Circular Economy Leading Sustainability Transition

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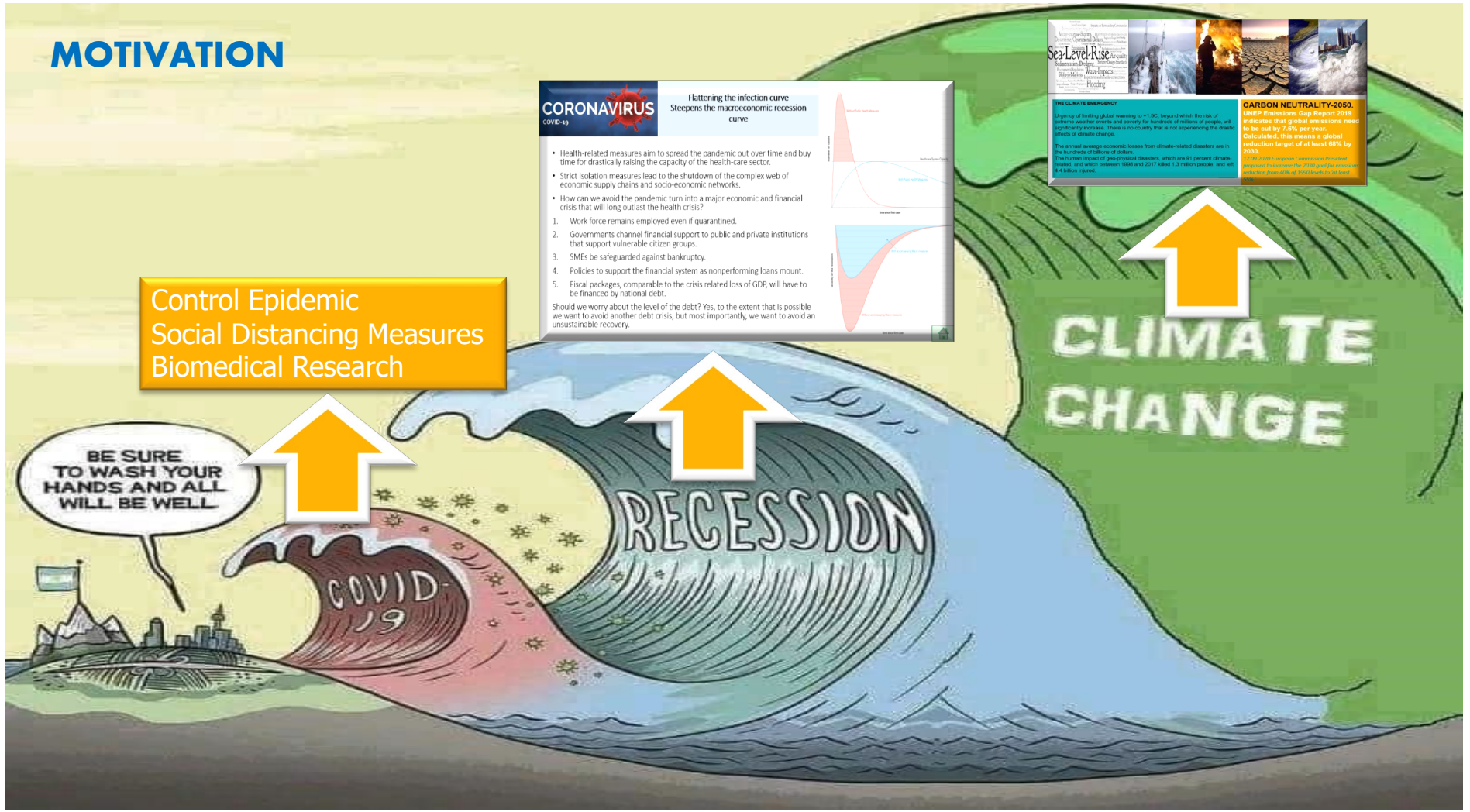
Climate-KIC is supported by the EIT, a body of the European Union

MOTIVATION


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
Flooding
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.
Control Epidemic
Social Distancing 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 Related Policies

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

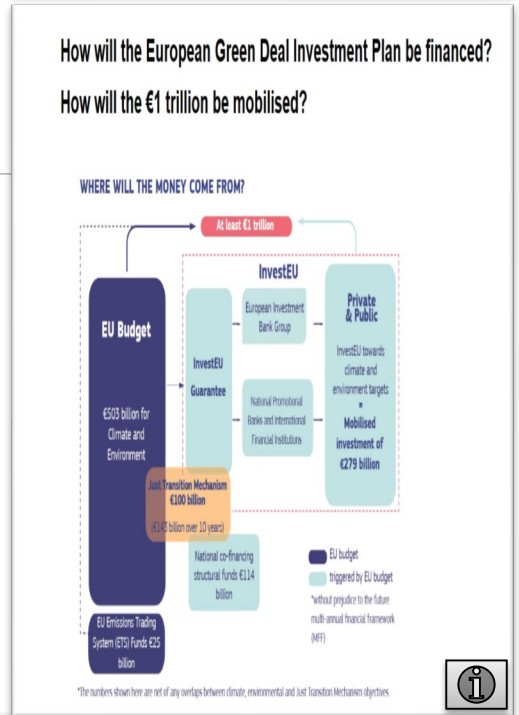
SUSTAINABLE DEVELOPMENT REPORT 2019

TRANSFORMATIONS TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS

6 Major Transformations to achieve SDGs

Dec 2019

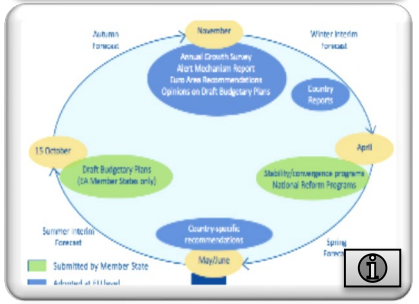
EGD Policies Overview



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

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

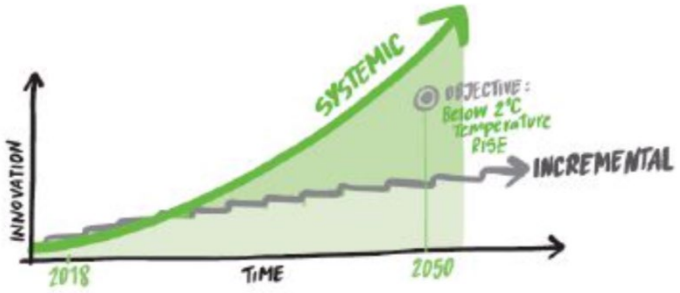
Israel
Green recovery plan
June 2020

China
Carbon neutral before 2060
Announced on 22 September, 2020

European Green Deal CLIMATE PACT

Systems Innovation Approach: Co-Design Systemic Change with Stakeholders

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.

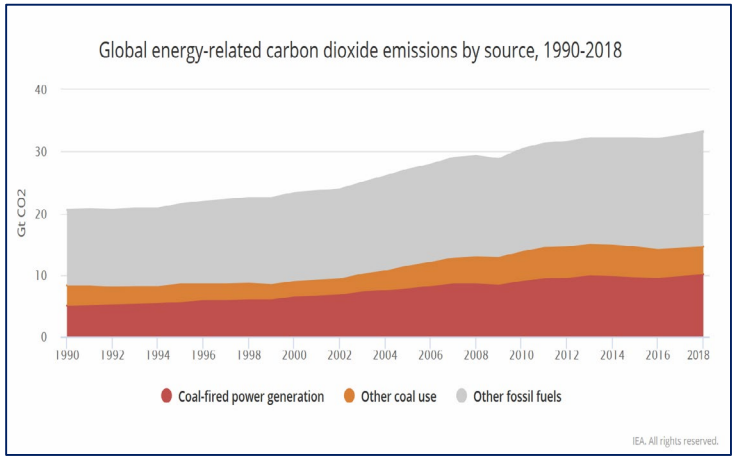


Working through gradual, incremental changes is not enough!

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**”.

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.

- Renewables Consistently Cheaper than Fossil Fuels by 2020
- Energy storage installations increasing exponentially
- Strong energy efficiency improvements
- Large-scale carbon capture
- Transition to Circular Economy

DEMAND

SUPPLY

CIRCULAR ECONOMIC (CE)
A MAJOR DRIVER FOR SUSTAINABILITY TRANSITION

Although we will never reach 100% circularity, CE is transformative
Scope to address structural waste in current systems

Circular Economy sets a direction for travel!

