranging from increased disposable income to improved living conditions and associated health impacts, the benefits for individuals of a system based on the principles of circularity are significant.

ENVIRONMENTAL AND SYSTEM-WIDE BENEFITS

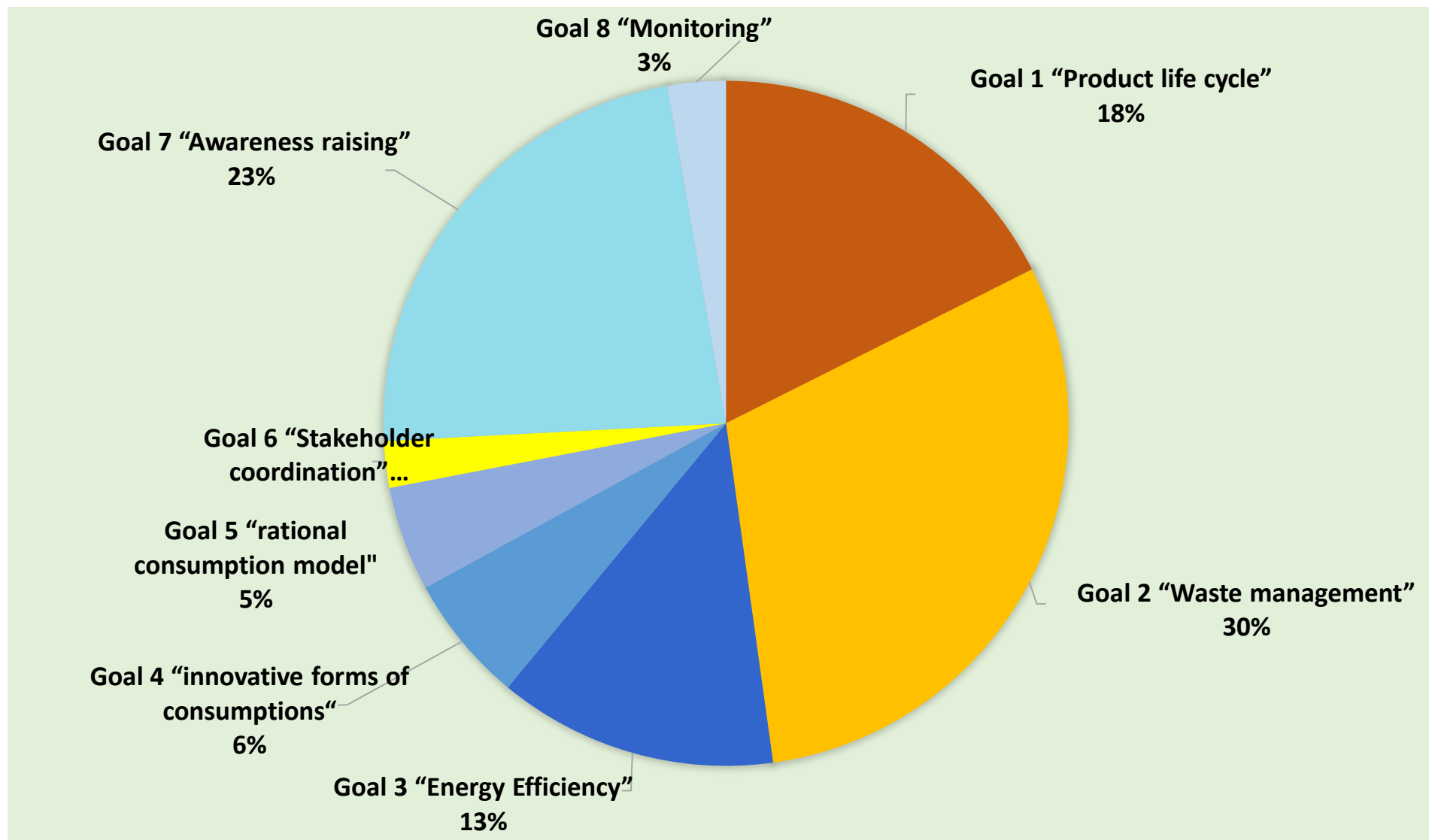
What impact will shifting to a circular economy have on the environment?

