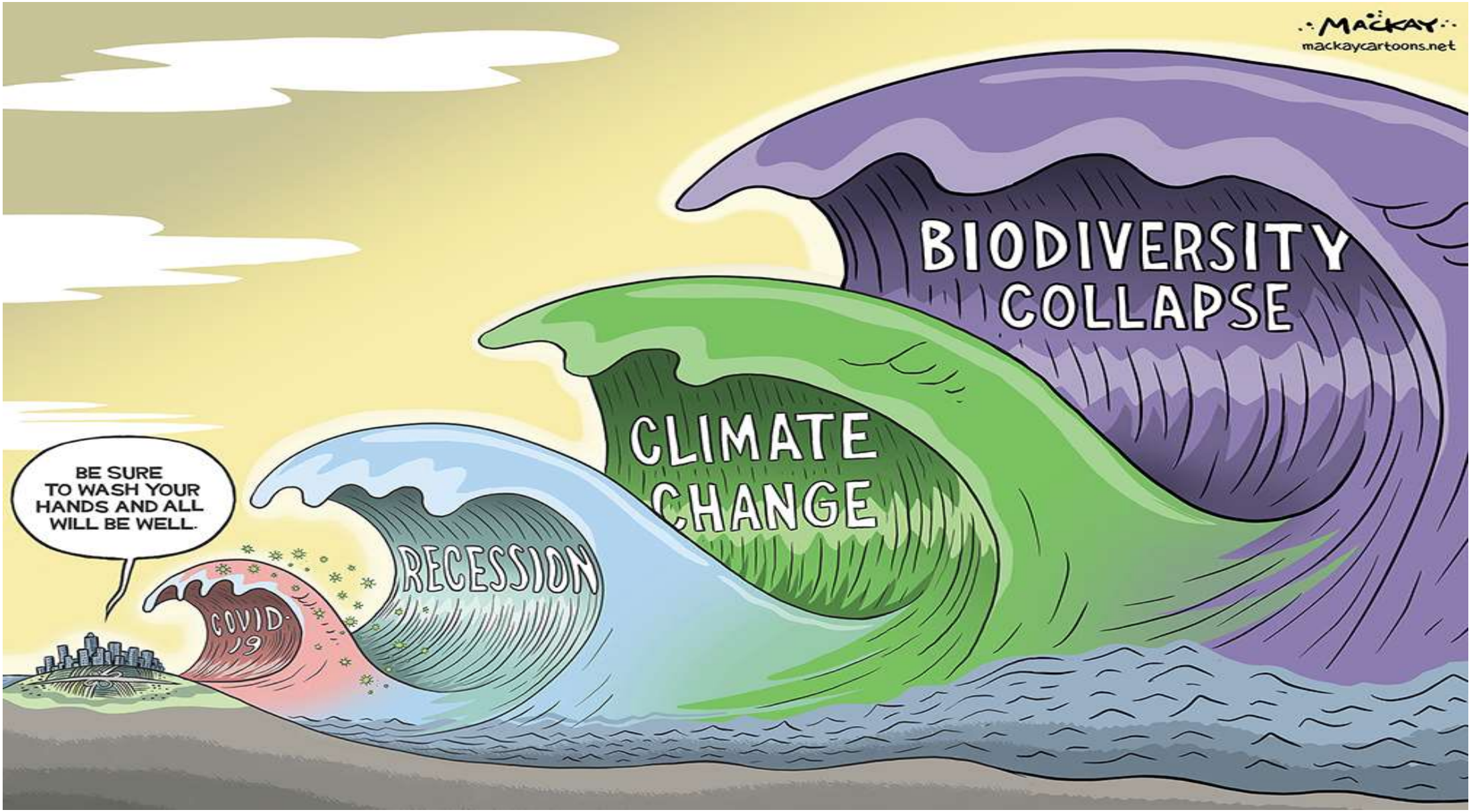

MACKAY
mackaycartoons.net
BIODIVERSITY COLLAPSE
CLIMATE CHANGE
RECESSION
COVID-19
BE SURE TO WASH YOUR HANDS AND ALL WILL BE WELL.

International Cluster for Research on Sustainability Transition (ICRE8)

Transforming Research and Innovation into Sustainability Action

Director: Professor Dr. Phoebe Koundouri www.phoebekoundouri.org
President-elect, European Association of Environmental and Resource Economist
Fellow, World Academy of Art and Science

ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

Research laboratory on Socio-Economic and Environmental Sustainability
ReSEES

ATHENA
Research & Innovation Information Technologies

Sustainable Development Unit

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

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

SDSN Europe

SDSN GREECE

International Cluster for Research on Sustainability Transition

Director: Prof. Phoebe Koundouri

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

THEMIS

DAFNE

H2Ocean

Euro-limpacs

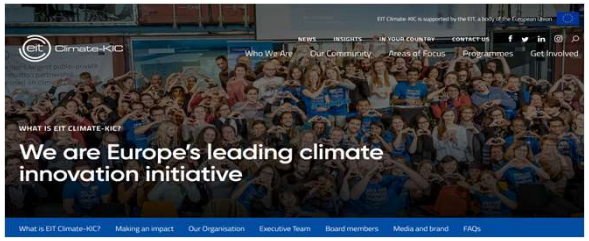
CIGESMED

AquaSTRESS

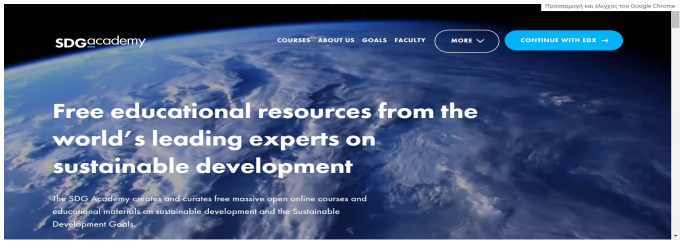
erc European Research Council Supporting top researchers from anywhere in the world

Smart Water Futures:

Innovation Acceleration Deep Demonstration



Education & Training & Policy Interface



MSc in Law and Economics in Energy Markets

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ΚΕΝΤΡΟ ΕΠΙΜΟΡΦΩΣΗΣ ΚΑΙ ΔΙΑ ΒΙΟΥ ΜΑΘΗΣΗΣ

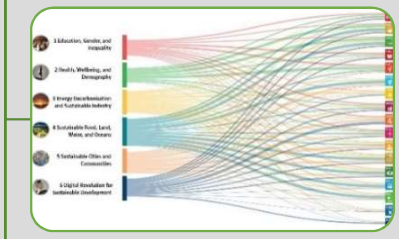
The Policy Framework for the "Transition to Sustainability"

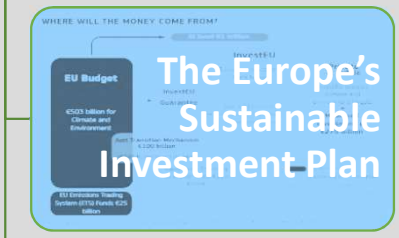
2015

Limiting global temperature to well below +2o C

2018

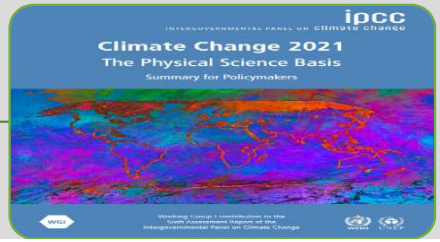
2019





2020

2021




SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

1 Education, Gender, and Inequality

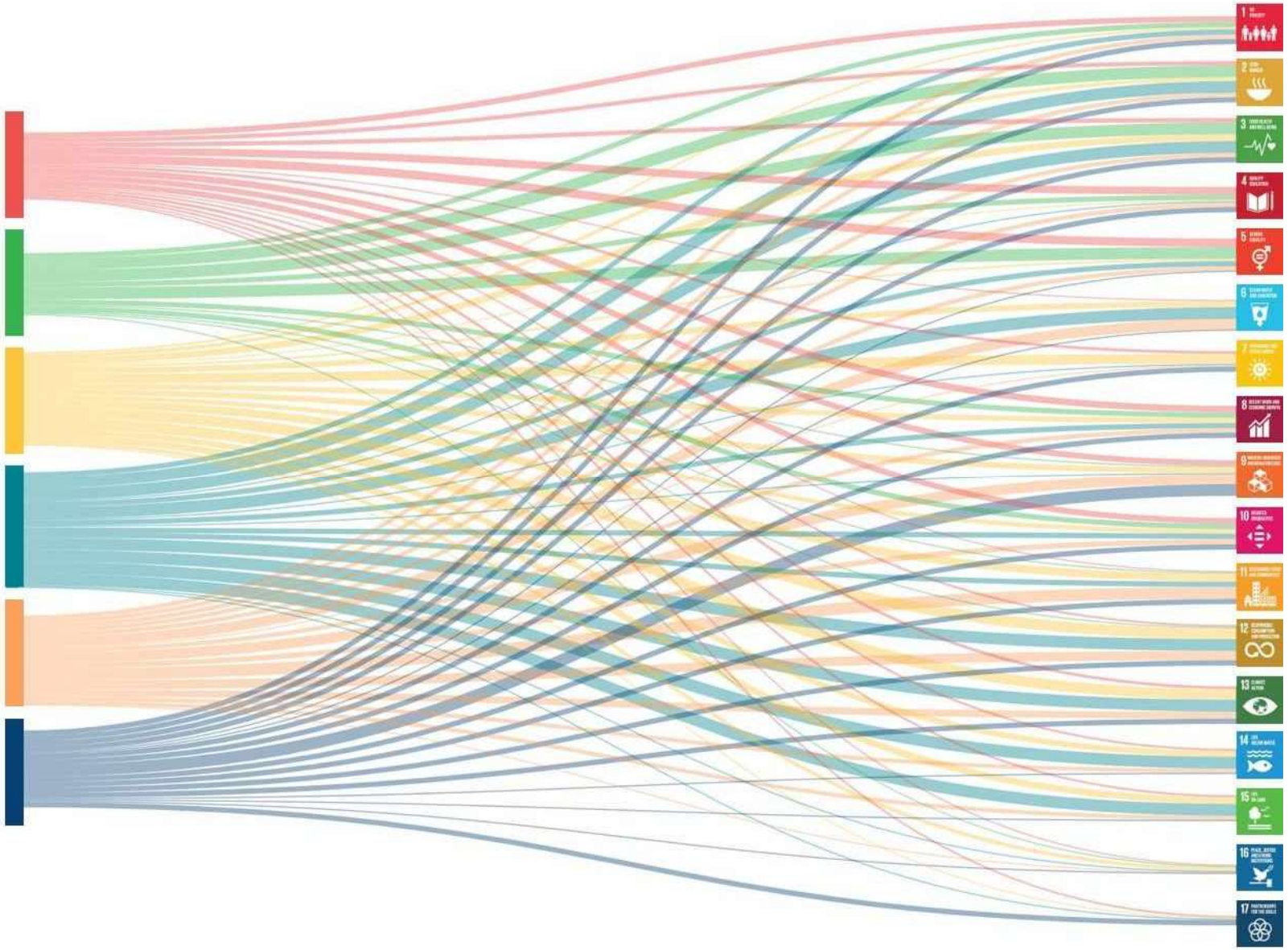
2 Health, Wellbeing, and Demography

3 Energy Decarbonisation and Sustainable Industry

4 Sustainable Food, Land, Water, and Oceans

5 Sustainable Cities and Communities

6 Digital Revolution for Sustainable Development



European Commission

What is the European Green Deal?

December 2019
#EUGreenDeal

The European Green Deal is about **improving the well-being of people**. Making Europe climate-neutral and protecting our natural habitat will be good for people, planet and economy. No one will be left behind.

The EU will:

- Become climate-neutral by 2050
- Protect human life, animals and plants, by cutting pollution
- Help companies become world leaders in clean products and technologies
- Help ensure a just and inclusive transition

"The European Green Deal is our new growth strategy. It will help us cut emissions while creating jobs."

Ursula von der Leyen, President of the European Commission

"We propose a green and inclusive transition to help improve people's well-being and secure a healthy planet for generations to come."