OUTLINE OF A CIRCULAR ECONOMY

PRINCIPLE

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows
ReSOLVE levers: regenerate, virtualise, exchange

PRINCIPLE

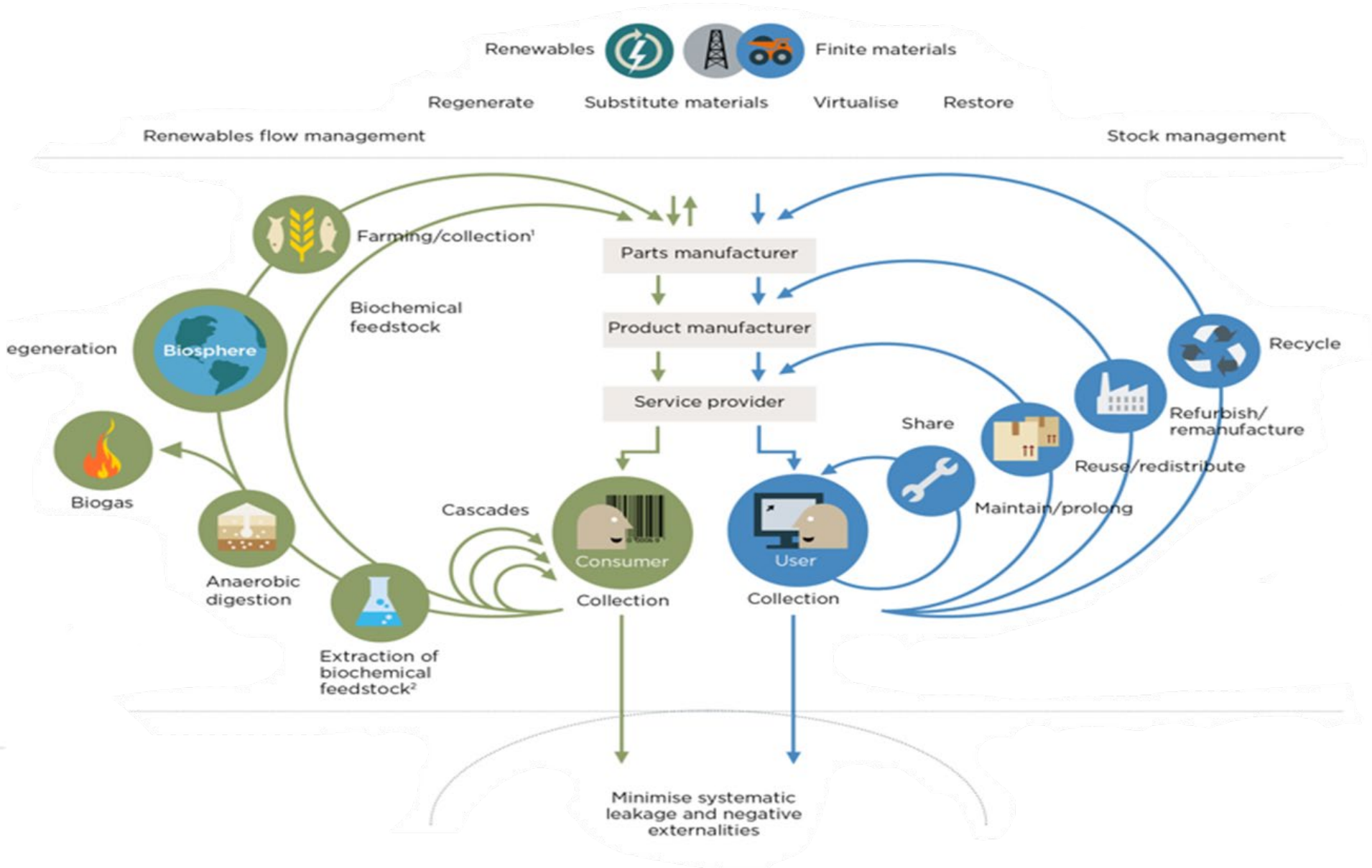
2

Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles
ReSOLVE levers: regenerate, share, optimise, loop

PRINCIPLE

3

Foster system effectiveness by revealing and designing out negative externalities
All ReSOLVE levers

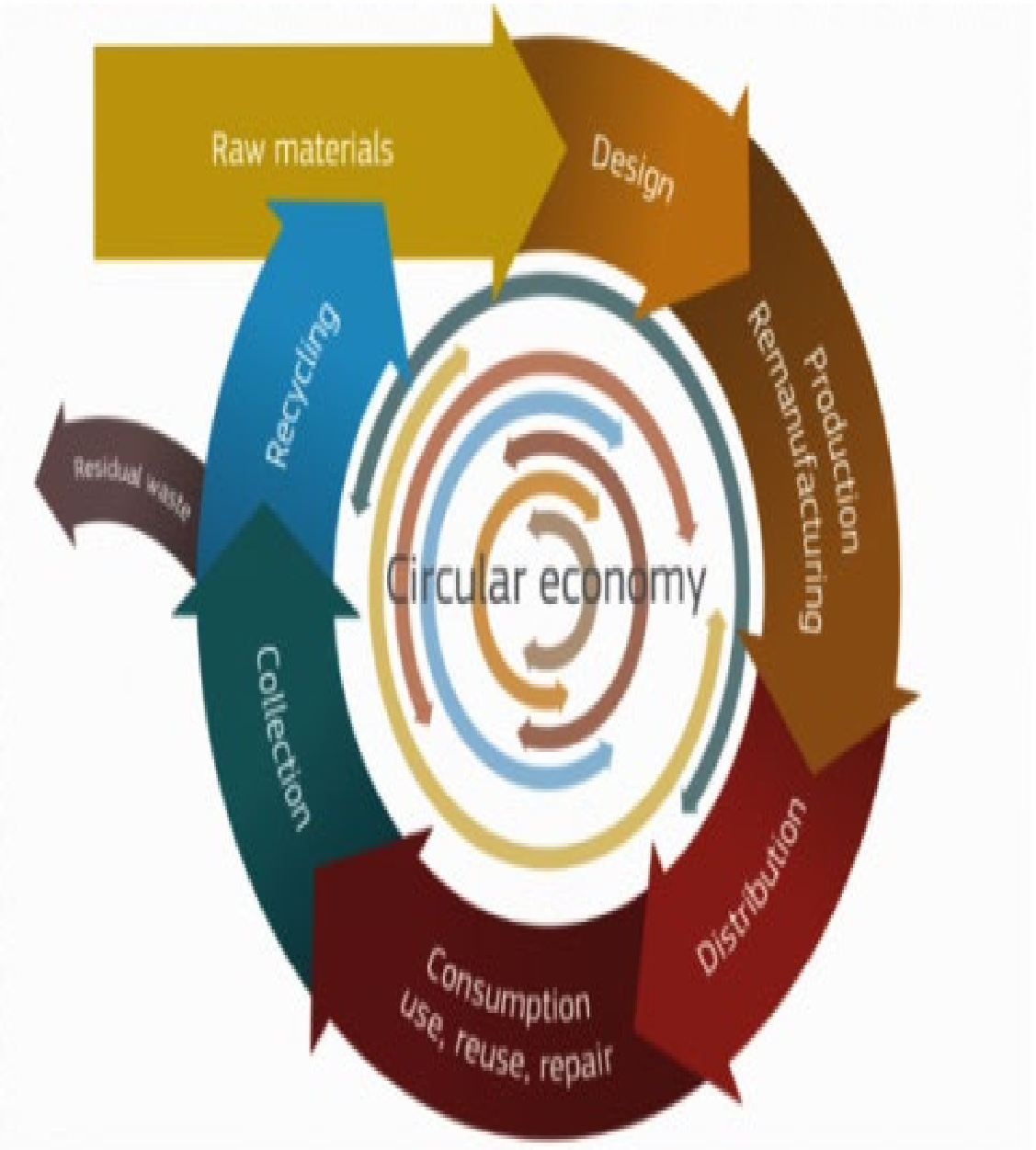


How Can Circular Economy Contribute to CC

Design out waste and pollution
to reduce GHG emissions
across the value chain

Keep products and materials in use
to retain the embodied energy
in products and materials

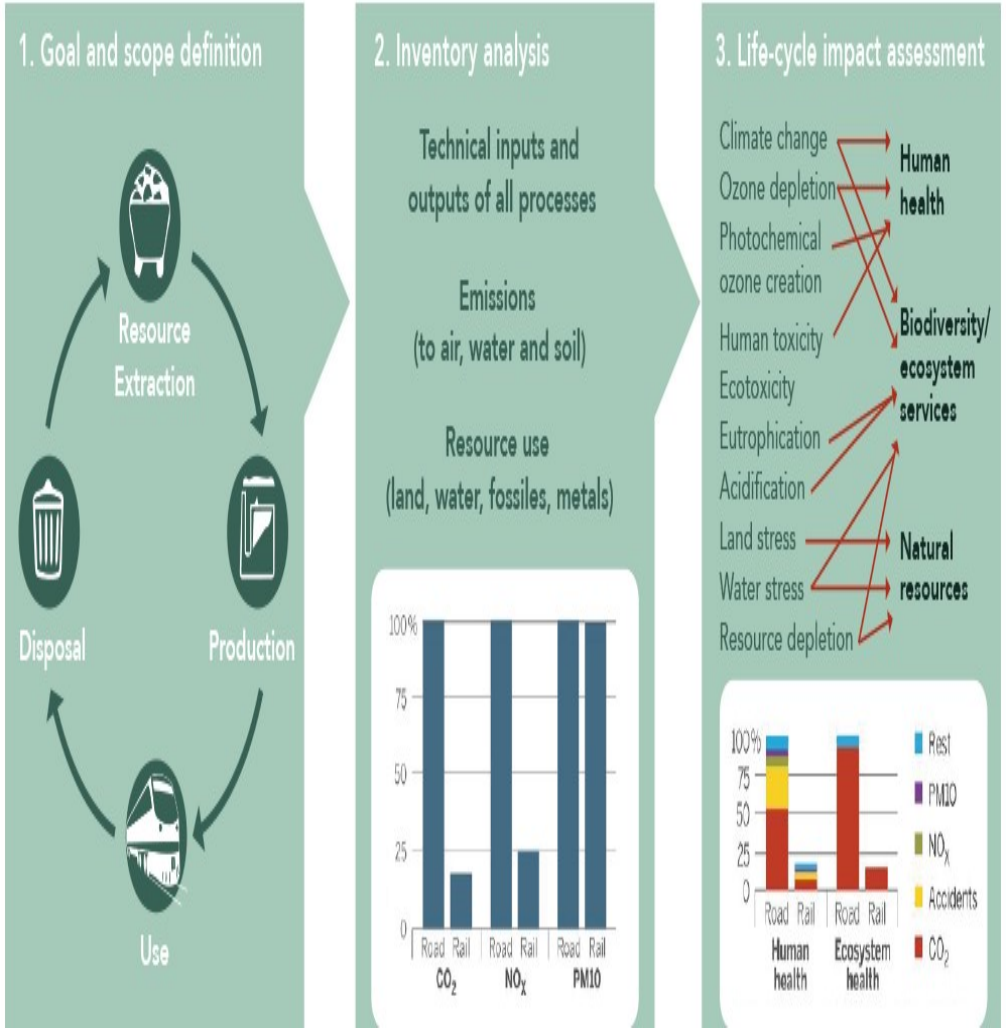
Regenerate natural systems
to sequester carbon
in soil and products