The potential benefits of shifting to a circular economy extend beyond the economy and into the natural environment. By designing out waste and pollution, keeping products and materials in use, and regenerating, rather than degrading, natural systems, the circular economy can be the mechanism by which we achieve global climate targets.

- **PROJECT: Methodology integrating and monetizing financial, economics (growth and job creation), environmental, social (health, accessibility) benefits**
- **LCA, Non-Market Valuation Methods, CBA**
- **Private and Public Benefits**
- **Public-Private Partnerships best model for financing the transition to CE**

Mapping Circular Economy Transition (CE) in Smart Specialization Strategy (S3)

Mapping 4 **GREEK** Sectoral + 13 Regional Programs \Rightarrow 113 interventions related to CE



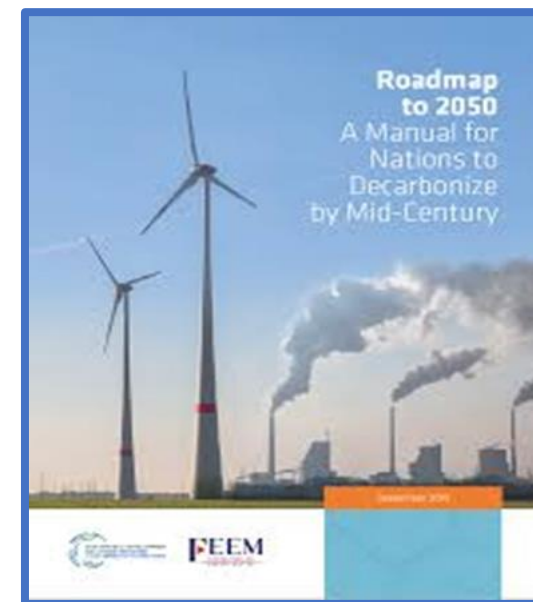


- Aims at bringing together **researchers and technology developers, shipbuilders, shipowners, ports, policy makers and politicians**, from across the globe, to work on technological and policy innovations, related to zero emissions shipping, to target net-zero emissions by 2050.
- Find more at: <http://www.unsdsn.gr/global-roundtable-for-sustainable-shipping-2>

ACTION AREAS IN MARITIME TRANSPORT

Effective decarbonization pathways rely on technological solutions, new sustainable fuel developments, and fuel shifts

- Long-haul navigation is hard to abate. **ammonia and hydrogen** are currently being investigated.
- Short-haul navigation (in-land waterways, coastal and intra regional) can be supplied by **electricity or hydrogen technologies.**
- Use of biofuels and the sustainability of biomass for biofuels needs to be carefully assessed to avoid competition with food production, deforestation, loss of biodiversity.



- Regulatory frameworks need to be **technology agnostic** to create a fertile environment for **innovation**, unleashing the potential of the research.
- Research and innovation need to investigate:
 - life-cycle analysis (LCA)
 - indirect land-use change (ILUC)
 impacts of technologies to confirm sustainability, avoiding solution lock-in and stranded assets.