Frans Timmermans, Executive Vice-President of the European Commission

93% of Europeans see **climate change** as a **serious problem**

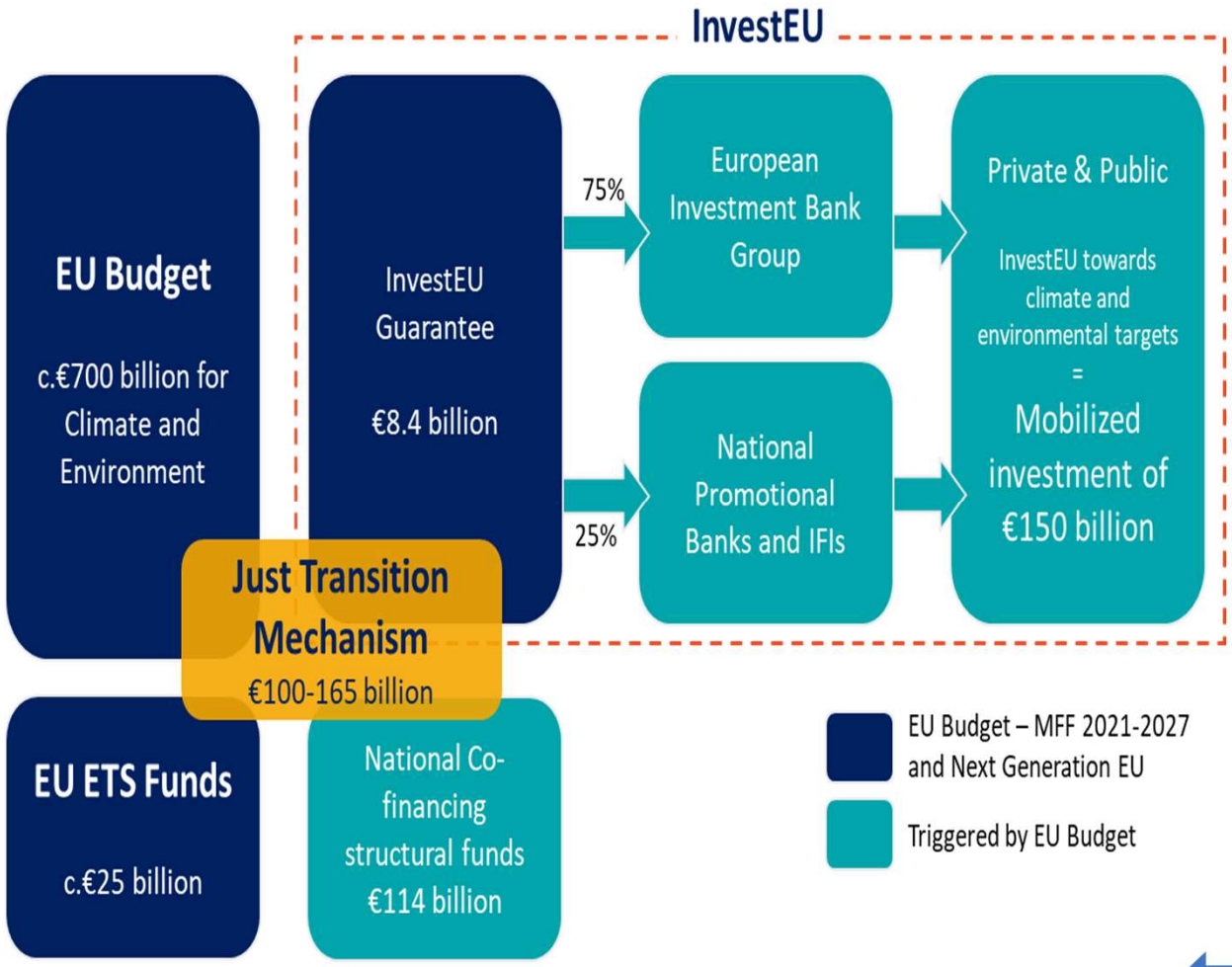
93% of Europeans have **taken** at least one **action** to tackle climate change

79% agree that taking action on climate change will **lead to innovation**

The Sustainable Europe Investment Plan

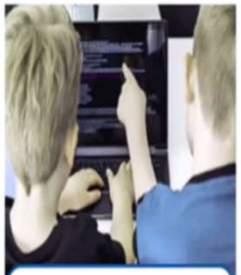
Mobilising €1 trillion over the period 2021-2030 requires a combination of funds:

- EU budget (MFF & NGEU combined) will provide about €547 billion for the years 2021-2027, extrapolated to 10 years, €700 billion
- InvestEU Fund leverage €108 billion from 2021 until 2027, €150 billion over a decade of private-public climate and environmentally-related investments
- The Just Transition Mechanism will reach €140 billion to ensure a just transition
- The Innovation and Modernisation funds will provide at least some €25 billion for EU transition to climate neutrality.



Supporting the digital transition

Improve connectivity



Help citizens develop digital skills

Deploy cutting edge technologies

Improve cyber security

- Min. **20%** of **digital-related expenditure**

European Commission

Supporting the green transition = implementation of EU Green Deal

Decarbonise power generation and industry

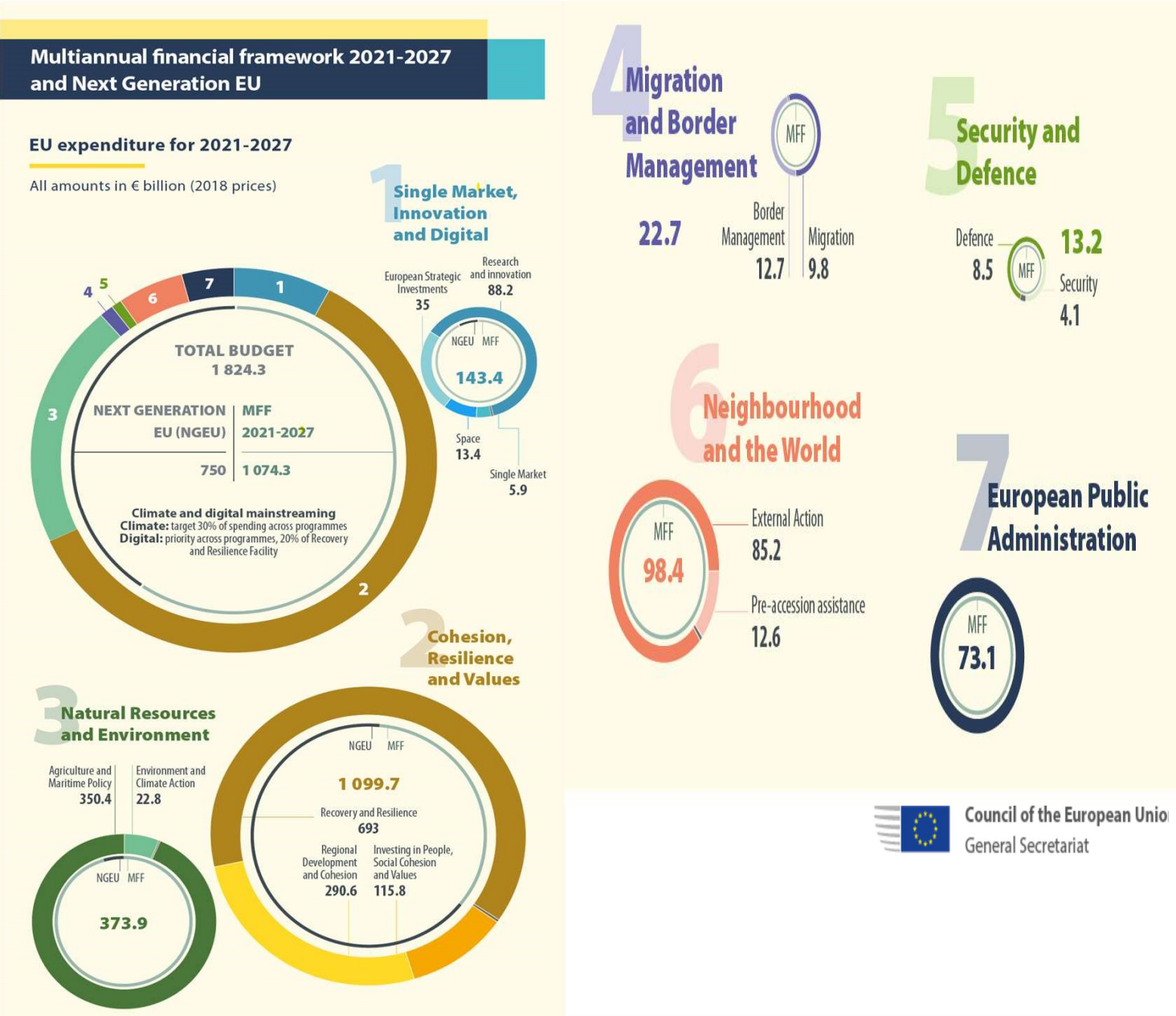
Promote a more circular economy

Protect and restore biodiversity

Strengthen sustainable mobility

- **Min. 37% of climate-related** expenditure
- **Each** measure to respect **"do no significant harm" principle**

European Commission



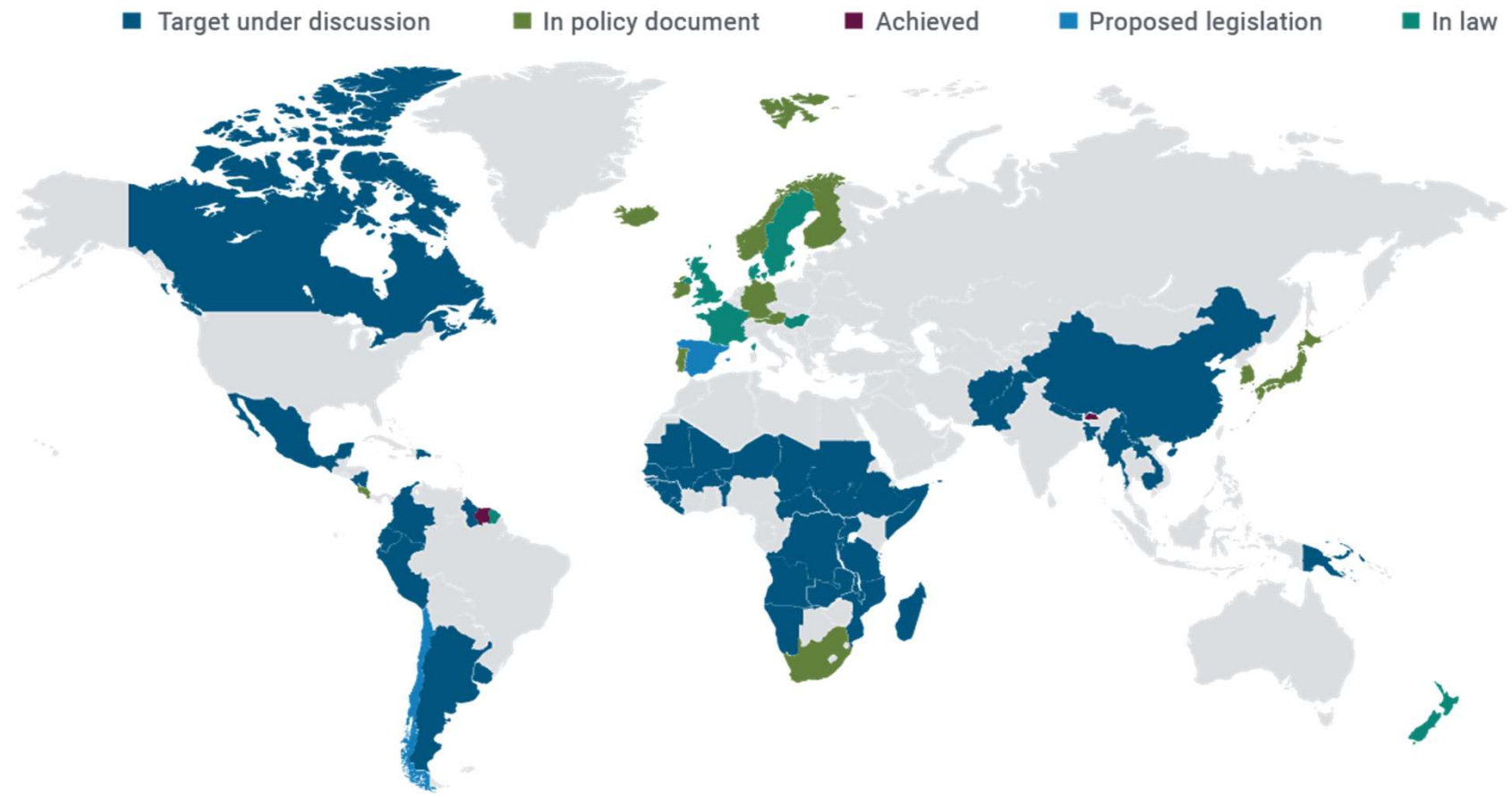
NextGenerationEU breakdown

Recovery and Resilience Facility (RRF)	€672.5 billion
of which, loans	*€360 billion*
of which, grants	*€312.5 billion*
ReactEU	€47.5 billion
Horizon Europe	€5 billion
InvestEU	€5.6 billion
Rural Development	€7.5 billion
Just Transition Funds (JTF)	€10 billion
RescEU	€1.9 billion
TOTAL	**€750 billion**

Source: Conclusions of the European Council of 21 July 2020

Race to Net Zero: Carbon Neutral Goals by Country

Figure 1: Net zero targets – 126 countries have set goals to decarbonize their economies



Source: BNEF (Bloomberg New Energy Finance), Climate Action Tracker, Climate Change News, and PIMCO as of October 2020

European Climate Law – 21 April 2021

European Council and European Parliament negotiators reached a provisional political agreement setting into law the objective of a climate-neutral EU by 2050, 55% reduction of GHG emissions by 2030 (compared to 1990).