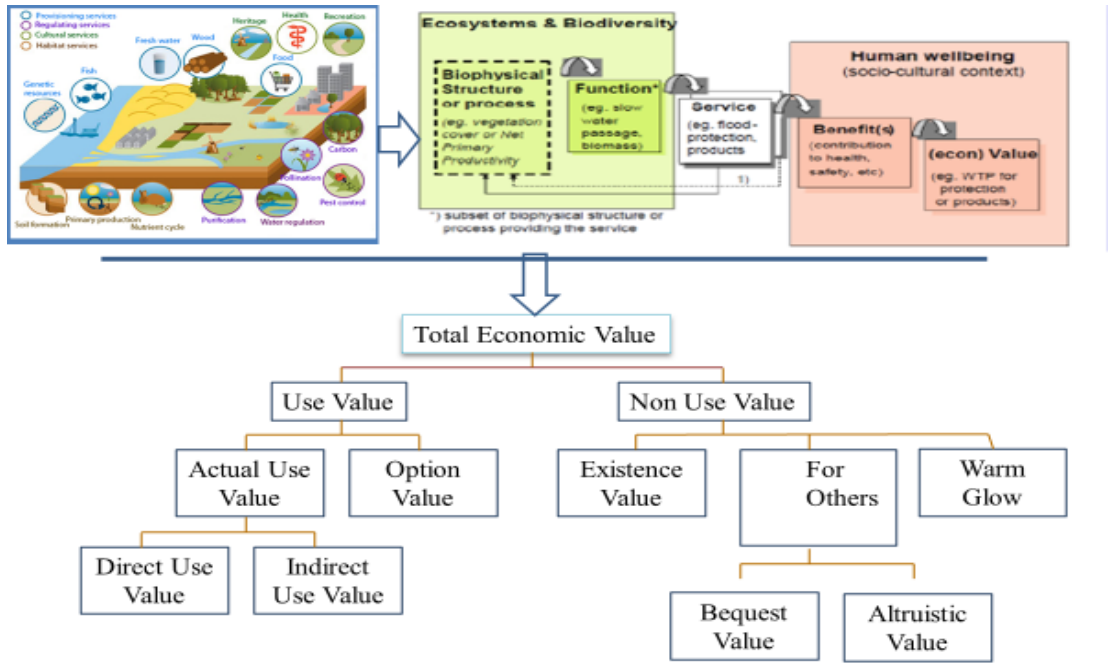


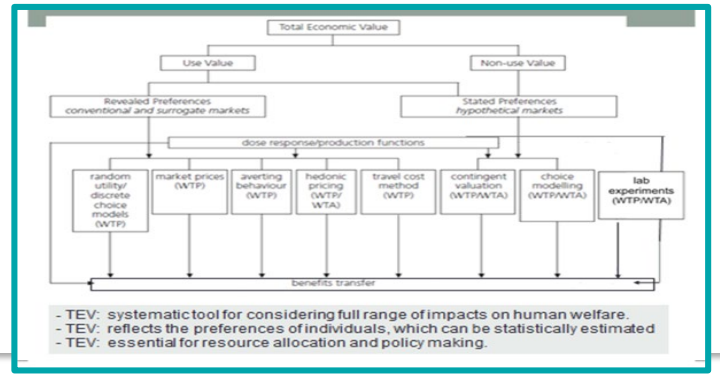
CIRCULAR ECONOMY

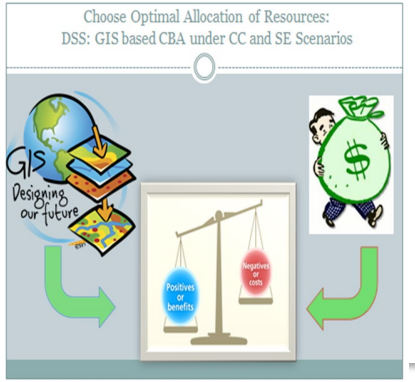
- Savings of 600 billion euro for EU Business, 8% of their annual turnover, Relevant for SMEs
- Creation of 580,000 jobs in innovative design and business models, research, recycling, re-manufacturing and product development
- Reduction of EU carbon emissions by 450 million tones by 2030
- Reducing Environmental 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









The European Commission has adopted a new Circular Economy Action Plan - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth.

The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.

It introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value.

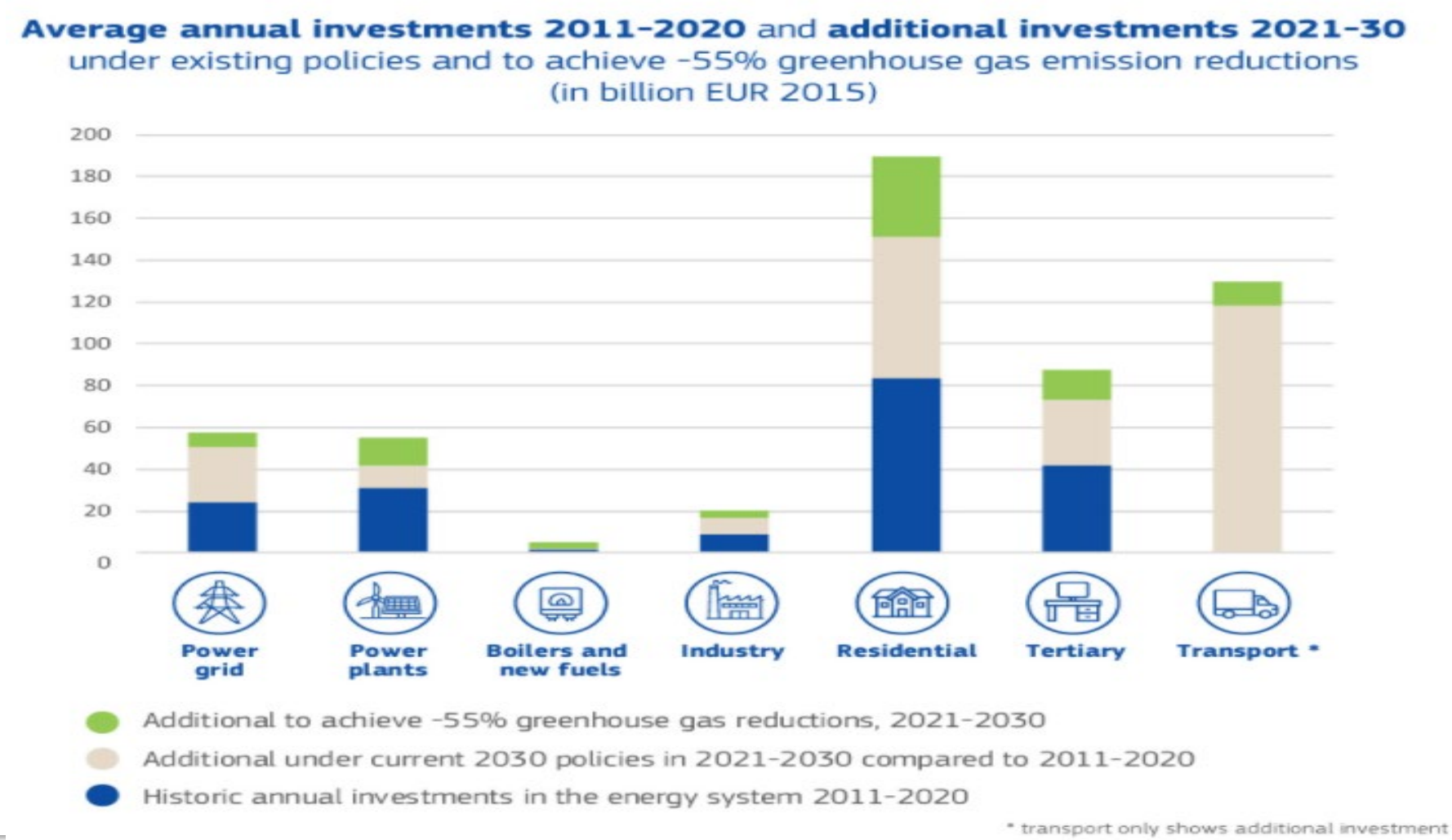
Actions

The new Circular Economy Action presents measures to:

- Make sustainable products the norm in the EU;
- Empower consumers and public buyers;
- Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- Ensure less waste;
- Make circularity work for people, regions and cities,
- Lead global efforts on circular economy.

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



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

Energy Sector to kick-start Green Recovery

- Ambitious agenda setting for job creation and climate change goals: Modernizing energy systems can contribute to job creation and economic growth while also protecting the climate.
- Public sector leadership on investing in clean energy: Governments directly or indirectly drive more than 70% of global energy investments. At this time of crisis, their actions matter more than ever. Policy settings can actively steer energy-related investments onto a more sustainable path.
- Making energy efficiency, renewables and battery storage central to economic recovery: Stimulus programs in energy industries should be prioritized to support existing workforces, create new jobs and drive reductions in emissions.