BRIGAIID H2020 and Organization

Climate Window with 200 Innovations (TRL 8-9) on Climate Change Adaptation

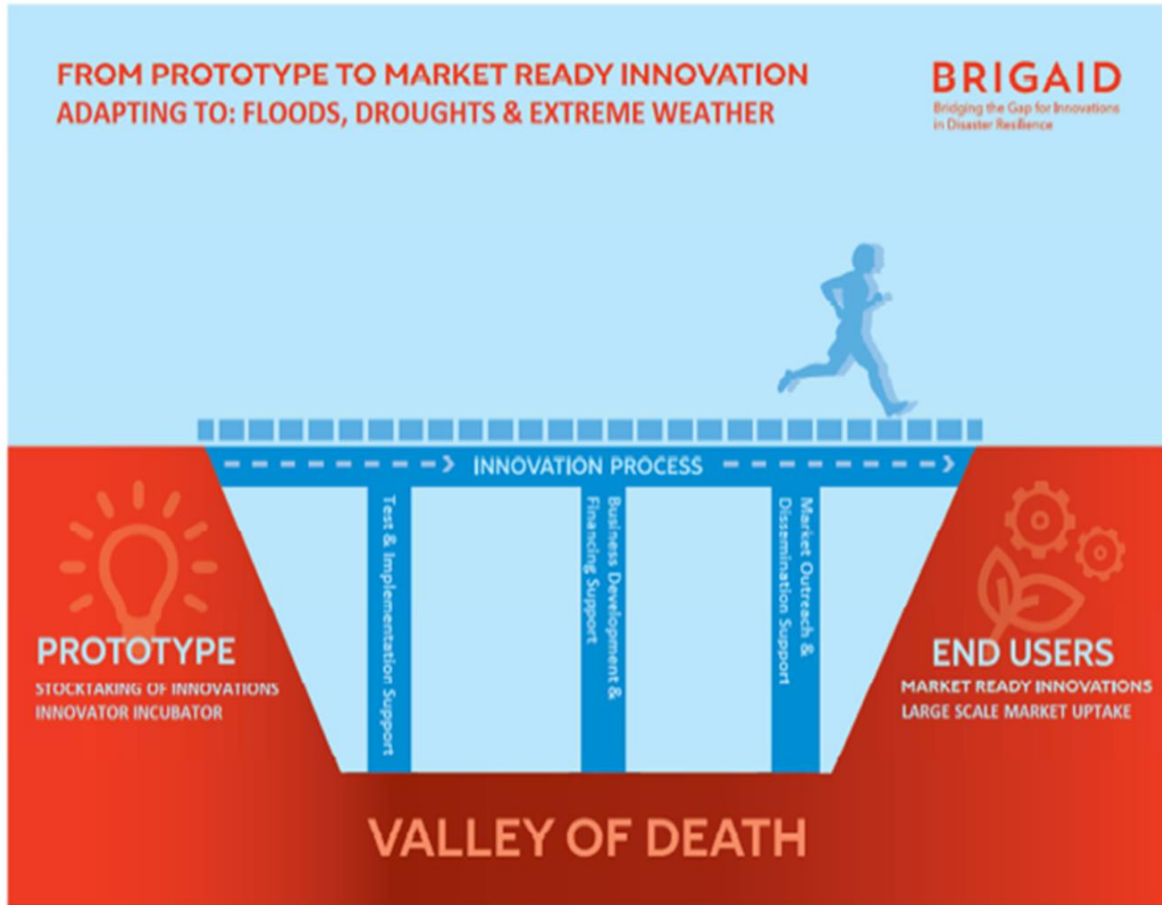


Figure 1.1: BRIGAIID's conceptual approach with three types support for innovations

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

HKV

MyOverstromingRisikoProfiel

Disasters and ICT | Water Safety

MyFloodRisk (for business)