- Priority to emissions reductions over removals
- Establishment of a European Scientific Advisory Committee on Climate Change
- Land Use, Land Use Change and Forestry (LULUCF) policy should contribute more to reducing EU emissions
- Intermediate climate target for 2040 to be published by the Commission
- Commitment to negative emissions after 2050
- Stricter provisions on adaptation to climate change
- Stronger coherence between common European policies aimed at climate neutrality
- Commitment to cooperate with different sectors of the economy to create sector-specific roadmaps towards climate neutrality

Ελληνικός Κλιματικός Νόμος. Νοεμβριος 2021

- Μείωση εκπομπών αερίων θερμοκηπίου 55% το 2030 σε σχέση με το 1990, 80% το 2040, κλιματική ουδετερότητα το 2050
- Τομεακοί «προϋπολογισμοί άνθρακα»: Παραγωγή Ηλεκτρικής Ενέργειας, Μεταφορές, Βιομηχανία, Κτίρια, Γεωργία και Κτηνοτροφία, Απόβλητα, Χρήσεις Γης, αλλαγές χρήσεων γης και Δασοπονία.
- Απαγόρευση χρήσης καυστήρων πετρελαίου θέρμανσης & πώλησης αυτοκινήτων με κινητήρες βενζίνης ή πετρελαίου από το 2030
- Κατάργηση της χρήσης μαζούτ για παραγωγή ρεύματος
- Υποχρεωτική ασφάλιση κτιρίων σε περιοχές υψηλού κλιματικού κινδύνου
- Κλιματικές Επιπτώσεις στην Μελέτη Περιβαλοντικών Επιπτώσεων

21st April: EU Taxonomy Package of Measures
EU global leader in sustainable finance

- **Improve the flow of money towards sustainable activities** by enabling investors to re-orient investments towards more sustainable technologies and businesses. To qualify as 'green':

Climate change mitigation/ Climate change adaptation/ Sustainable use and protection of water and marine resources/ Circular economy/ Pollution prevention and control/ Biodiversity

- **Proposal for a Corporate Sustainability Reporting Directive (CSRD)**

Extends scope to all large companies and all companies listed on regulated markets/ requires the audit (assurance) of reported information/ introduces more detailed reporting requirements/ requires companies to digitally 'tag' the reported information, so it is machine readable and feeds into the European single access point as per capital markets union action plan

- **Six amending Delegated Acts on fiduciary duties, investment and insurance advice**, to ensure that financial firms include sustainability in their procedures and their investment advice to clients.

Europe's 'Fit for 55': A climate package with 13 legislative proposals

Revision of the energy taxation directive	• Last agreed in 2003, the energy taxation directive is in desperate need of an update. It sets minimum tax rates for energy products, like heating, transport fuels and electricity, but was never adjusted to inflation.
New EU forest strategy	• The Commission plans to adopt stronger and more transparent governance rules for forestry and reaffirm its commitment to strictly protect all primary and old-growth forests, which would be defined at EU level.
Revision of the directive on deployment of alternative fuels infrastructure	• In addition to facilitating recharging for electric cars and refuelling for hydrogen trucks, the revision seeks to end the current lack of transparency on pricing and facilitate cross-border payments when charging e-vehicles, an issue flagged by the European Court of Auditors in a recent report.
Revision of the regulation setting CO2 standards for new cars and vans	• Last updated in 2019 (and only in force since the start of 2020), the regulation allocates vehicle manufacturers a carbon budget based on the weight of vehicles registered in a given year. Should emissions exceed the CO2 target assigned, the manufacturer must pay a penalty on the excess emissions.
ReFuelEU Aviation – sustainable aviation fuels	• ReFuelEU Aviation aims to cut emissions in the notoriously carbon-intensive aviation sector by increasing the amount of green jet fuel used within the EU. To increase the supply of sustainable aviation fuels (SAFs), the EU is set to impose a blending mandate. All aircraft departing from EU airports will be required to refuel using green jet fuel.
FuelEU Maritime – green European maritime space	• Similar to its aviation counterpart, FuelEU Maritime aims to decarbonise the shipping industry by ramping up the use and production of sustainable alternative fuels. Ship traffic currently accounts for some 11% of EU transport emissions, which is around 3-4% of total EU CO2 emissions.

Climate change widespread, rapid, and intensifying – IPCC

6th Assessment Report

Stressing the need for international efforts to limit the global temperature well below 1.5 degrees Celsius, a target that would, according to IPCC scientists, be exceeded by 2040 if no action is taken.

1. The global surface warming is projected to 1.5oC - 1.6oC in the next two decades under all emission scenarios;
2. Human activity undoubtedly influences the climate, oceans, and land warming;
3. With enhanced climate models, scientists can now analyze present and forecast temperature and hydrological extremes at a regional level, and see how global climate impacts will affect individual regions;
4. We are closer to irreversible tipping points, including strong Antarctic ice sheet melt and forest dieback;
5. Methane emissions are now higher than at any point in the past 800,000 years and it is responsible for almost a quarter of global warming;

- Stronger commitments to reduce emissions and to keep global temperature rise to 1.5°C.

40 countries 2050/China 2060/India 2070

US and China to continue Climate Negotiations

- From the projected 4 °C faced before Paris, and the 2.7 degrees before Glasgow, we have now edged towards 2-1.8°C
- 450 Business and Financial Institutions coalition worth $130 trillion vows to put climate at heart of finance
- Global standards body takes aim at company 'greenwashing' claims
- 100 countries make new pledges to cut methane and 133 save forests
- Ensuring carbon market integrity
- Developed countries confirm commitment $100 billion goal a year for Climate Mitigation and Adaptation in developing countries

Five action areas to help inform the transitions needed to realize the vision of the 2030 Agenda:

(1) Nourish All People

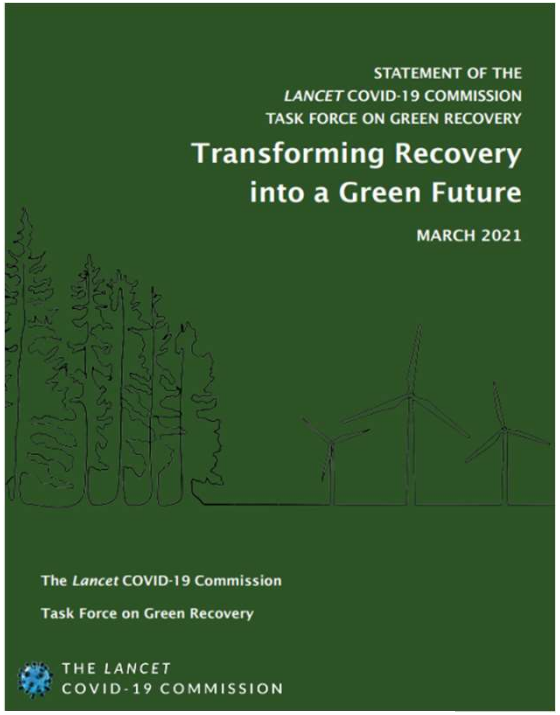
(2) Boost Nature-based Solutions

(3) Advance Equitable Livelihoods, Decent Work and Empowered Communities

(4) Build Resilience to Vulnerabilities, Shocks and Stresses

(5) Accelerating the Means of Implementation

The Lancet Commission for COVID 19



Recovery packages across the world should finance the transformations needed for a green, digital and fair future.

Financial resources devoted to, and commitments made for post COVID-19 recovery are largely insufficient for a green recovery, including in most G20 countries.

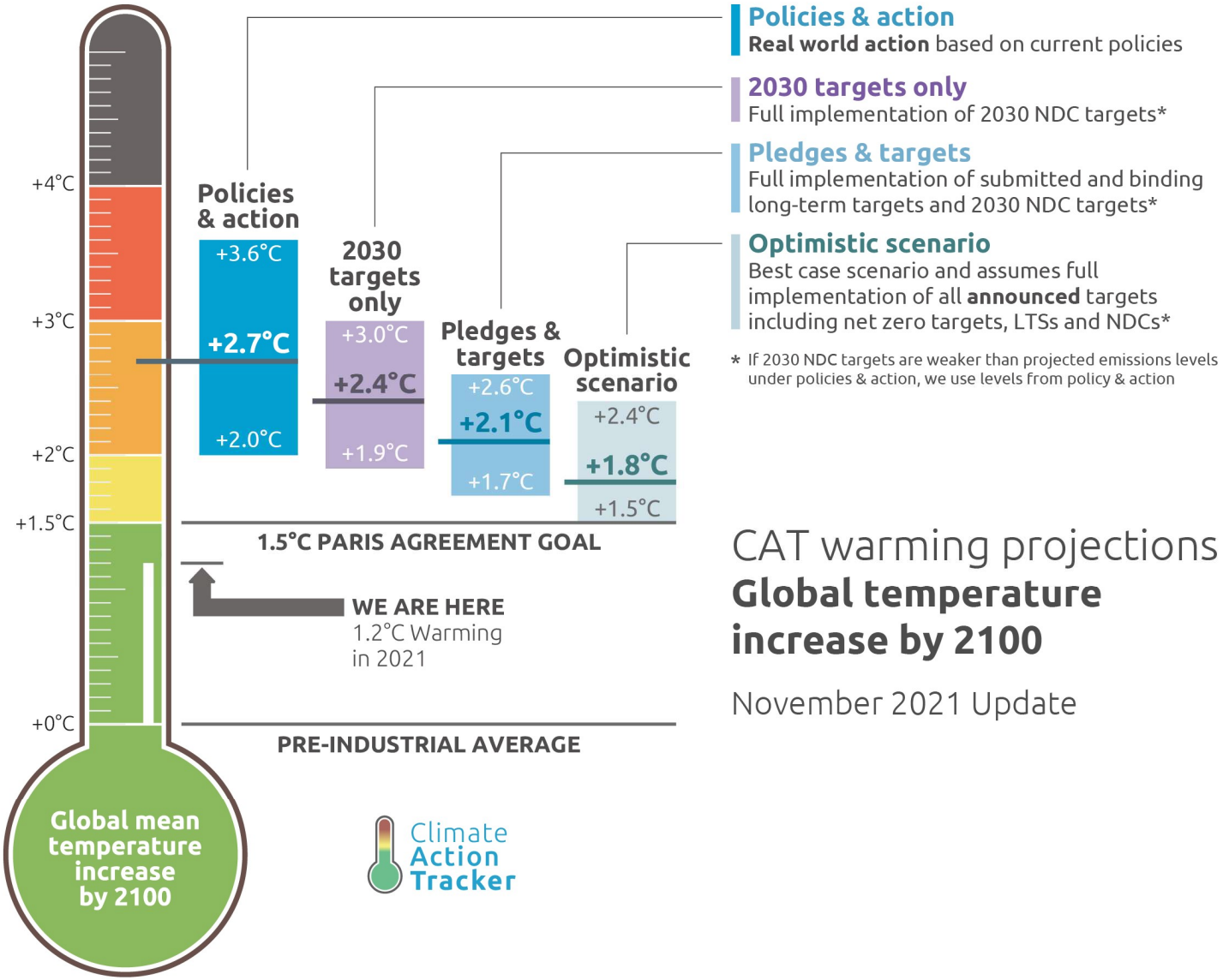
1/3 of global Assets Under Management are now ESG-based; recovery should build on this momentum.

G20 should take major steps for development financing of a green, digital, and inclusive recovery from the pandemic and to achieve the SDGs must be taken:

- Increasing lending to the MDBs to provide LIDCs funding
- Enacting global tax reforms on mega-wealth and carbon emissions for climate financing.

UNITED NATIONS FOOD SYSTEMS SUMMIT 2021

G20 ITALIA 2·0·2·1



CAT warming projections
Global temperature increase by 2100

November 2021 Update

SDSN Europe

Mission: *"In Europe, over 400 members and 13 national and regional networks of SDSN, are part of SDSN Europe that aims to align the European recovery with the Agenda 2030. Leveraging on the research within the networks, SDSN Europe will play an active role in the shaping of a sustainable and resilient Europe. "*

Welcome

to SDSN Europe

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

SDSN Europe

#EUGreenDeal Senior Working Group

#EUGreenDeal Senior Working Group

Transformations for the Joint Implementation of Agenda 2030 for Sustainable Development and the European Green Deal
A Green and Digital, Job-Based and Inclusive Recovery from the COVID-19 Pandemic