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.

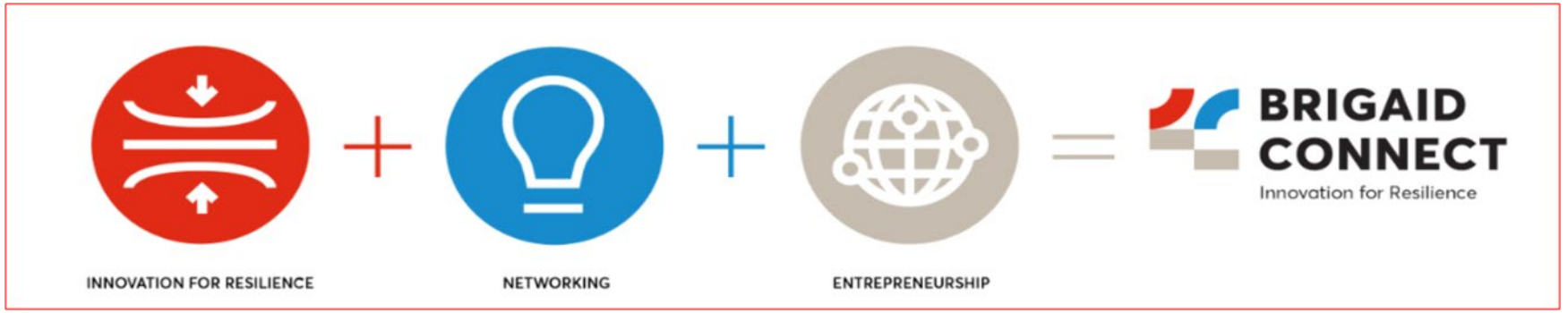
Wind and **solar** are cost-competitive in large parts of the global energy system, but their continued growth still needs supportive policy frameworks (especially in the case of **offshore wind**, which is now ready for massive investment).

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 electrolysers** –have the potential to be the coming decade's breakout technologies.

Green Economics and Decent Work: A Viable Unified Framework, 2019 by R. Pollin

- 160 million jobs will be created globally and 4 million will be lost in the fossil fuel industry
- Europe: net increase of approximately 17 million jobs in Europe.
- Capacity Building for a Just Transition is crucial!



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

Sustainable Finance and Economic Instruments

Launches ambitious new climate strategy and Energy Lending Policy

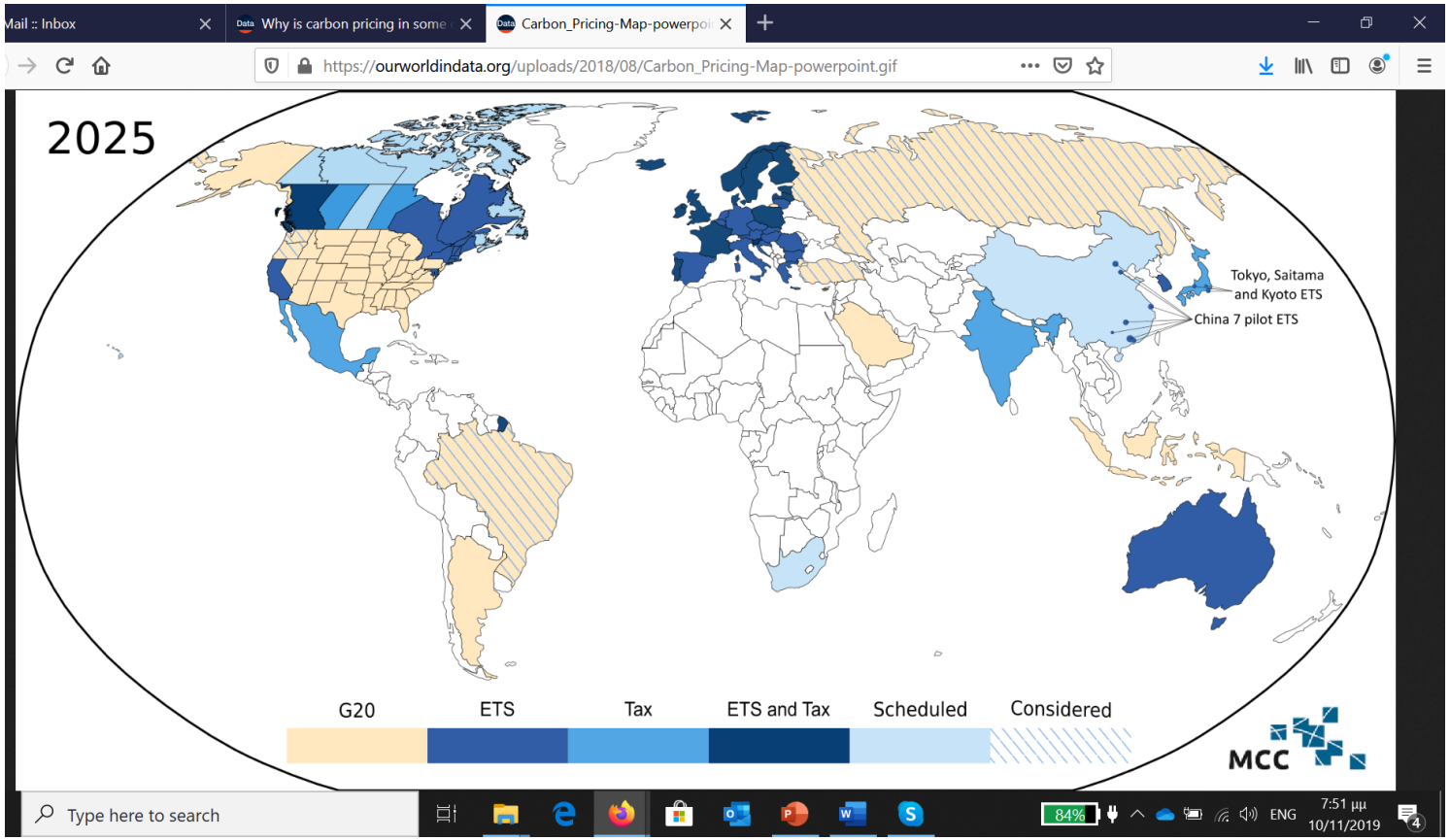
European Investment Bank

- The EIB will end financing for fossil fuel energy projects from the end of 2021
- Future financing will accelerate clean energy innovation, energy efficiency and renewables
- EIB Group will align all financing activities with the goals of the Paris Agreement from the end of 2020

- Classification system for sustainable economic activities, which creates a common language for investors and lenders.
- Scale up private and public investments to finance the transition to a climate-neutral and green economy
- Challenge: connect green taxonomy with financial instruments (green/transition bonds, green loans, etc.)
- Monitoring mechanism needed: ensure that transition bonds are used in an energy-efficient, circular, sustainable investment.

Demand Management: Information-Awareness-Training-Education

Economic Instruments: CO2 taxes, ETS, REDD, Sustainable Insurance, Transition Bonds, 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

What is the EU ETS?

- Largest multi-national greenhouse gas emissions trading scheme in the world
- Created in conjunction with the Kyoto Protocol
  - 1997 international treaty that came into force in 2005

EU ETS Key features of phase 4 (2021-2030)

The legislative framework of EU ETS revised in early 2018 to enable it to achieve the EU's 2030 emission reduction targets (EU's contribution to Paris Agreement)

Strengthening the EU ETS as an investment driver by increasing the pace of annual reductions in allowances to 2.2% as of 2021 and reinforcing the Market Stability Reserve (the mechanism established by the EU in 2015 to reduce the surplus of emission allowances in the carbon market and to improve the EU ETS's resilience to future shocks)