TRL 5

3C for Cities

Disasters and ICT | Urban Areas

3C for Cities

TRL 6

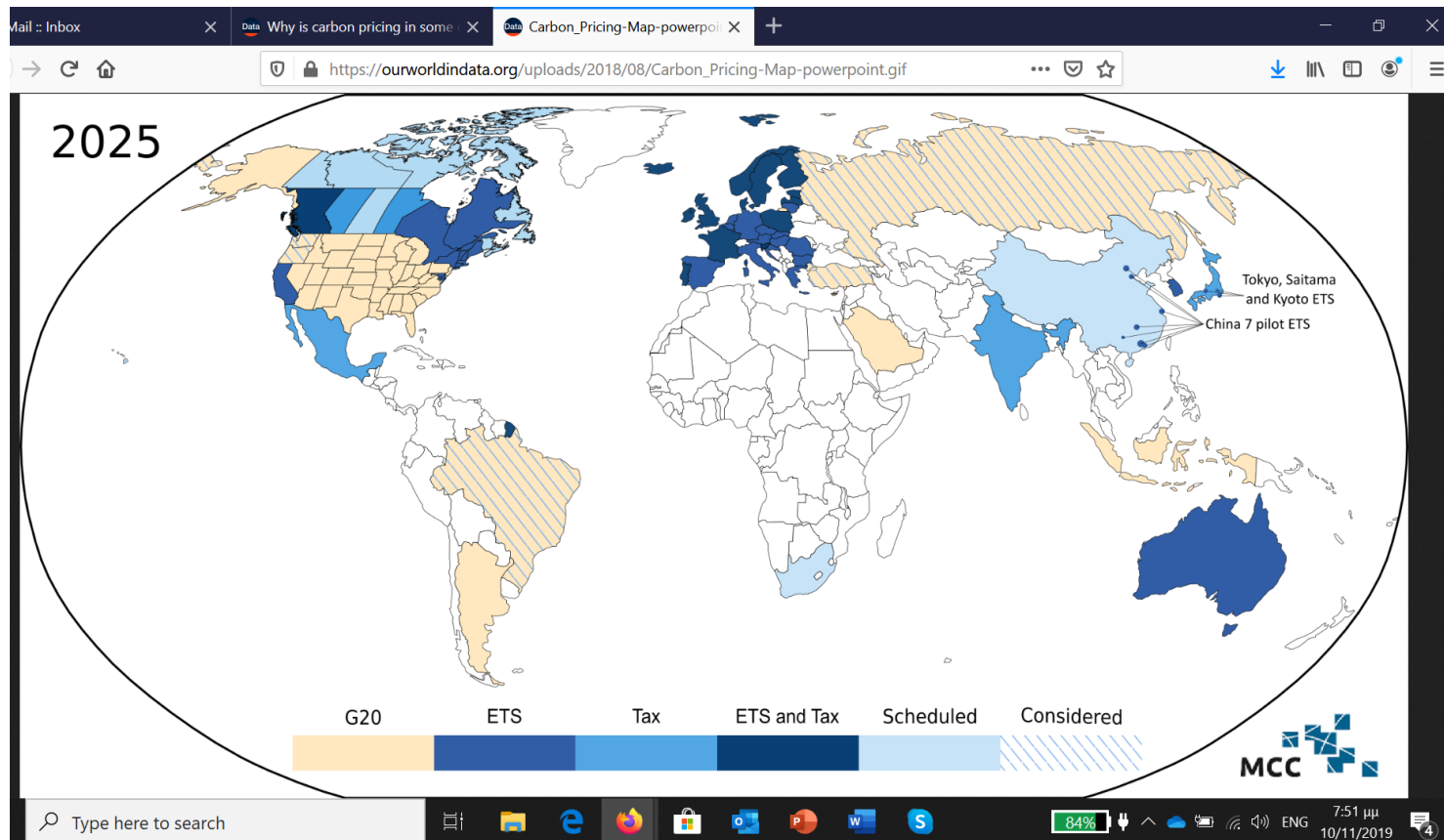
ARIEL

Agriculture | Disasters and ICT

ARIEL, soil moisture retrieval by microwave remote sensing

TRL 5

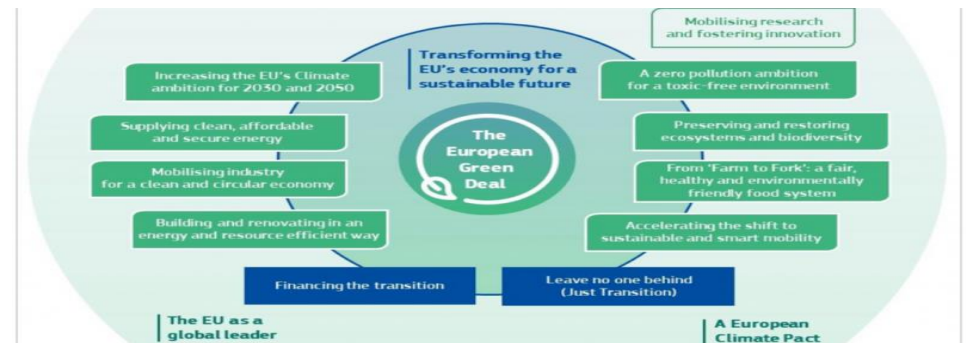
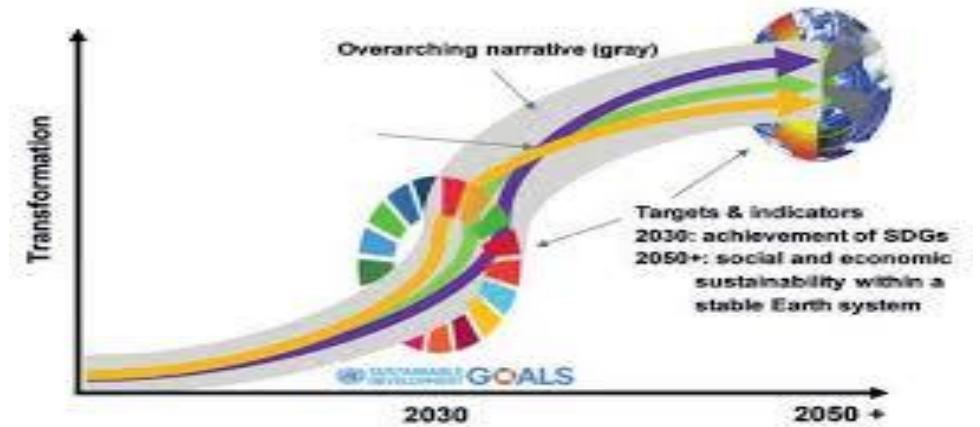
Demand Management
Information-Awareness-Training-Education
Economic Instruments: CO2 taxes, ETS,
REDD, Insurance, etc.