https://sdsn.eu/european-green-deal-senior-working-group/

Jeffrey Sachs President UN SDSN

Phoebe Koundouri President-elect EAERE
co-Chair SDSN Europe

Paolo Carnevale Fondazione Eni Enrico Mattei

Carlo Papa Enel Foundation

Laura Cozzi International Energy Agency

Mariana Mazzucato University College London

Leonardo Becchetti University of Roma

SDSN EU Report - Main Messages

AIM: Connects 4 major policy initiatives

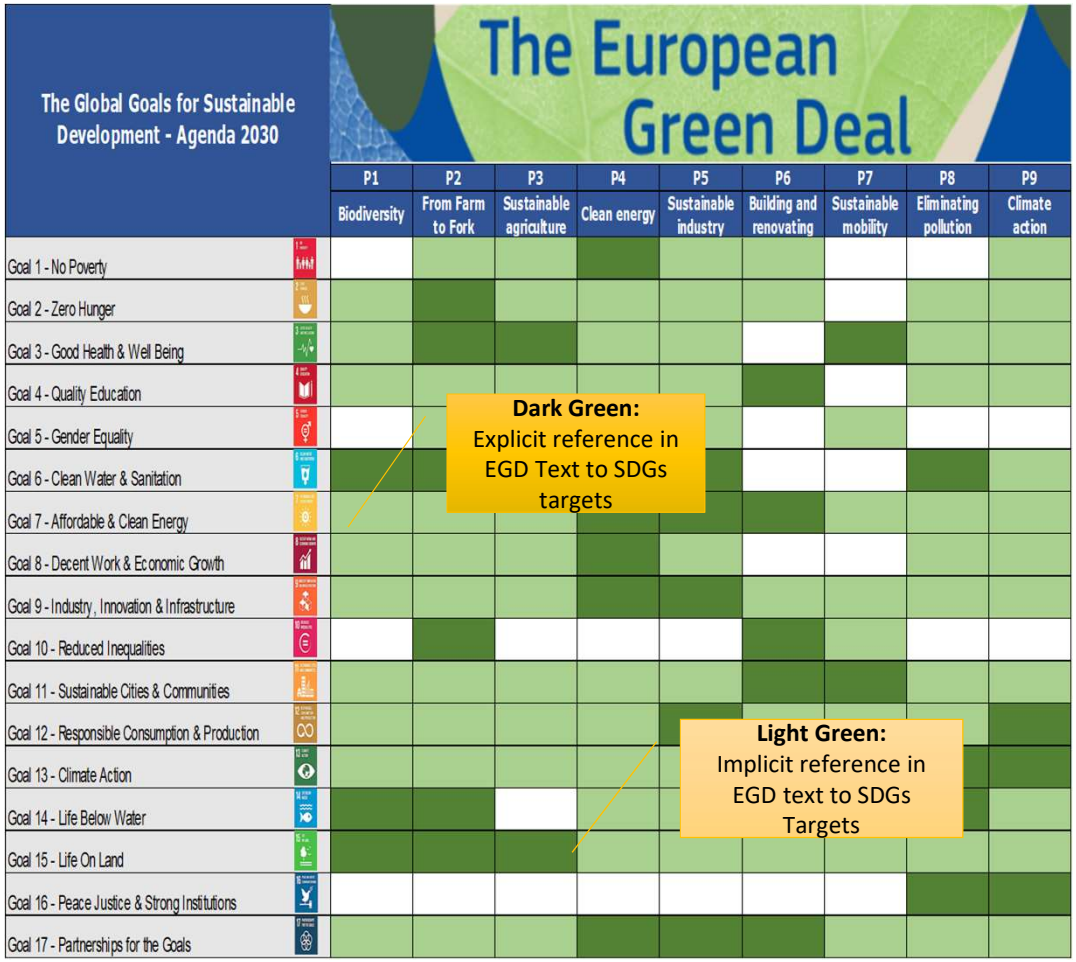
SDGs European Green Deal European Semester EU Next Generation

to support policymakers with actionable strategies that can guide EU-wide and national economic recovery in line with Europe's overarching sustainability agenda.

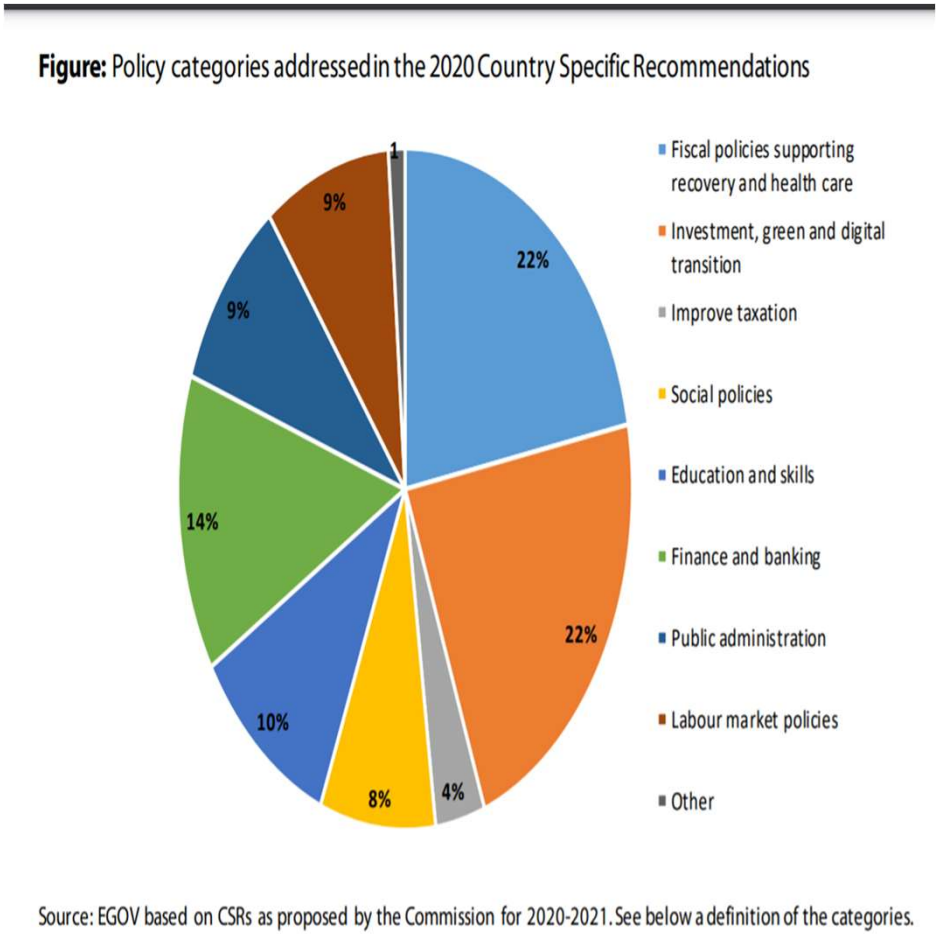
Beyond fiscal stimulus that is expected to boost aggregate demand, this crisis calls for transformative public investments that will shape a sustainable and fair, green and digital transition, and leverage private sector investment.

https://sdsn.eu/european-green-deal-senior-working-group/

SDGs – EGD



European Semester Process



Priority EGD Policies for most EU Countries are:

Prioritization of EGD Policies for each Country. A - High Priority B - Next Priority Blank - Not relevant	P1 Biodiversity	P2 From Farm to Fork	P3 Sustainable agriculture	P4 Clean energy	P5 Sustainable industry	P6 Building and renovating	P7 Sustainable mobility	P8 Eliminating pollution	P9 Climate action
Austria	B	B	B	A	A	A		A	A
Belgium	A	A	B	B	A	B		A	A
Bulgaria	B	A	B	B	B	A	B		B
Croatia		A		B	B	A	B	B	B
Cyprus	B	B		A	A	A	B	A	A
Czech Republic	B	B	B	A	A	A		A	A
Denmark	A	A			A	B	B	A	A
Estonia		A	B	B	A	B		A	A
Finland	B	B		B	A	B		A	A
France	B	B		B	A	B		A	A
Germany		B			A			A	A
Greece	B	B	B	B	B	B	B	A	A
Hungary		A	B	A	A	B		A	A
Ireland	B	B		A	A	A		A	A
Italy	A	A	B	A	A	B	B	A	A
Latvia	A	A	B	A	A	A	B	A	A
Lithuania	B	A	B	A	A	A	B	A	A
Luxembourg	B		B	A	A	A	B	A	A
Malta	A	A	B	A	A	A		A	A
Netherlands	A	A	B	A	A	A		A	A
Poland	A	A		A	A	A		A	A
Portugal	A	A		B	B	B		A	A
Romania	A	A	B	B	B	A	B	B	A
Slovak Republic		A		A	A	B		A	A
Slovenia	A	A		B	A	B		A	A
Spain		A						B	B
Sweden		B			A			A	A
High Priority for # of Countries:	10	17	0	13	21	13	0	23	24
Next Prority for # of Countries:	10	9	14	10	5	11	10	3	3

Policies associated with 'Major-SDGs-Challenge' are prioritized followed by policies in domains associated with 'Significant-SDGs Challenges'

- ✓ P2 for environmentally-friendly food system ("From farm to fork")
- ✓ P5 for sustainable industry
- ✓ P8 for elimination of pollution
- ✓ P9 for climate action

SDGs – EGD - ESPcsr (Further investigated via Machine Learning)

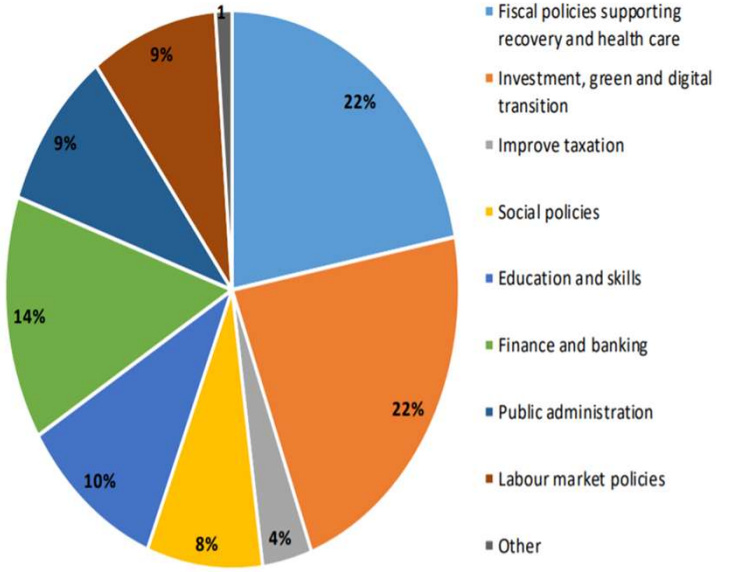
The Global Goals for Sustainable Development - Agenda 2030	P1 Biodiversity	P2 From Farm to Fork	P3 Sustainable agriculture	P4 Clean energy	P5 Sustainable industry	P6 Building and renovating	P7 Sustainable mobility	P8 Eliminating pollution	P9 Climate action
Goal 1 - No Poverty									
Goal 2 - Zero Hunger									
Goal 3 - Good Health & Well Being									
Goal 4 - Quality Education									
Goal 5 - Gender Equality									
Goal 6 - Clean Water & Sanitation									
Goal 7 - Affordable & Clean Energy									
Goal 8 - Decent Work & Economic Growth									
Goal 9 - Industry, Innovation & Infrastructure									
Goal 10 - Reduced Inequalities									
Goal 11 - Sustainable Cities & Communities									
Goal 12 - Responsible Consumption & Production									
Goal 13 - Climate Action									
Goal 14 - Life Below Water									
Goal 15 - Life On Land									
Goal 16 - Peace Justice & Strong Institutions									
Goal 17 - Partnerships for the Goals									

The European Green Deal

Dark Green: Explicit reference in EGD Text to SDGs targets

Light Green: Implicit reference in EGD text to SDGs Targets

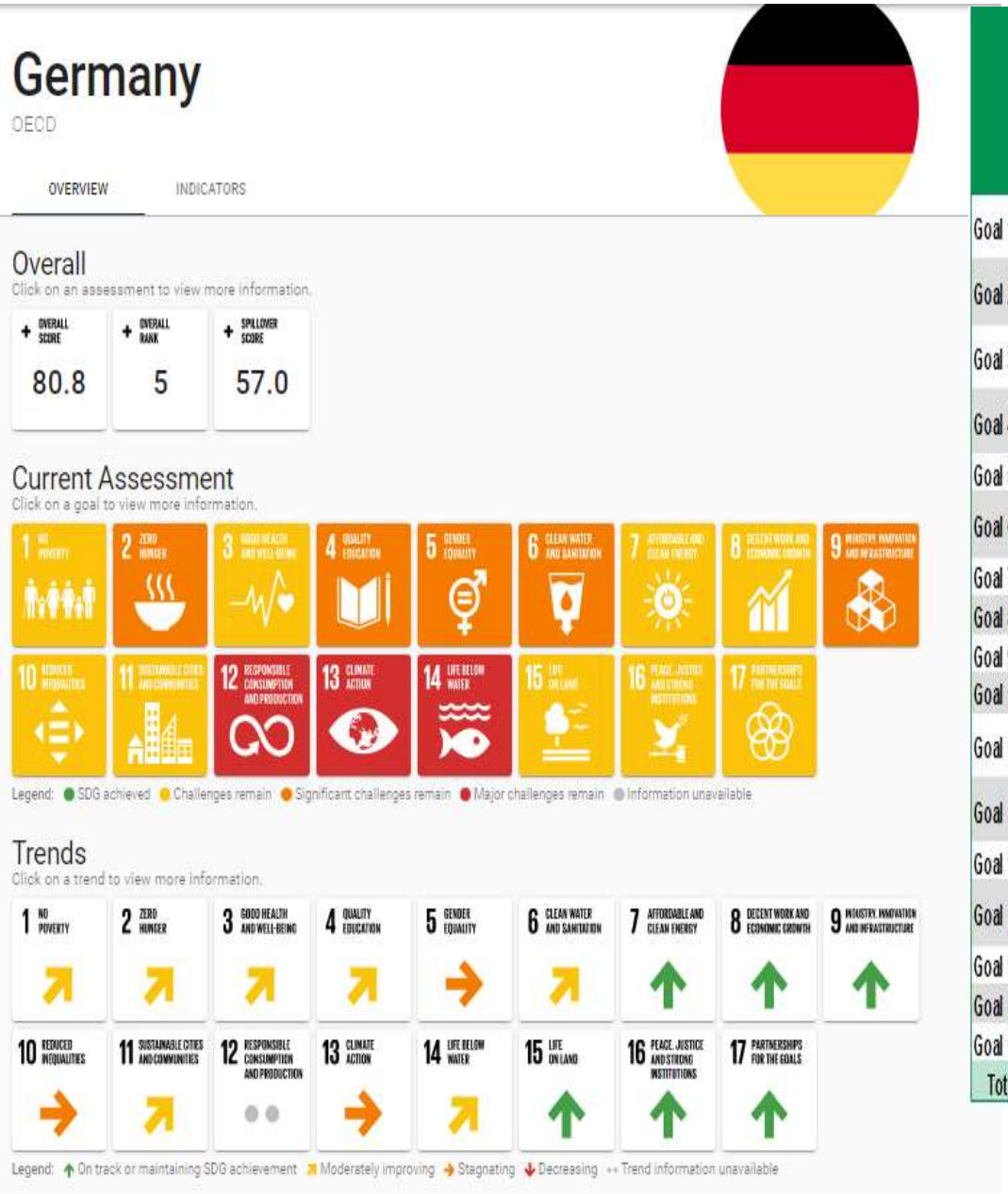
Figure: Policy categories addressed in the 2020 Country Specific Recommendations



Source: EGOV based on CSRs as proposed by the Commission for 2020-2021. See below a definition of the categories.