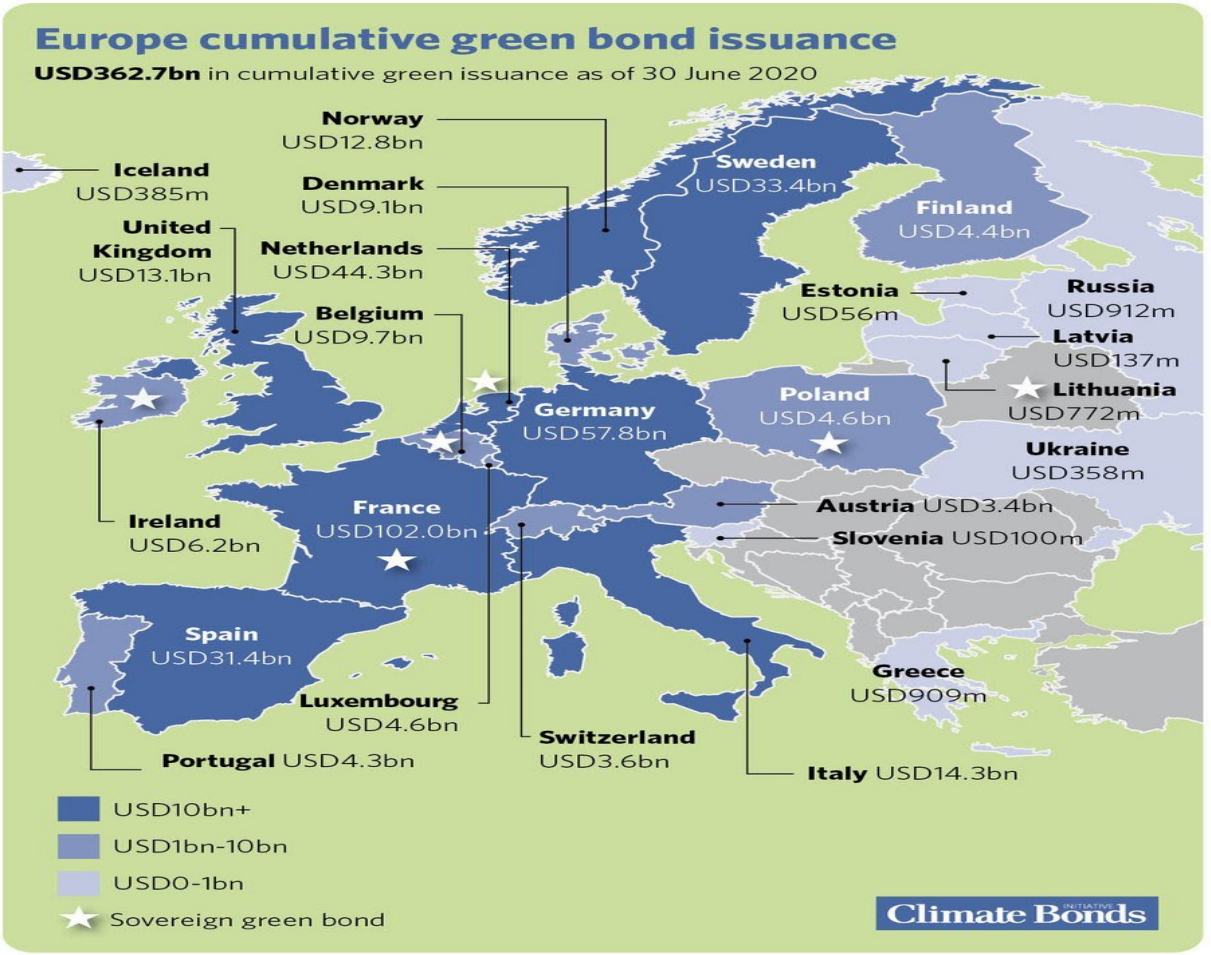
Continuing the free allocation of allowances as a safeguard for the international competitiveness of industrial sectors at risk of carbon leakage, while ensuring that the rules for determining free allocation are focused and reflect technological progress

Helping industry and the power sector to meet the innovation and investment challenges of the low-carbon transition via several low-carbon funding mechanisms

Efficiency-Equity-Sustainable Finance

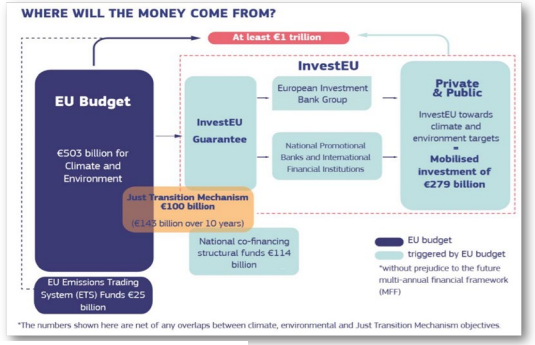
Measures to counterbalance the regressive effects of decarbonization policies:

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



Transition Bonds

Needed to Leverage Private Funds for InvestEU & Implementation of EGD



European Economic and Social Committee

NAT/778

Financing the Transition to a Low-Carbon Economy and the Challenges in Financing Climate Change Adaptation

DRAFT OPINION

Section for Agriculture, Rural Development and the Environment

Financing the Transition to a Low-Carbon Economy and the Challenges in Financing Climate Change Adaptation
(exploratory opinion)

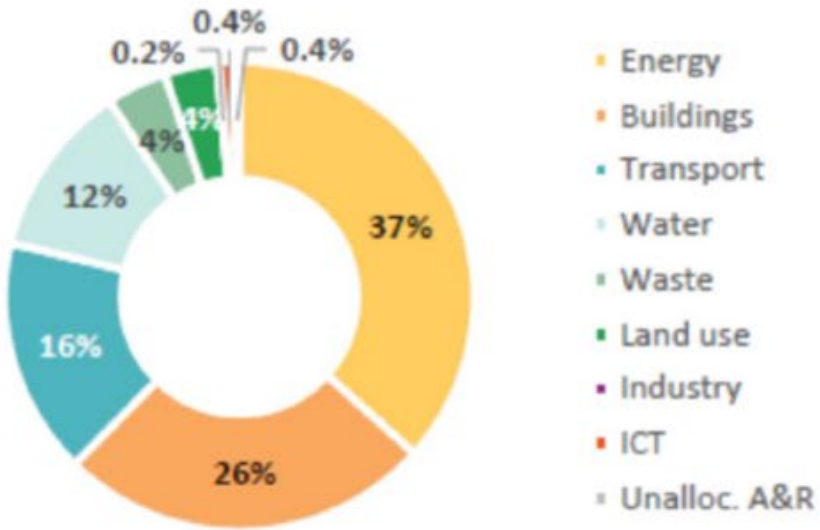
Rapporteur: **Toni Vidan (HR/III)**
Co-rapporteur: **Dimitris Dimitriadis (EL/I)**

Expert: Prof. Phoebe Koundouri

Green bonds

- A **green bond** has the same financial characteristics of a conventional bond, with the special commitment that the proceeds from the bond will be used to finance green projects that deliver environmental benefits.
- The "**use of proceeds**" is what distinguishes green bonds from conventional bonds.
- There is **not a globally agreed methodology** for establishing which projects are "green".

80% of issuance to date is allocated to Energy, Buildings and Transport



Source: Bloomberg and CBI data (2018)

An example of a successful Green Bond

Enel SpA placed three green bonds on the European market: 2017,1.25 billion euros, 2018, 1.25 billion euros and 2019, 1 billion euros, (total 3.50 billion euros). The green bonds are for institutional investors and are guaranteed by Enel SpA.

GB emission	Area of investment	Allocated GB proceeds	Installed capacity[1] (MW)	CO_2 avoided (t)
2017	Renewables	**1,237 mil euros**	3,319	9,165,814
2018		**1,240 mil euros**		
of which new renewable projects	Renewables	575 mil euros	1,878	1,712,117
of which new Infrastructure and Networks projects	I&N	665 mil euros	n.a.	26,287
2019		**985.6 mil euros**	734	n.a.
of which new projects identified in 2019	Renewables	71.1 mil euros	734	n.a.
of which new Capex for 2018 projects	Renewables	342.5 mil euros	n.a.	n.a.
of which new Capex for 2017 projects	Renewables	572 mil euros	n.a.	n.a.

1 29.4 MW were installed for the Delfina plant in 2019, augmenting the 180 MW of 2018, while 33 MW were installed for the Cerro Pabellón plant, augmenting the 48 MW of 2018.

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.

Control the Epidemic, Create Jobs, Embrace Green Taxonomy for Investments

1. Control of the epidemic, Biomedical research (vaccines, drugs, diagnostics)

2. Renewable energy (wind, solar, kick-start clean hydrogen economy) and Climate Adaptation Investments

3. Circular economy and massive renovation wave for buildings and infrastructure

4. Cleaner transport and logistics

5. Food security and smart agriculture

6. Secure ICT networks (privacy standards, 5G rollout, etc.)

8. Strengthen Just Transition Fund for re-skilling helping businesses create new economic opportunities: Sustainability Education, Training, Capacity Building and Innovation

The transition should **"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.

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

Cluster for Sustainability Transition: Transforming Research and Innovation into Climate Action

Director: Professor Phoebe Koundouri

The Cluster on Sustainability Transition (CST)

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ReSEES, AUEB
https://www.dept.aueb.gr/en/ReSEES

SDSN GREECE

UN SDSN GREECE
http://www.unsdsn.gr/

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EIT Climate-KIC HUB GR
https://www.athena-innovation.gr/en/eit-climate-kic-greece-hub

CLUSTER ON SUSTAINABILITY TRANSITION

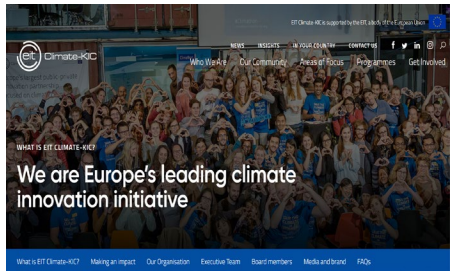
Research - Innovation Acceleration
Deep Demonstration - Education & Training

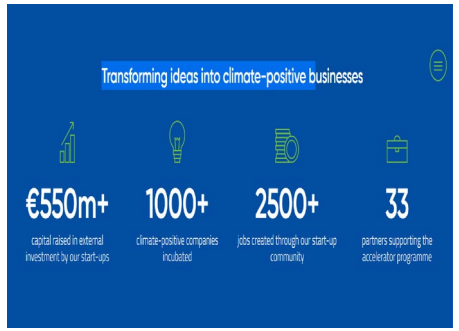
Research and Innovation Projects
Global Initiatives

BRIGAID
OpenAIRE
simra Social Innovation in Marginalised Rural Areas
AMAre
COASTAL Collaborative Land-Sea Integration Platform
eit Climate-KIC
SMIRES 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
erc European Research Council Supporting top researchers from anywhere in the world

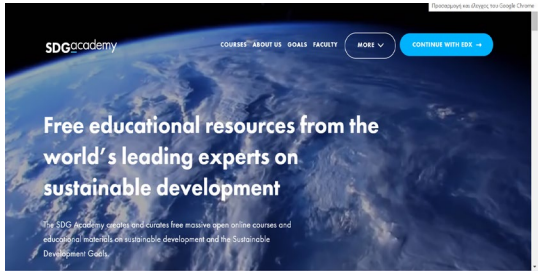
Smart Water Futures:

Innovation Acceleration
Deep Demonstration





Education & Training
Awareness



MSc in Law and Economics in Energy Markets

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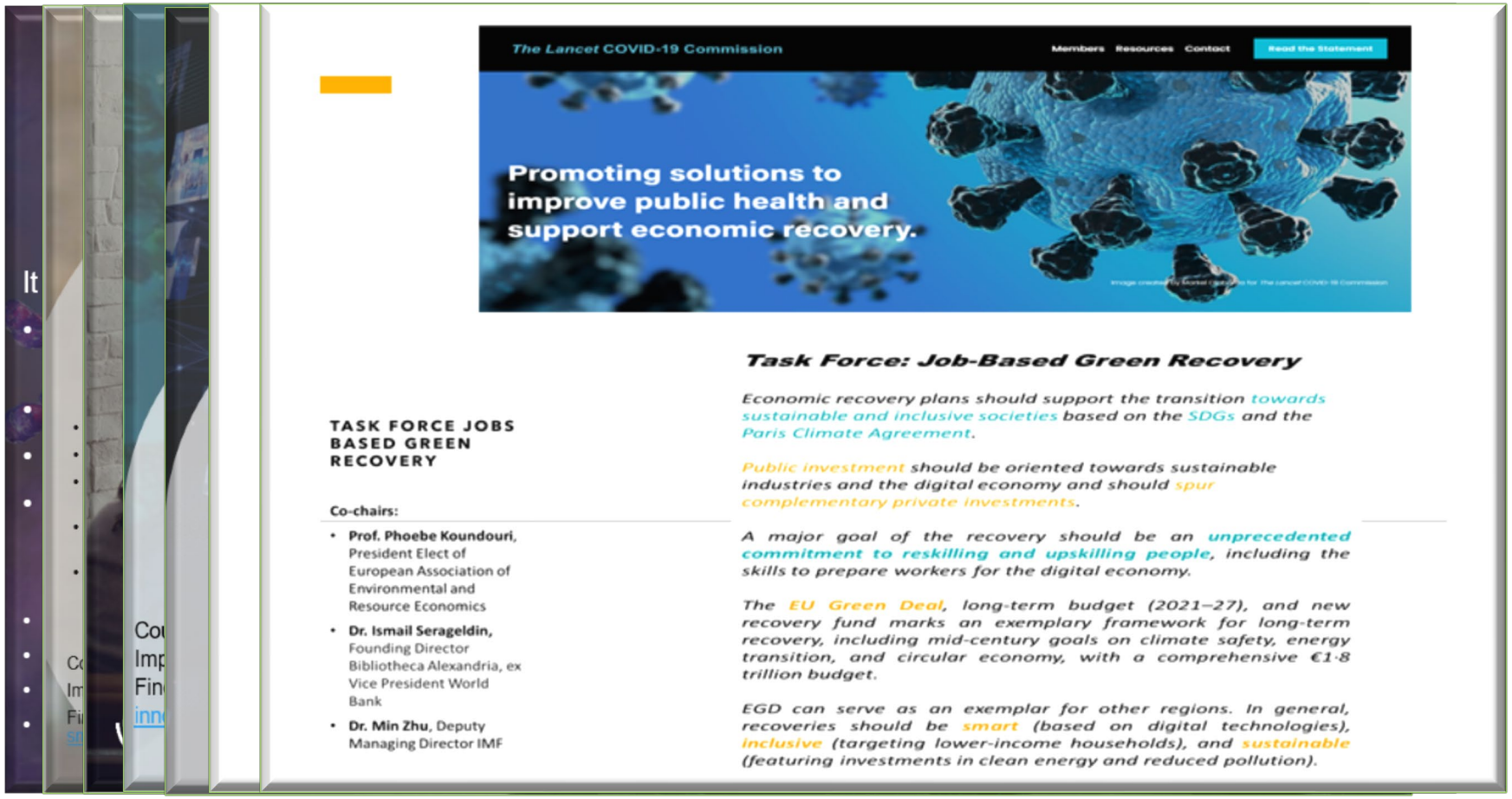
Projects

Circular Economy
Green-Digital-Just Recovery
Climate Change Mitigation and Adaptation



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

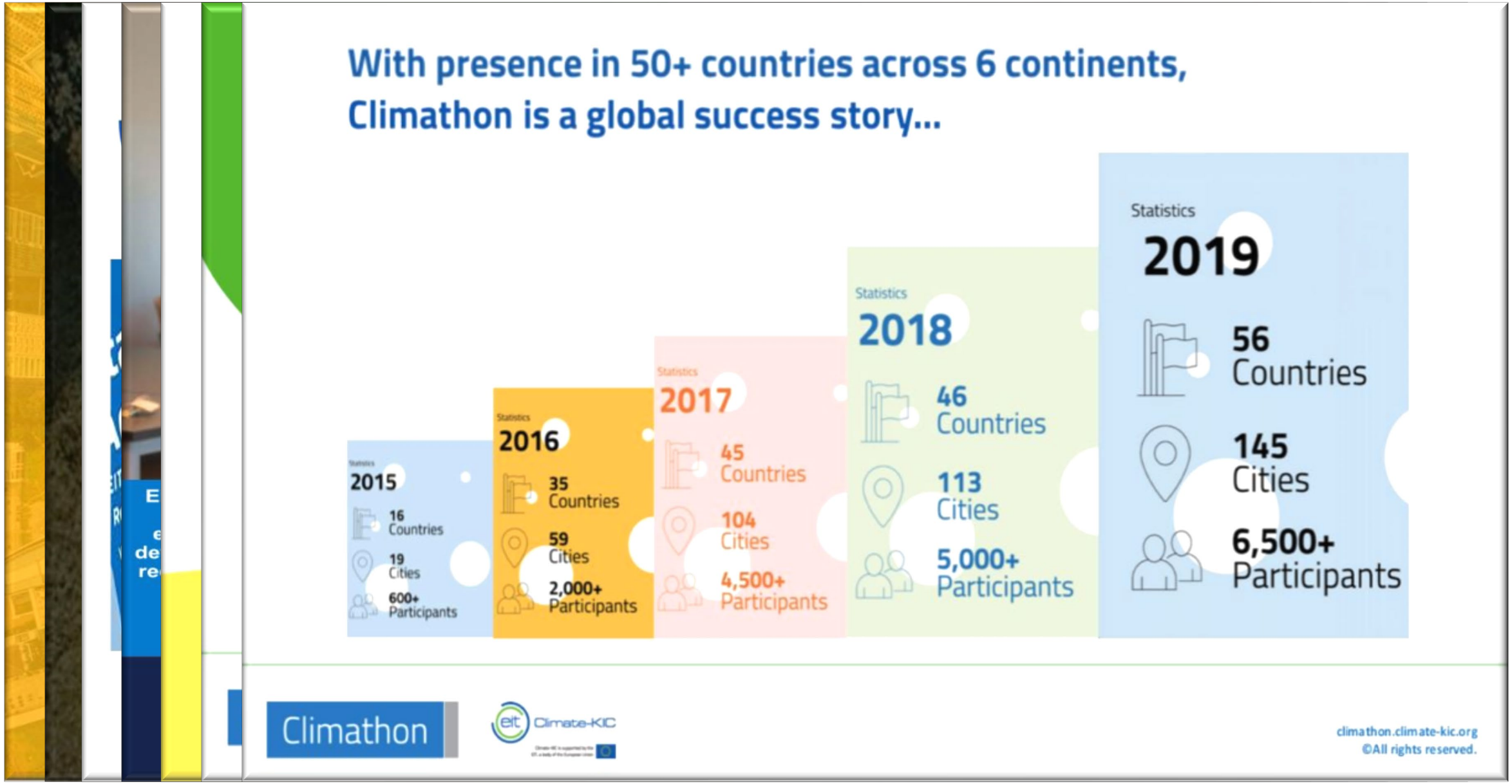
- Aims at bringing together **researchers and technology developers, shipbuilders, shipowners, ports, policy makers and politicians**, from across the globe, to work on technological and policy innovations, related to zero emissions shipping, to target net-zero emissions by 2050.
- Find more at: http://www.unsdsn.gr/global-roundtable-for-sustainable-shipping-2

Projects

Blue Growth

Projects Water-Food-Energy Nexus
Smart Agriculture & Smart Urban Water Systems

EIT Climate KIC **Programs**



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.