- Over the last decade:
- 51 carbon pricing schemes have been implemented or are scheduled for implementation
- 25 of the 51 are in the form of ETS, predominantly introduced at the subnational level
- 26 of the 51 in the form of carbon taxes, mostly implemented at the national level.
- Among the countries that have already submitted their Nationally Determined Contributions to the Paris Agreement, 88 countries have stated their intent to implement carbon pricing as part of their national climate policies

Our Blueprint for Systemic Change: The SDGs and EGD

- We must start investing in what makes our socio-economic system resilient to crisis, by laying the foundation for a green, circular economy that is anchored in nature-based solutions and geared toward public wellbeing.
- Now is the time to usher in **systemic economic change** and the good news is that we have our blueprint: it's the combination of **UN Agenda 2030 (17 SDG)** and **European Commission's European Green Deal**.



Never Waste a Good Crisis!

- Economic crisis more severe than the 2008 financial crisis, and the decarbonization challenge is even more urgent.
 - Energy technologies: some vital components for building a clean energy future are more mature and ready to scale up.
-
- Embrace **EU taxonomy** for sustainable investments (2019)
 1. Control of the epidemic (contact tracers, testing, other public systems)
 2. Biomedical research (vaccines, drugs, diagnostics)
 3. Border security, safe travel, safe trade
 4. Renewable energy and circular economy (EGD)
 5. Food security and Smart Agriculture
 6. Promotion of European supply chains (ICTs, batteries, EVs, etc.)
 7. Secure ICT networks (privacy standards, 5G rollout, etc.)
 8. Sustainability Education, Training, Capacity Building and Innovation
 - The transition should be inclusive and **"leave no one behind"**! finance should be directed to those that are sustainable, but also those who are willing to commit, and be monitored henceforth, to learning how to become sustainable.



Senior UN SDSN WG on EGD Greek UN Initiative on CC effects on Cultural Heritage



UN SDSN Senior Working Group on the EGD
and the European Recovery Plan



New UN SDSN Global Initiatives

Global Roundtable for Sustainable Shipping



IPCC warned of unprecedented changes if we exceed 1.5 degrees of warming. Maritime transport emits around 940 million tonnes of CO₂ annually and is responsible for about 2.5% of global greenhouse gas (GHG) emissions (3rd IMO GHG study). These emissions are projected to increase significantly if mitigation measures are not put in place swiftly. According to the 3rd IMO GHG study, shipping emissions could under a business-as-usual scenario increase between 50% and 250% by 2050, undermining the objectives of the Paris Agreement. The **Global Roundtable for Sustainable Shipping** aims at bringing together shipowners, shipbuilders, technology developers and researchers, ports and policy makers, on innovation related to zero emissions shipping, from across the globe, to target net-zero emissions by 2050. It will be launched at a specific session on the zero-carbon ocean shipping at the two-day **COP 25 in Santiago, Chile** hosted by SDSN on December 9th & 10th 2019.

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The UN SDSN 4-Seas Initiative



The UN SDSN 4-Seas is a Euro-Asian Initiative that aims to mobilizing science driven sustainable blue growth in the **Mediterranean Sea**, the **Black Sea**, the **Caspian Sea** and the **Aral Sea**, in order to protect the future state of global seas and oceans by providing a Blue Sustainability Transition Plan “from rivers to the oceans”.

The initiative is led by **SDSN Greece** and **SDSN Black Sea**, established leaders on research for the implementation of SDGs in rivers and wetlands, coastal zones, seas and oceans, shipping, marine transport, offshore energy production, fishing, aquaculture, marine litter, and relevant education and training.