Goal	CSR_1 Address Pandemic - Health System	CSR_2 Employment- Decent Work- Reskill	CSR_3 Energy- Environment- Digital Transition	CSR_4 Improvement to Structural Characteristics	Total	SDSN Dashboard Assessment	SDSN Dashboard Trend	Addressed By CSRs
Goal 1-No Poverty					0	Achieved	↑ On track	Not required
Goal 2-Zero Hunger			2		2	Significant Challenges	↗ Moderately improvement	YES
Goal 3-Good Health & Well Being	3	1			4	Achieved	↑ On track	Not required
Goal 4-Quality Education		3			3	Challenges Remain	↗ Moderately improvement	YES
Goal 5-Gender Equality					0	Achieved	↑ On track	Not required
Goal 6-Clean Water & Sanitation					0	Challenges Remain	↗ Moderately improvement	NO
Goal 7-Affordable & Clean Energy			4		4	Achieved	↑ On track	Not required
Goal 8-Decent Work & Economic Growth		4			4	Challenges Remain	↑ On track	YES
Goal 9-Industry, Innovation & Infrastructure		1	8		9	Challenges Remain	↑ On track	YES
Goal 10-Reduced Inequalities		3			3	Challenges Remain	→ Stagnating	YES
Goal 11-Sustainable Cities & Communities			3		3	Challenges Remain	↗ Moderately improvement	YES
Goal 12-Responsible Consumption & Production					0	Major Challenges	Informartion Unavailable	NO
Goal 13-Climate Action			4		4	Major Challenges	→ Stagnating	YES
Goal 14-Life Below Water					0	Significant Challenges	→ Stagnating	NO
Goal 15-Life On Land					0	Challenges Remain	↑ On track	NO
Goal 16-Peace Justice & Strong Institutions				2	2	Challenges Remain	↑ On track	YES
Goal 17-Partnerships for the Goals	1			4	5	Challenges Remain	↑ On track	YES
Total Number of relevant SDG indicators	4	12	21	6	43			

CSRs addressing the SDG challenges of Sweden: 50%



Goal	CSR_1 Address Pandemic - Health System	CSR_2 Employment- Decent Work- Reskill	CSR_3 Energy- Environment- Digital Transition	CSR_4 Improvement to Structural Characteristics	Total	SDSN Dashboard Assessment	SDSN Dashboard Trend	Addressed By CSRs
Goal 1-No Poverty					0	Challenges Remain	↗ Moderately improvemnet	NO
Goal 2-Zero Hunger					0	Significant Challenges	↗ Moderately improvemnet	NO
Goal 3-Good Health & Well Being	5				5	Challenges Remain	↗ Moderately improvemnet	YES
Goal 4-Quality Education		9			9	Significant Challenges	↗ Moderately improvemnet	YES
Goal 5-Gender Equality					0	Significant Challenges	→ Stagnating	NO
Goal 6-Clean Water & Sanitation					0	Significant Challenges	↗ Moderately improvemnet	NO
Goal 7-Affordable & Clean Energy		4			4	Challenges Remain	↑ On track	YES
Goal 8-Decent Work & Economic Growth	1				1	Challenges Remain	↑ On track	YES
Goal 9-Industry, Innovation & Infrastructure		10			10	Significant Challenges	↑ On track	YES
Goal 10-Reduced Inequalities					0	Challenges Remain	→ Stagnating	NO
Goal 11-Sustainable Cities & Communities		4			4	Challenges Remain	↗ Moderately improvemnet	YES
Goal 12-Responsible Consumption & Production		7			7	Major Challenges	Information Unavailable	YES
Goal 13-Climate Action		4			4	Major Challenges	→ Stagnating	YES
Goal 14-Life Below Water		2			2	Major Challenges	↗ Moderately improvemnet	YES
Goal 15-Life On Land					0	Challenges Remain	↑ On track	NO
Goal 16-Peace Justice & Strong Institutions	1				1	Challenges Remain	↑ On track	YES
Goal 17-Partnerships for the Goals	1	4			5	Challenges Remain	↑ On track	YES
Total Number of relevant SDG indicators	8	44	0	0	52			

CSRs addressing the SDG challenges of Germany: 63%

Goal	CSR_1 Address Pandemic - Health System	CSR_2 Employment-Decent Work-Reskill	CSR_3 Energy-Environment-Digital Transition	CSR_4 Improvement to Structural Characteristics	Total	SDSN Dashboard Assessment	SDSN Dashboard Trend	Addressed By CSRs
Goal 1-No Poverty		3			3	Challenges Remain	↑ On track	YES
Goal 2-Zero Hunger			2		2	Significant Challenges	→ Stagnating	YES
Goal 3-Good Health & Well Being	3	1		1	5	Significant Challenges	↗ Moderately improvement	YES
Goal 4-Quality Education					0	Major Challenges	↗ Moderately improvement	NO
Goal 5-Gender Equality					0	Significant Challenges	↗ Moderately improvement	NO
Goal 6-Clean Water & Sanitation			5		5	Challenges Remain	↑ On track	YES
Goal 7-Affordable & Clean Energy			4		4	Significant Challenges	↑ On track	YES
Goal 8-Decent Work & Economic Growth		1			1	Significant Challenges	↑ On track	YES
Goal 9-Industry, Innovation & Infrastructure		1	4		5	Significant Challenges	↗ Moderately improvement	YES
Goal 10-Reduced Inequalities		3			3	Significant Challenges	↗ Moderately improvement	YES
Goal 11-Sustainable Cities & Communities		1	3		4	Significant Challenges	↗ Moderately improvement	YES
Goal 12-Responsible Consumption & Production			7		7	Major Challenges	Informartion Unavailable	YES
Goal 13-Climate Action			4		4	Major Challenges	→ Stagnating	YES
Goal 14-Life Below Water			2		2	Significant Challenges	→ Stagnating	YES
Goal 15-Life On Land					0	Significant Challenges	↗ Moderately improvement	NO
Goal 16-Peace Justice & Strong Institutions				1	1	Significant Challenges	↗ Moderately improvement	YES
Goal 17-Partnerships for the Goals	1			5	6	Significant Challenges	→ Stagnating	YES
Total Number of relevant SDG indicators	4	10	31	7	52			

CSRs addressing the SDG challenges of Greece: 80%

SDGs Achieved			45
SDG's Assessment	**Addressed by CSR**	**NOT addressed by CSR**	**Total**
Challenges Remain	120	46	**166**
Significant Challenges	115	44	**159**
Major Challenges	64	20	**84**
Grey (not available info)	1	4	**5**
Total SGDs to be addressed	**300**	**114**	**414**
Grand Total	**17 SDGs for 27 EU countries**		**459**
Efficiency Ratio	**72%**	**28%**	

- ✓ Country Specific Recommendations (CSRs) by ESP efficiently address the challenges identified by SDR.
- ✓ There is still space for further alignment between CSRs and SDGs.

Priority EGD Policies for most EU Countries are:

Prioritization of EGD Policies for each Country. A - High Priority B - Next Priority Blank - Not relevant	P1 Biodiversity	P2 From Farm to Fork	P3 Sustainable agriculture	P4 Clean energy	P5 Sustainable industry	P6 Building and renovating	P7 Sustainable mobility	P8 Eliminating pollution	P9 Climate action
Austria	B	B	B	A	A	A		A	A
Belgium	A	A	B	B	A	B		A	A
Bulgaria	B	A	B	B	B	A	B		B
Croatia		A		B	B	A	B	B	B
Cyprus	B	B		A	A	A	B	A	A
Czech Republic	B	B	B	A	A	A		A	A
Denmark	A	A			A	B	B	A	A
Estonia		A	B	B	A	B		A	A
Finland	B	B		B	A	B		A	A
France	B	B		B	A	B		A	A
Germany		B			A			A	A
Greece	B	B	B	B	B	B	B	A	A
Hungary		A	B	A	A	B		A	A
Ireland	B	B		A	A	A		A	A
Italy	A	A	B	A	A	B	B	A	A
Latvia	A	A	B	A	A	A	B	A	A
Lithuania	B	A	B	A	A	A	B	A	A
Luxembourg	B		B	A	A	A	B	A	A
Malta	A	A	B	A	A	A		A	A
Netherlands	A	A	B	A	A	A		A	A
Poland	A	A		A	A	A		A	A
Portugal	A	A		B	B	B		A	A
Romania	A	A	B	B	B	A	B	B	A
Slovak Republic		A		A	A	B		A	A
Slovenia	A	A		B	A	B		A	A
Spain		A						B	B
Sweden		B			A			A	A
High Priority for # of Countries:	10	17	0	13	21	13	0	23	24
Next Prority for # of Countries:	10	9	14	10	5	11	10	3	3

Policies associated with 'Major-SDGs-Challenge' are prioritized followed by policies in domains associated with 'Significant-SDGs Challenges'

- ✓ P2 for environmentally-friendly food system ("From farm to fork")
- ✓ P5 for sustainable industry
- ✓ P8 for elimination of pollution
- ✓ P9 for climate action

Pissarides Report: 10-Year Development and Recovery Plan for Greece:

MAJOR PROBLEMS

- Low productivity and introversion
- Inefficient functioning of public administration and institutions
- Significant lag in achieving environmental goals on climate change and circular economy
- Exports have increased in recent years but systematically lag behind imports
- Vulnerable households (at the brink of poverty) due to the unsatisfactory access to the labor market and low wages (due to low productivity)

Pissarides Report: 10-Year Development and Recovery Plan for Greece

PRIORITIES

Consistent with Greek RRP

RRF created short-term fiscal space for Greece, which is crucial to be used effectively in order to have a high growth multiplier.

- Production and investment:

Dramatic reduction in the cost of employment

Favorable tax treatment for investments

Innovation

Energy upgrade of buildings

Infrastructure Strengthening Export Sectors of Manufacturing

Waste management and circular economy.

- Human capital:

New training programs and structures for the employed and unemployed

Adaptation of the institutional framework to enhance cutting-edge research in universities and research centers that will support production.

- Public sector and administration:

Accelerate the digitization of public sector services

Strengthening primary health care and hospital units

Legal System increased efficieency

Greek Resilience and Recovery plan

Pillars and Components		RRF Budget	Mobilised Investment Resources
1. Green Transition		(mil. €)	(mil. €)
1.1 Power Up		1,200	2,348
1.2 Renovate		2,689	5,203
1.3 Recharge and refuel		520	1,305
1.4 Sustainable use of resources, climate resilience and environmental protection		1,763	2,726
	Total Resources Pillar 1	**6,172**	**11,582**
2. Digital Transformation			
2.1 Connect		522	582
2.2 Modernise		1,303	1,303
2.3 Digitalisation of businesses		375	475
	Total Resources Pillar 2	**2,200**	**2,360**
3. Employment, skills, and social cohesion			
3.1 Increasing job creation and participation in the labour market		776	776
3.2 Education, vocational education, training, and skills		2,311	2,395
3.3 Improve resilience, accessibility and sustainability of healthcare		1,486	1,486
3.4 Increase access to effective and inclusive social policies		611	611
	Total Resources Pillar 3	**5,184**	**5,268**
4. Private investment and transformation of the economy			
4.1 Making taxes more growth friendly, and improving tax administration and tax collection		187	215
4.2 Modernise the public administration, including through speeding up the implementation of public investments, improving the public procurement framework, capacity building measures and fighting corruption		189	189
4.3 Improve the efficiency of the justice system		251	464
4.4 Strengthen the financial sector and capital markets		20	20
4.5 Promote research and innovation		444	612
4.6 Modernise and improve resilience of key economic sectors		3,743	7,233
4.7 Improve competitiveness and promote private investment and exports		5	5
Technical Assistance		40	40
	Total Resources Pillar 4	**4,879**	**8,778**
Sum of Grants		**18,436**	**27,988**
Loans		**12,728**	**31,819**
Total Investment Resources		**31,164**	**59,807**