GLOBAL GREEN

earthfund

www.earthfundglobal.org

earthfund greece

Climate-KIC

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

Deep Demonstration on Zero-Net Emissions, Resilient Maritime Hubs

Maria Loloni, Maritime Programme Manager, EIT Climate-KIC

Lydia Papadaki, Manager EIT Climate-KIC Hub Greece

Prof. Phoebe Koundouri, Director EIT Climate-KIC Hub Greece

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Our 10-year track record in climate innovation

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

1600+
climate-positive start-ups incubated

€3.4bn+
climate funding leveraged

595
new products and services

€550m+
total value of funds managed

391+
formal partners, across 33 countries *(including Linked 3rd Parties)*

>€1bn
investment attracted to start-ups

>2,300+
full-time jobs created since 2010

44,000
participants in our education activities

Climate-KIC

Deep Demonstrations

Place-based

Vehicle for fair transformation

Collaborative

Systems innovation service

Addressing problems across levers of change

Rapid-connected experiments

Deep Demonstration for Zero-Net Emissions in the Port of Piraeus

create conditions for the unexpected

- decarbonization of the Port of Piraeus
  - the second maritime cluster globally
  - and a particular hotspot of waste and shipping industry emissions
- identify **cause and effect relationships**, dependencies and opportunities to look for breakthrough possibilities
- Create **innovation clusters**

Challenge owners: Piraeus Port Authority, Valencia Port, Ministry of Shipping, Cyprus
Implementation period: 2019-2022
Find more at: https://www.athenarc.gr/el/deep-demonstration-projects-sustainability-transition-european-ports

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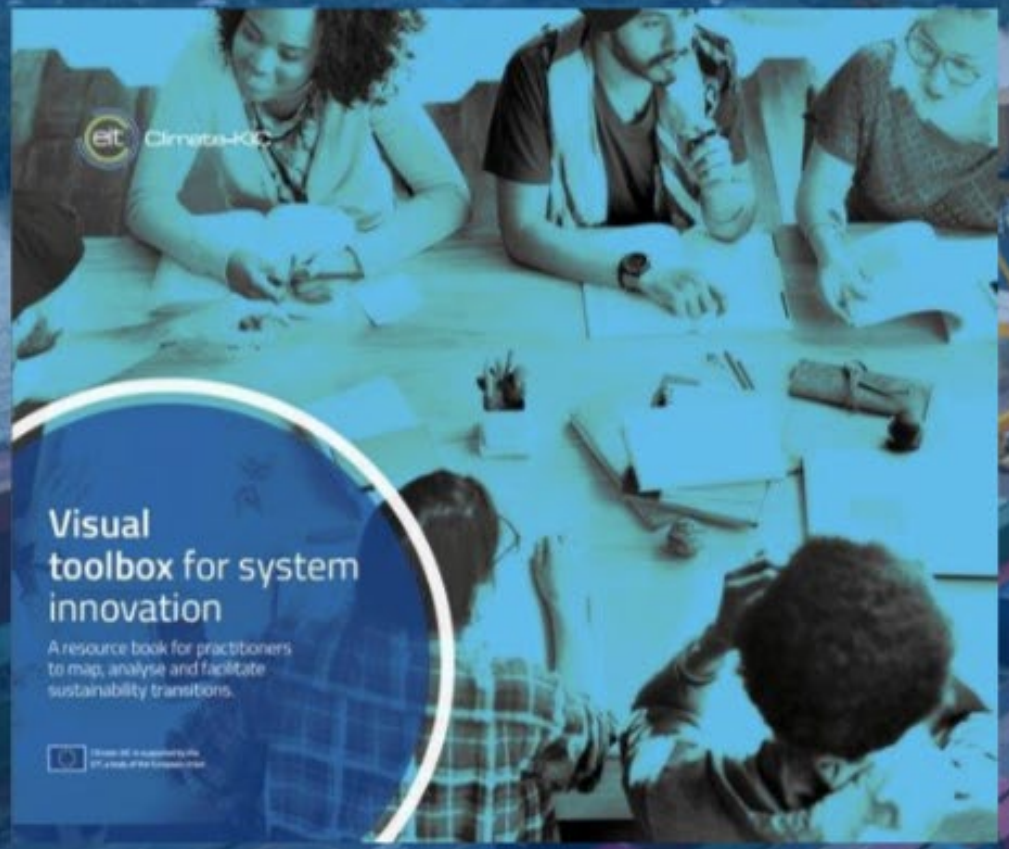
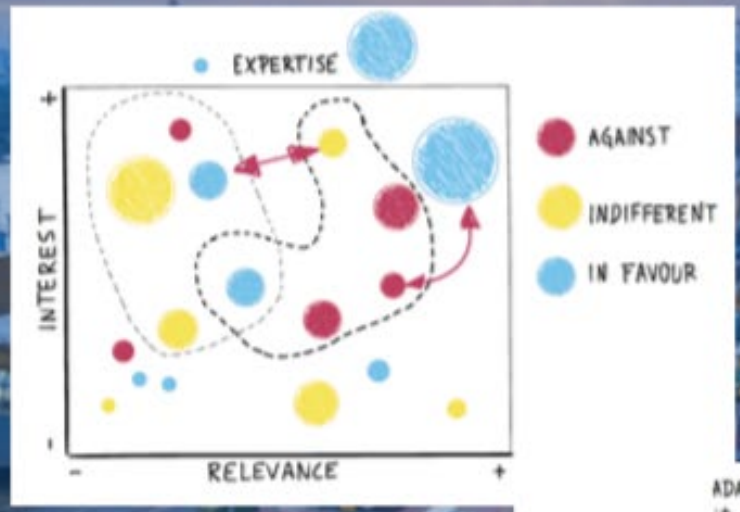
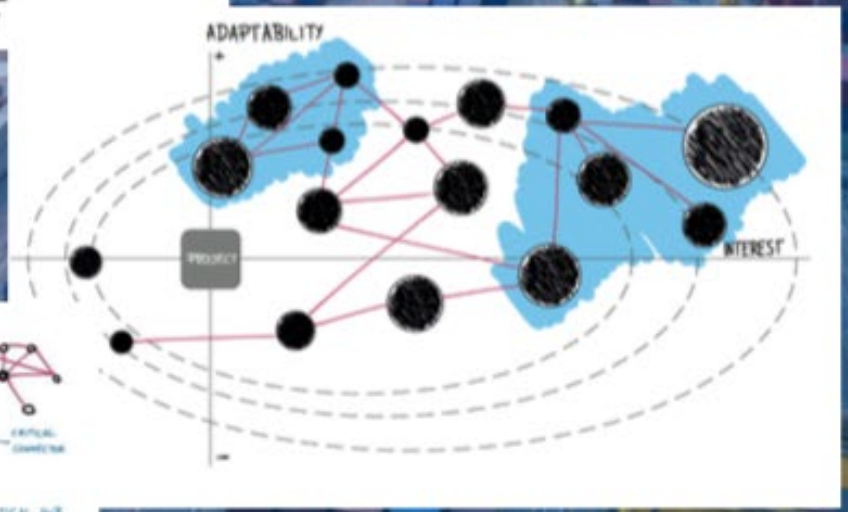
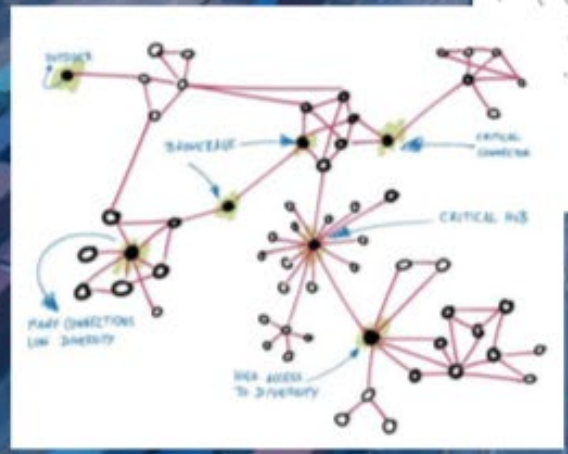
Who do we Work with? Stakeholder Mapping









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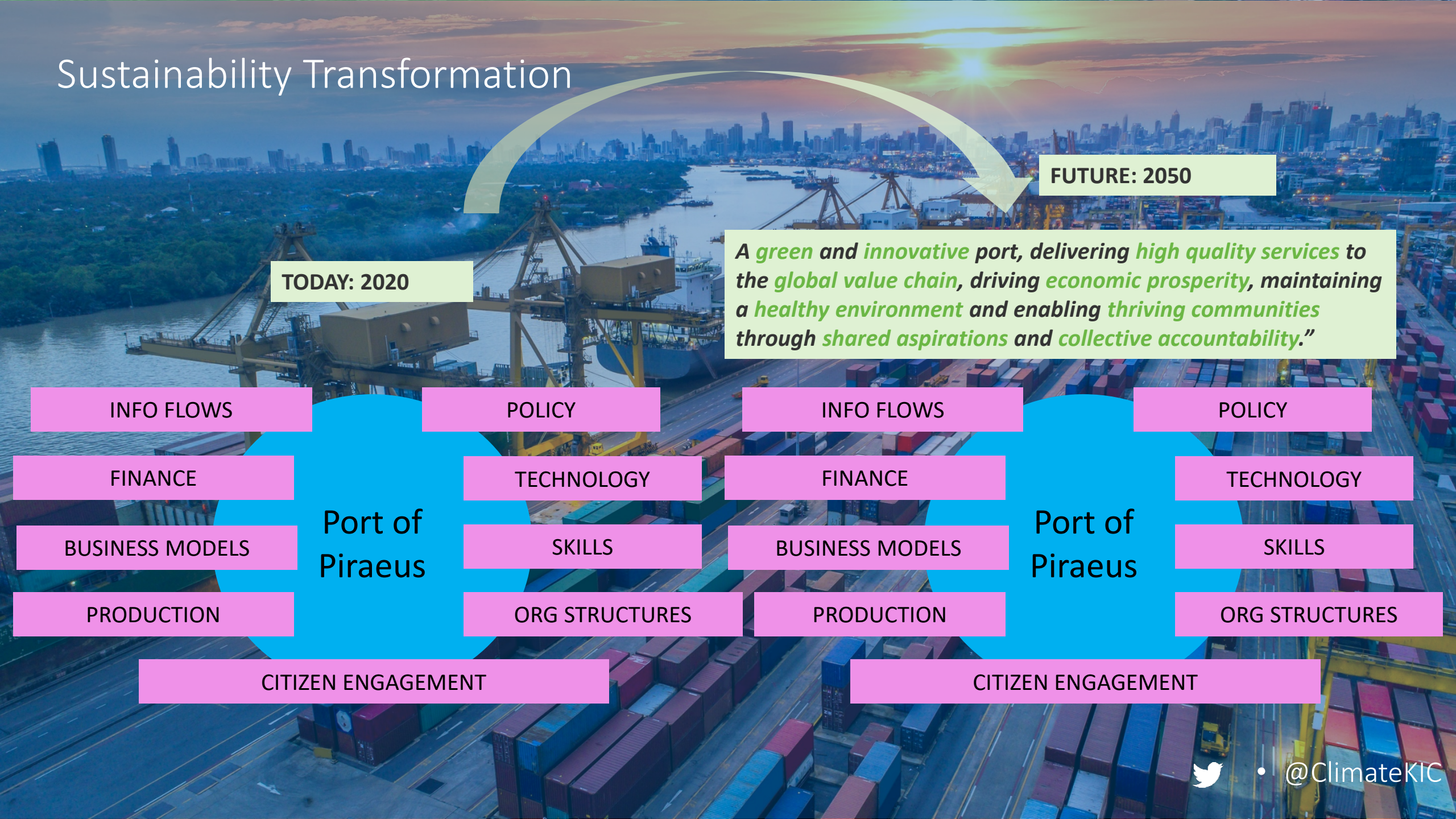
Working Vision Port of Piraeus

"A green and innovative port, delivering high quality services to the global value chain, driving economic prosperity, maintaining a healthy environment, and enabling thriving communities, through shared aspirations and collective accountability."