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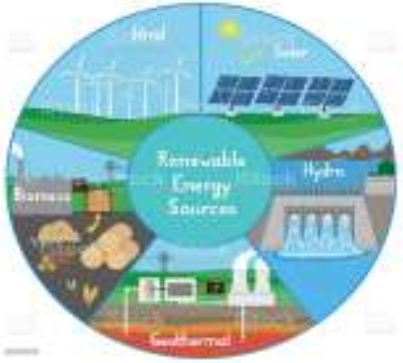
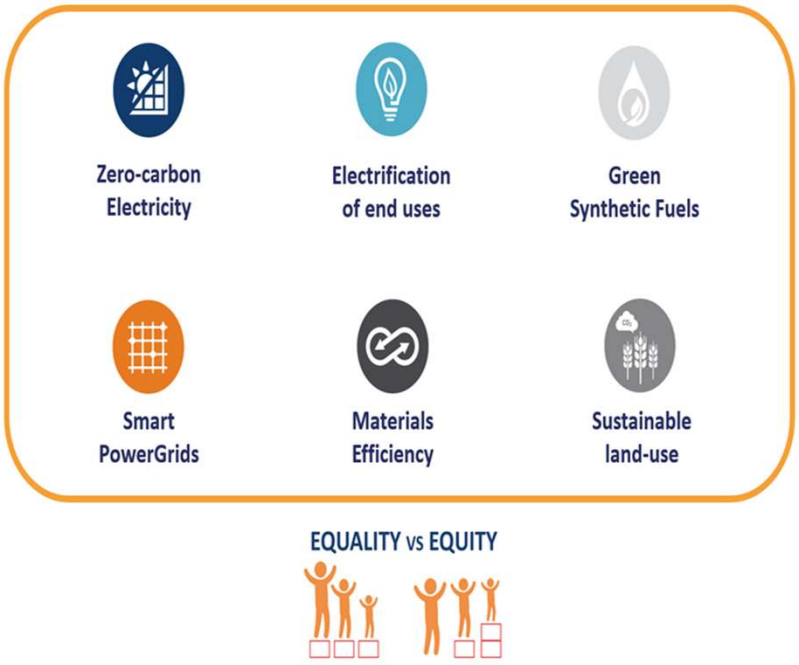
Technological and Investment Pathways

Technological pathways: Roadmap to 2050, A Manual for Nations to Decarbonize by 2050

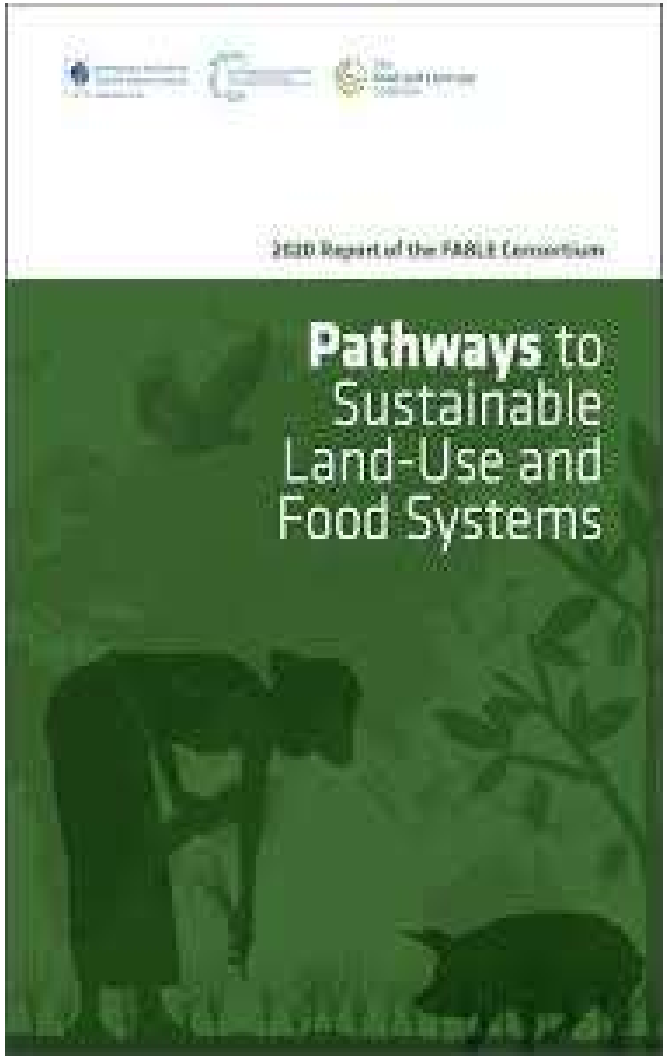


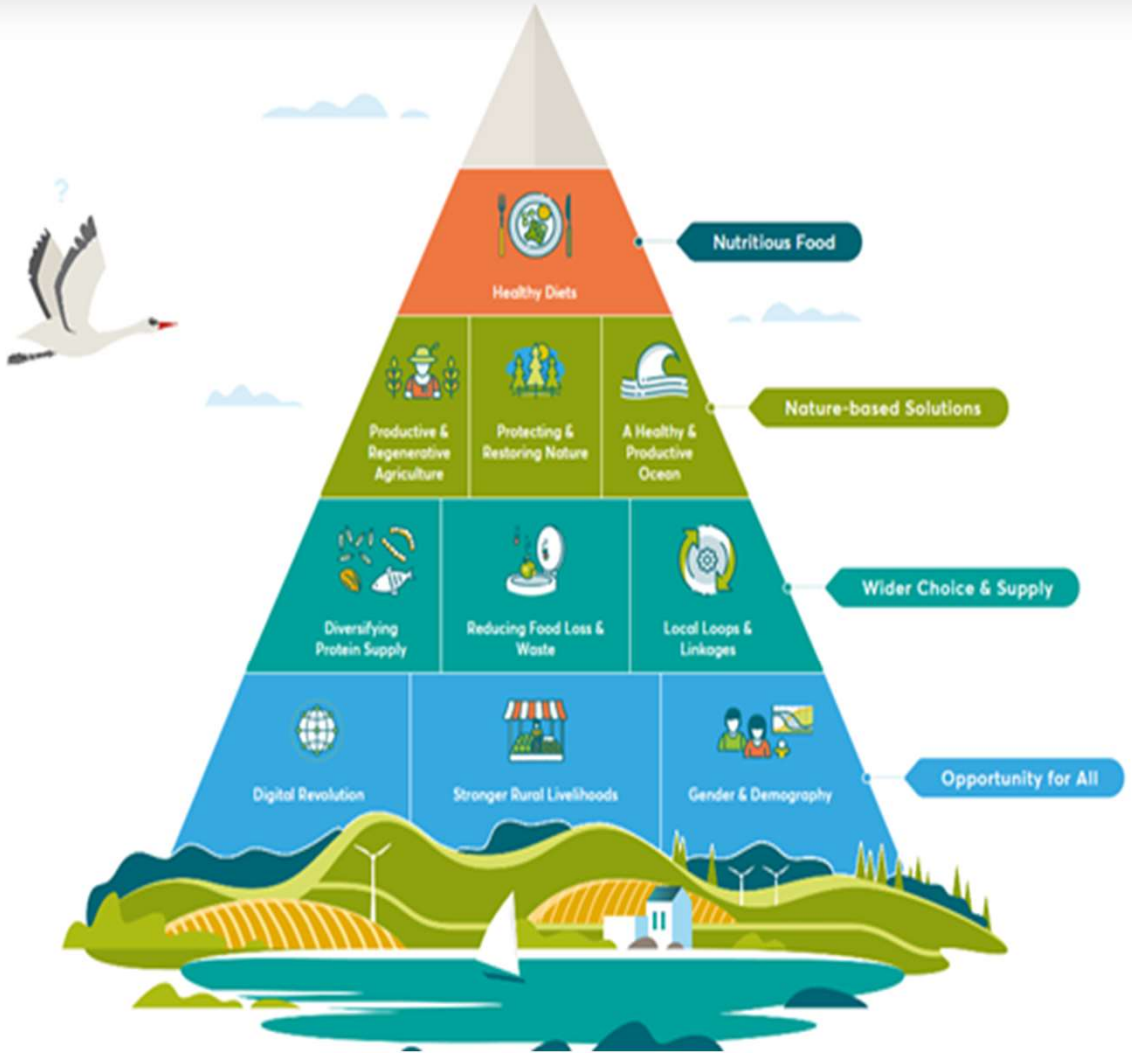
The European Green Deal should be conceived on a systems approach: simultaneously address multiple objectives and promote the right mixture of policy instruments and technological solutions that can be used across the various sectors of the economy

Innovations are emerging across four key dimensions: Enabling Technologies/ Business Models/ Market design/ System Operation



The Food and Land Use Coalition





Greece and innovation – current status

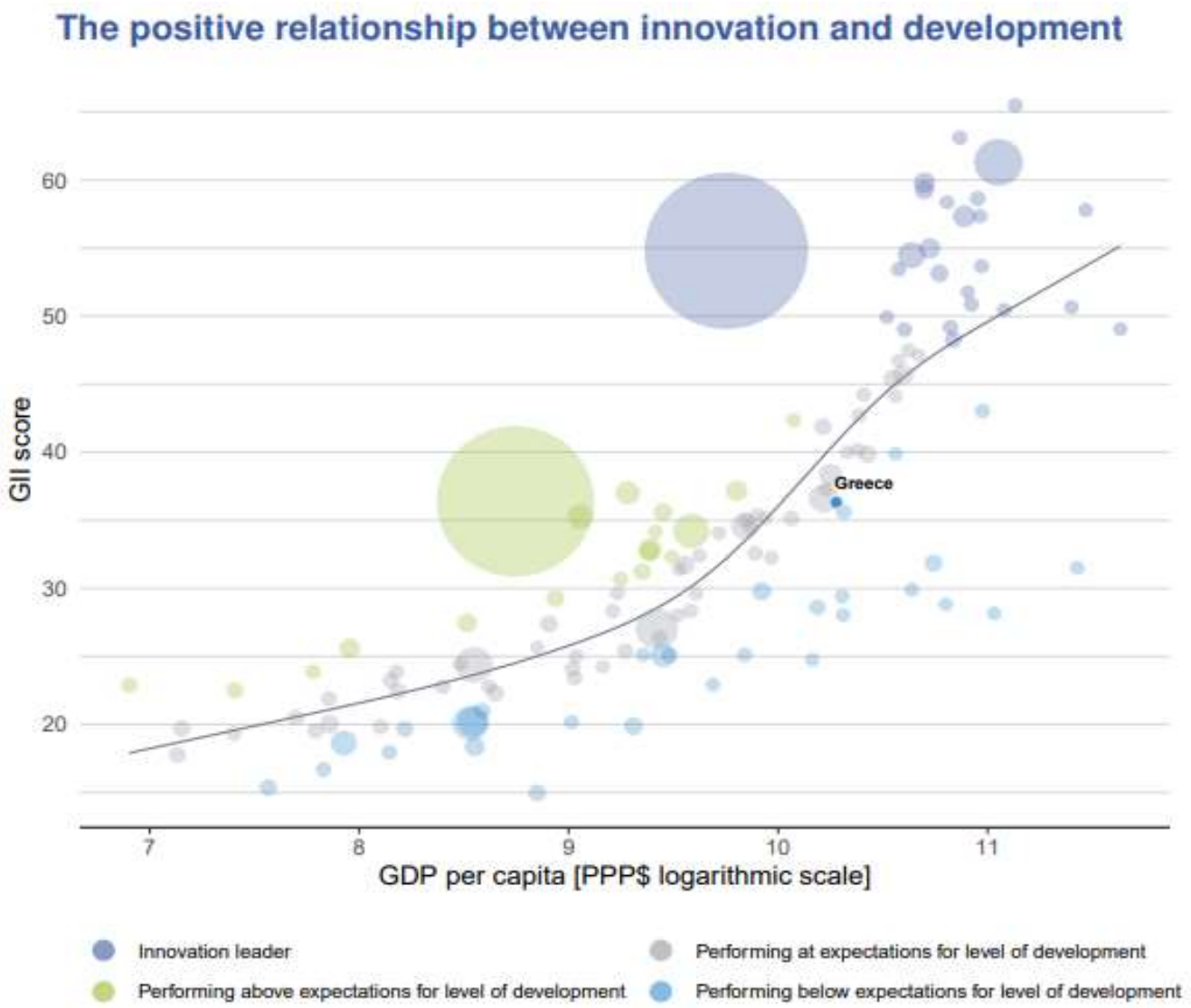
Global Innovation Index (GII) 2021

Greece:

- ranks 47th among 132 economies
- ranks 39th among the 51 high-income economies
- ranks 30th among the 39 economies in Europe

The bubble chart depicts the link between income (GDP per capita) and innovation (GII score).

The trend line shows the projected innovation performance by income level. Economies above the trend line outperform expectations, while those below underperform.



Pissarides' Committee Proposals on Innovation

Greece's performance in promoting **basic research and innovative businesses**, as well as directing resources to more efficient production processes, will play a key role in whether it will be able to seize the opportunities associated with e**nergy saving, renewable energy, electricity and smart grids.**

- The central objective: Systematic increase of productivity and extroversion, as well as the **closer interconnection of production with technology and innovation**.
- Creation of **clusters of state-of-the-art technology** in individual sectors that will develop and implement innovation on a global scale.
- **Strengthening basic research** by removing rigidities for universities and research centres and coordination by an independent institution with resources and a long-term research strategy.
- Fostering innovation by incentivizing **research in enterprises in manufacturing, agri-food**, **growth through smart specialisation**.
- **Support with funding research systems** that will develop solutions for the private and public sectors and will be interconnected with the scientific community of the diaspora

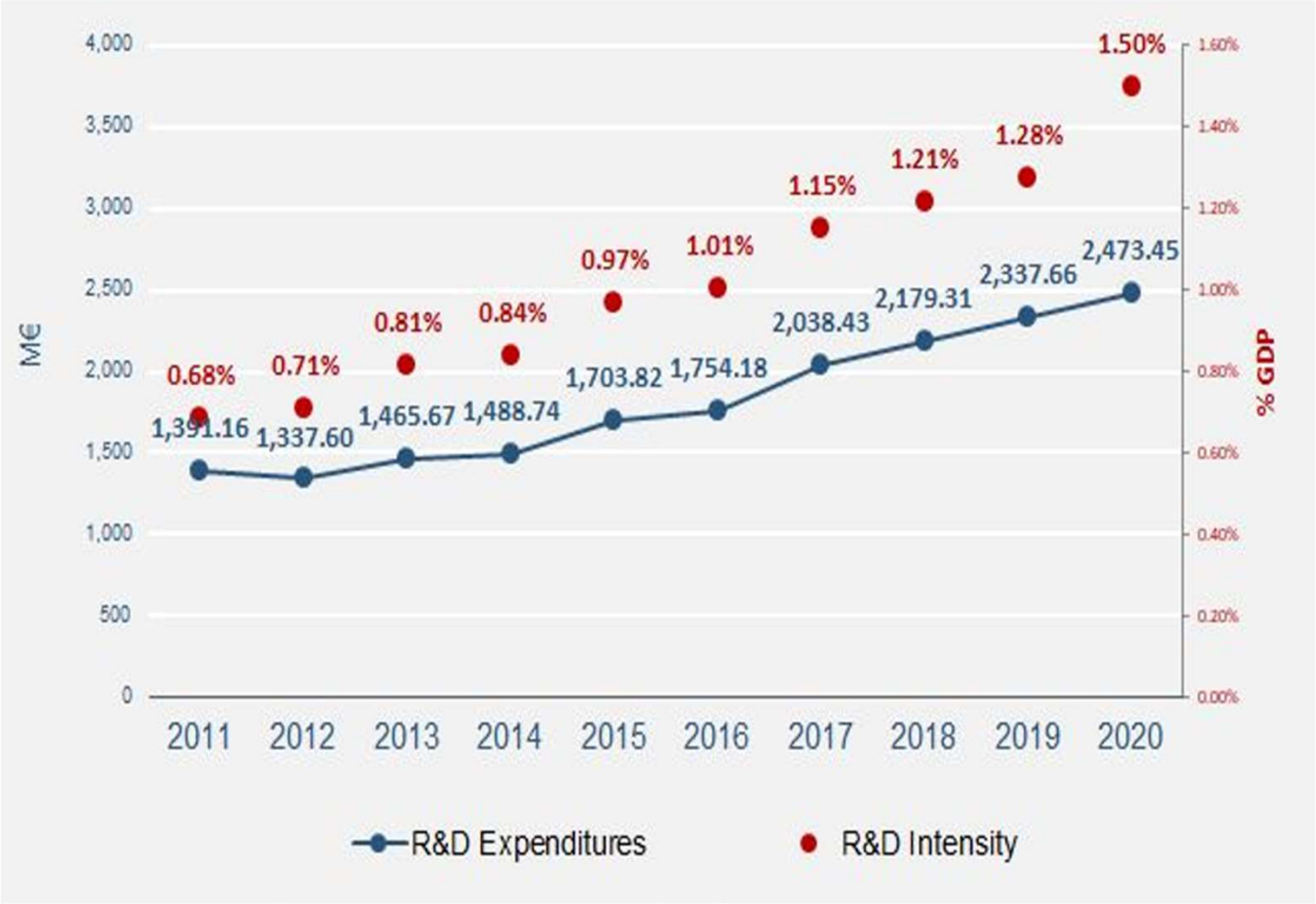
R&D Expenditure

- 2020 Research & Development (R&D) expenditures reached 1.50% of GDP

National Documentation Centre (EKT)

- 2020 R&D expenditure in Greece was € 2,473.45 million, an increase of € 135.8 million compared to 2019 (growth rate 5.8%)

R&D Expenditures and R&D Intensity (R&D expenditures of GDP), 2011-2020

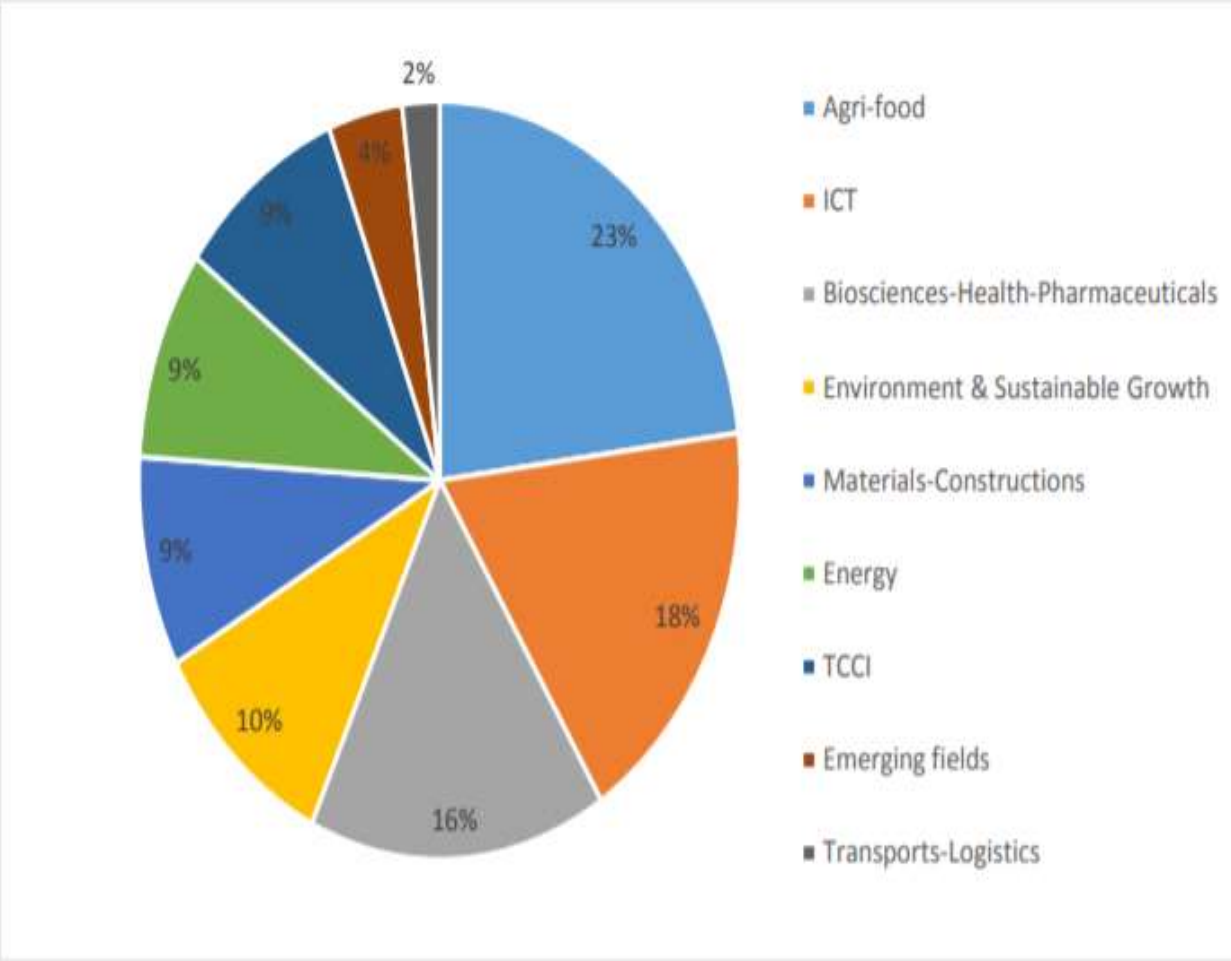


Source: National Documentation Centre (EKT)

Innovation sectors in Greece

The Greek *National Strategy for Research, Innovation and Smart Specialisation (RIS3) for 2014-2020* has identified eight smart priority areas:

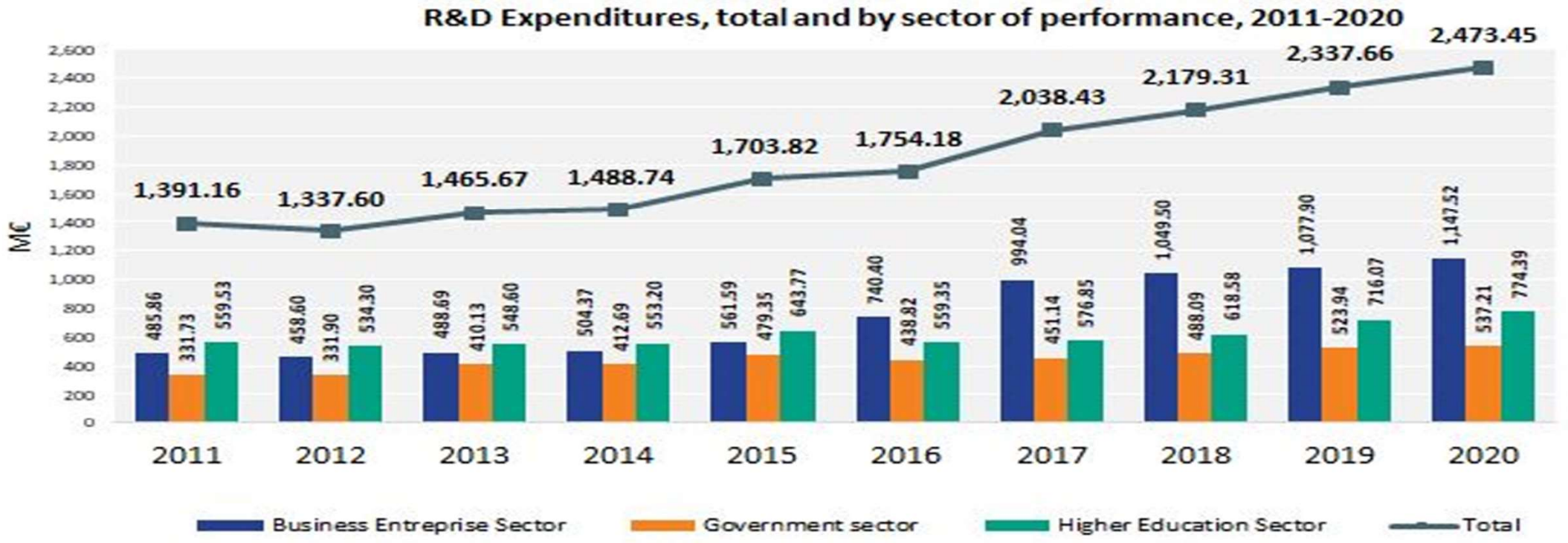
1. Agrofood
2. Life Sciences & Health - Pharma
3. Information and Communication Technologies
4. Energy
5. Environment and Sustainable Development
6. Transport and Logistics
7. Materials - Construction
8. Culture - Tourism - Cultural & Creative Industries



Public funds per specialization field. Source: General Secretariat for Research and Technology (GSRT)

R&D Expenditure: Business, Higher Education, Government, Non-profit Institutions

R&D expenditures for businesses in 2020 were €1,147.52 million (0.69% of GDP), up from 2019, and continue to make the largest contribution to the R&D expenditure indicator. The higher education sector incurred R&D expenditures of 774.39 million euros (0.47% of GDP), showing an increase of 8.1% compared to 2019.



Source: National Documentation Centre (EKT)

GREECE: Innovation at firm level

- Innovative enterprises, 2016-2018 : 60.3% during (increase 2.6pps compared to 2014-2016)
- Industry sector, 2016-2018 : 62.3% during (59.5% in 2014-2016). Highest percentage of innovative enterprises (62.9%) was reported in Manufacturing.
- Services sector, the share of innovative enterprises reached 58.9% during 2016-2018 (56.5% in the 2014-2016). The highest percentage (67.1%) in 'Information and Communication' sector

Share of Innovative enterprises in Greece. Source: National Documentation Center (EKT), CIS

Opportunities for innovation in Greece

- Greece has recently announced many large technology investments, putting it on the map of exciting digital advances:
  - ✓ Microsoft’s datacenters in Greece and the digital preservation of Culture
  - ✓ Acquisition of the Greek-owned Robotics Firm Softomotive by Microsoft
  - ✓ Pfizer pharmaceutical to establish a research hub in Thessaloniki
  - ✓ Cisco’s innovation center in Thessaloniki
  - ✓ A Research and Development Hub in Ioannina
  - ✓ The Mega Thessaloniki International Technology Center "Thess-INTEC" Project
- The country's active startup environment and large US and European IT corporations' infrastructure investments make Greece a noteworthy case of digital transformation efforts.
- As the demand for automation and digitalization grows in both the public and commercial sectors, Greece seeks to improve its technical and innovative footprint by utilizing all available financing.