Sustainability Transformation



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CURRENT STATUS & NEXT STEPS

VISION 2030/2050

PRIORITY AREAS
(eg Energy, Mobility, Waste Management)

Technology

Energy

Mobility

Waste Management (circularity)

Community engagement

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CURRENT STATUS & NEXT STEPS

VISION 2030/2050

PROBLEM SPACES
(eg Community engagement)

PRIORITY AREAS
(eg Energy, Mobility, Waste Management)

Organisational Structure / Information flows

Technology

Policy not aligned, slow

Skills for the new economy are lacking

Citizen & stakeholder engagement poor + cultural distance

Financial System supports economic values (not socia/environmental)

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

Hamanova-Rondini, Mariyana, Cleantech Bulgaria Ltd

Alexieva, Dianka, Cleantech Bulgaria Ltd

Ilieva, Desislava, Cleantech Bulgaria Ltd

Papadaki, Lydia, Cleantech Bulgaria Ltd

Shtereva, Eli, Cleantech Bulgaria Ltd

Prof. Phoebe Koundouri, Athens University of Economics and Business

Prof. Lena Tsipouri, National and Kapodistrian University of Athens

Lydia Papadaki, PhD Candidate Athens University of Economics and Business

Maria Argirou, PhD candidate National and Kapodistrian University of Athens

Funded by EIT Climate-KIC
Implementation period: June 2019 – December 2019
Budget: €47,000

Find more at: https://www.athenarc.gr/el/circular-economy-transition-ce-smart-specialization-strategy-s3

SSS is a **regional development tool**, aiming at maximising economies of agglomeration and economies of scope

The CE is a **way of producing and consuming**, a priority for the UN and the EU leading to an encompassing strategy with common elements across the globe

A key question then is **whether**, **to what extent** and **how** the two could become mutually reinforcing

GREECE: CE in S3	Level	Type of Intervention	Description
RIS	National	Action	Increase investment in existing companies to introduce new products and services to the market and to develop and implement modern production methods
RIS	Regional - Attica	Indicative actions	Products and processes for the management and exploitation of trash, residues and waste
RIS	Regional - Central Greece	Action	Modernizing and applying sustainable farming methods
RIS	Regional - Central Macedonia	Action	"Synthesis of artificial marble using recyclable aggregates"
RIS	Regional - Crete	Indicative Implementation Priorities	Utilization of agricultural waste products for the production of high nutritional value feed
RIS	Regional - Eastern Macedonia & Thrace	Priority of Intervention	Utilizing alternative uses of primary by-products, including their use as an energy resource.
RIS	Regional - North Aegean	Project	3 pilot projects for the management of organic plant materials and waste for compost and / or pellet production
RIS	Regional - Eastern Macedonia & Thrace	INTEGRASTE	Utilizing alternative uses of primary by-products, including their use as an energy resource.

Whether, to what extent and how the two can become mutually reinforcing: lessons from Greece

Problems

1. The 2014-2020 O.P. was too ambitious to be implemented
2. RISs could not (yet) play the ambitious role they were expected to play
3. Governance issues indicate reluctance to change

Opportunities

1. CE could be used as an opportunity to leapfrog for the economy
2. SSS can include CE aspects tailor-made to their competitive advantages
3. Identify and support regions willing to use their revised RIS as a CE model


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

Circular Learning Hub

A learning hub for the engagement and ecosystem transition towards circular thinking

Countries: Italy, Greece, Bulgaria
Implementation period: 2019-2020
Budget: € 331,186
Find more at: https://www.athenarc.gr/el/circular-learning-hub-cl-hub-learning-hub-engagement-and-ecosystem-transition-towards-circular

Virtual reality experiment

- an **awareness-intention-action path** of intervention
- fostering problem-owners in the ecosystem (firms, investors, citizens, policy makers, regulators, universities, associations, etc.) to a deeper understanding and involvement in the **circular thinking.**
- testing on a defined group of investors and entrepreneurs a **multi-sensor and multi-virtual experiment**

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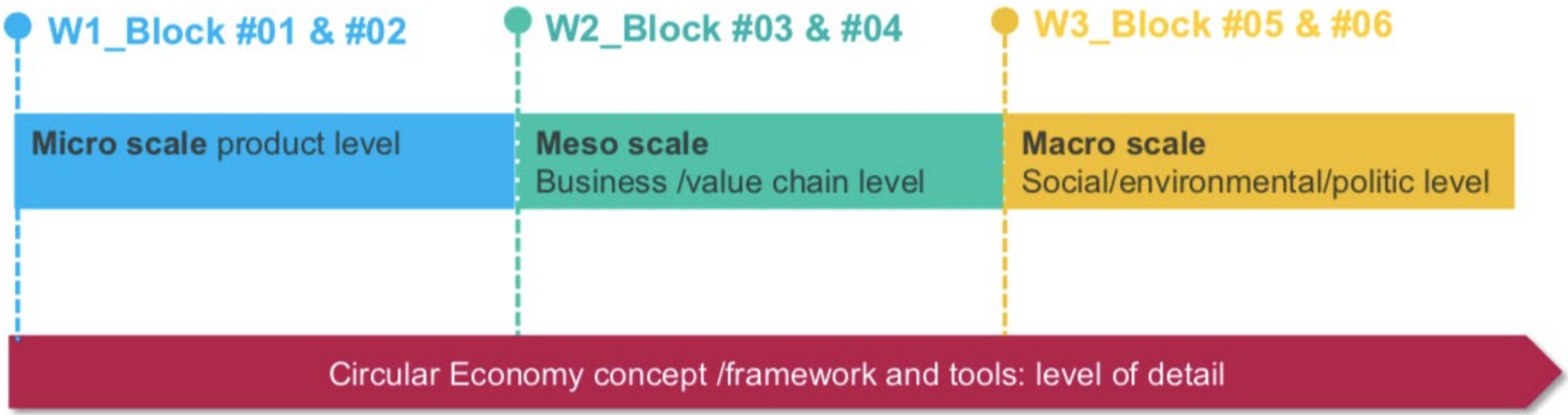
Experiment phase in Greece

We are testing on a defined group of investors and entrepreneurs some de-biasing videos specifically designed to overcome the hyperbolic discount bias on one of the priorities for the contrast to the climate change, which is the implementation of circular thinking in the industry production to reduce waste and gas emissions coming from the materials' processes and the re-orientation of capitals towards circular models.

Outline of CE local training:



Identify problems/key factors and find solution for CE transition

How to identify worthwhile **CE approaches**

day 1

goal

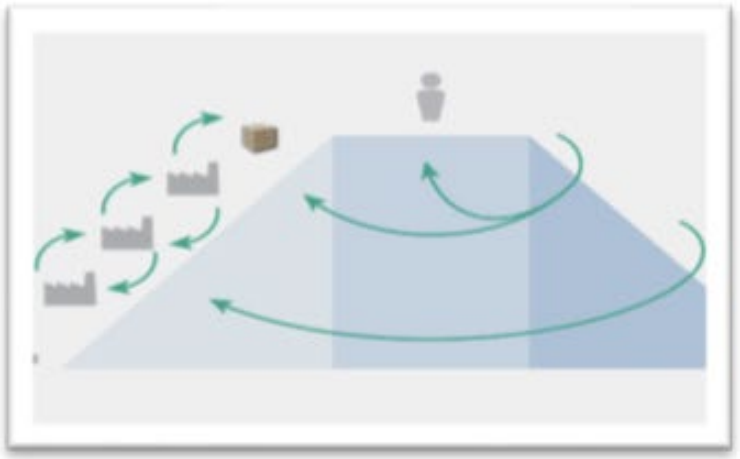
Map resource flows and Identify structural waste using a fictional case

tools

- Value Hill
- Structural waste
- Circularity compass

Guest speaker

Bill Stenos, CEO and Founder, Solmeya



day 2

How to develop worthwhile CE approaches into **realistic action plans**

goal

Ecodesign strategies, stakeholder, risk factors and opportunities. Start working on a business model

tools

- Circularity grid
- SWOT Analyisis
- Circularity strategy scanner
- Circular business model

Guest Speaker

COMING SOON!

How to make worthwhile CE approaches a **success**

Day 3

Goal

Systemic factors are integrated in the BM. Scenarios in a larger timescale. Preparing for experimentation.

tools

- Pestle
- Backcasting
- Cynefin framework
- Lean startup cycle

Guest Speaker

COMING SOON!