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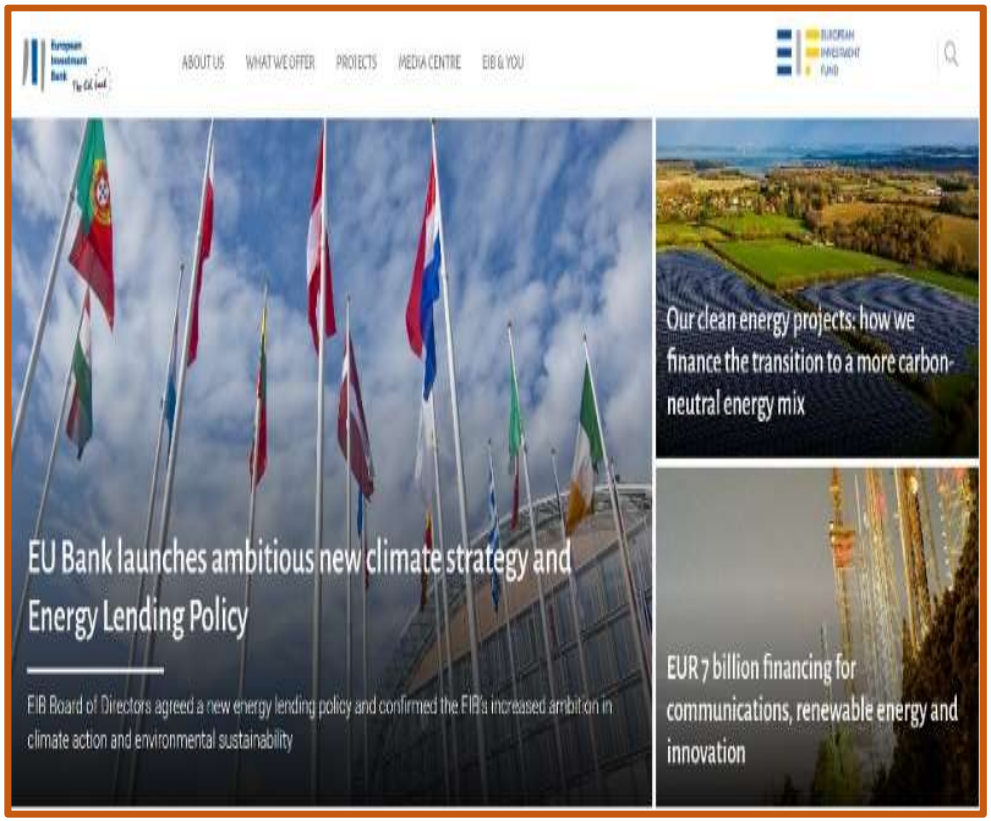
Sustainable-Patient Finance for European COVID recovery

Fiscal Policy, Financial Sector, Businesses



Governments asked to make significant long-term investments and play an entrepreneurial role to provide patient, long-term, strategic finance that supports sustainable innovation.

- MACRO LEVEL: Re-conceptualizing financial stability, and the 'mission' of central banks to include climate & environment degradation risk

The European Investment Bank (EIB) and the European Investment Fund have the expertise and scale to set direction in deploying equity-type financial instruments complementary to loans and guarantees.

- MESO LEVEL: National public investment organizations provide positive sources of long-term patient finance, which support sustainable investing.
- MICRO LEVEL: Companies to understand that those that switch towards sustainable practices soonest, will be the most competitive, most innovative and more successful over time

Sustainable Finance

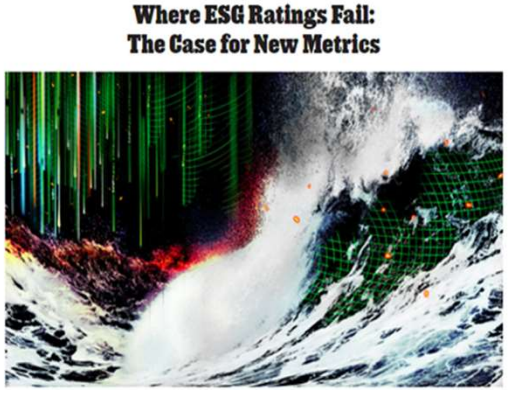
The need for a Hybrid Metrics - New Frontier for Sustainable Valuation

Connecting Shared Value to Shareholder Value

AS IS FINANCE VS ESG

"Corporate leaders, investors, and analysts today must deal with **two separate and disconnected reporting systems**: one for **financial results,** the other for **ESG performance**"

"The result is **two separate narratives**, one telling **how profitable a company is**, the other highlighting **whether it is good for people and the planet"**



TO BE HYBRID METRICS

"This suggests the possibility of a **single hybrid measurement system** that **combines social and environmental impact** with **standard measures of financial performance**"

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Jobs Creation, Up-skilling, Re-Skilling Equity Considerations

Effects of Sustainability Transition on Jobs and Skills
Insights from the International Energy Agency

Investments in line with the European Green Deal can lead to approx. one million new jobs in energy and energy-related sectors in Europe by 2030

Most new jobs created in Europe would be in highly skilled positions, requiring substantial training

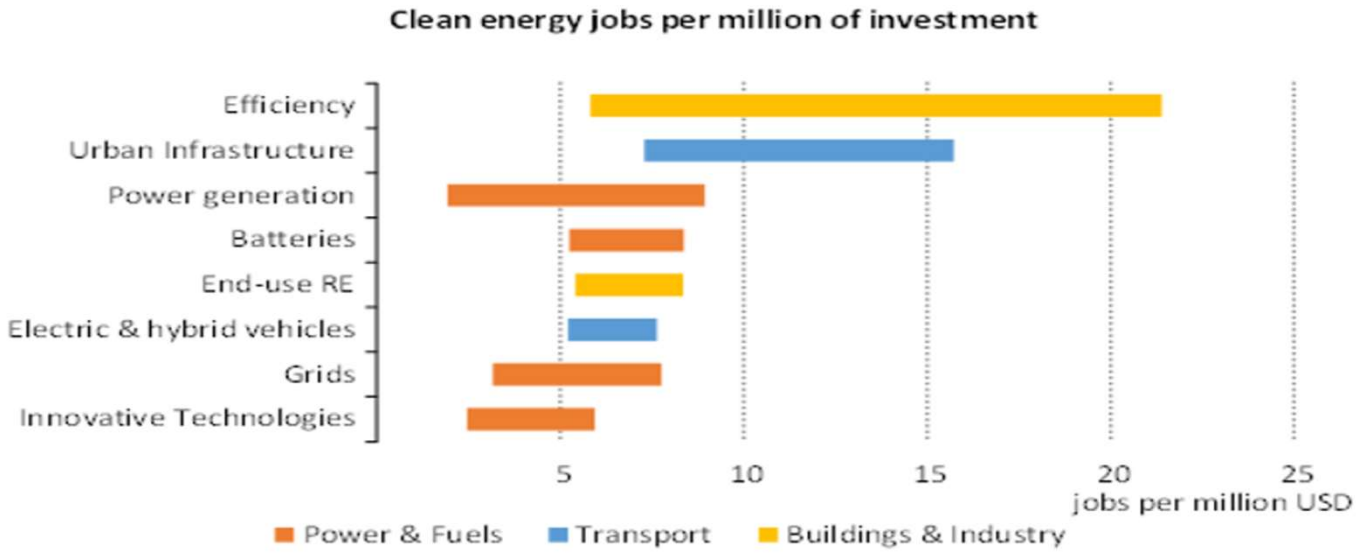


Figure 12. Number of additional European jobs needed to support an additional per one million USD of incremental investment annually. Source: IEA analysis

Distributional effects of key EU climate policies until 2050: Identifying measures to Mitigate Regressive Effects

Considering their simplicity, effectiveness, and deployability into EU, four key mitigating policy options were selected

Redistributing revenues through **lump-sum transfers** on per-head basis or **lowering VAT / taxes on electricity** to the general public

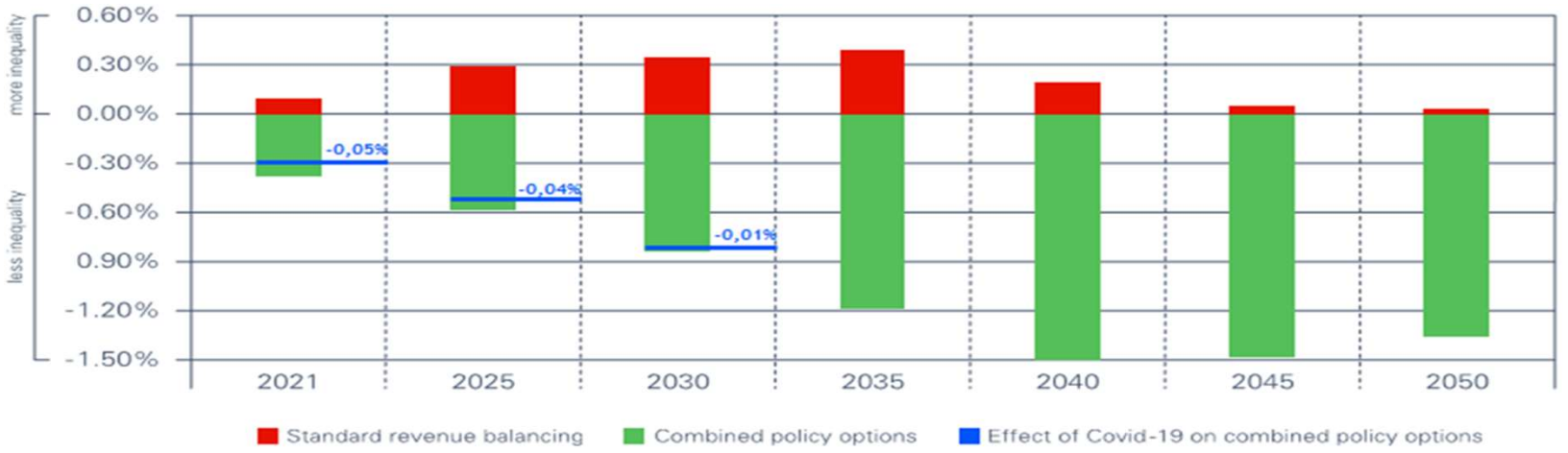
Implementation of **targeted energy efficiency measures** with no upfront costs, specifically targeting low-income households

Long-term **job retraining programmes** to avoid unemployment in affected industries

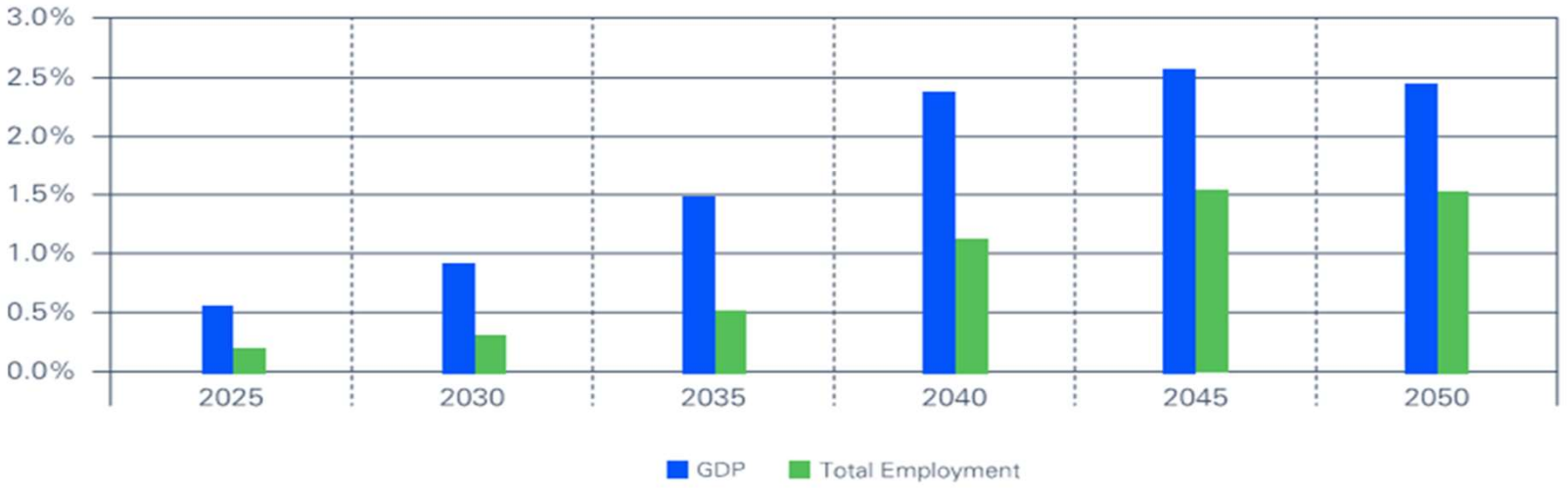
Funding of subsidies for new low-carbon technologies via general taxation or using carbon revenues to avoid uneven bearing of the costs

Detailed macroeconomic modelling based on the standard E3ME model baseline with an assessment of the existing policy best practices to explore the patterns of inequality in Europe (EU27 and the UK).

Combined mitigation policy options can ensure more equality, increase GDP and employment…



Mitigating the negative social impacts of climate policies is essential to ensure a broad support for the energy transition.



Regressive effects can be fully offset with targeted policies.

International Cluster for Research on Sustainability Transition (ICRE8)

Transforming Research and Innovation into Sustainability Action

Director: Professor Dr. Phoebe Koundouri, www.phoebekoundouri.org

President-elect, European Association of Environmental and Resource Economist

Fellow, World Academy of Art and Science

ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

Research laboratory on Socio-Economic and Environmental Sustainability
ReSEES

ATHENA
Research & Innovation Information Technologies

Sustainable Development Unit

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

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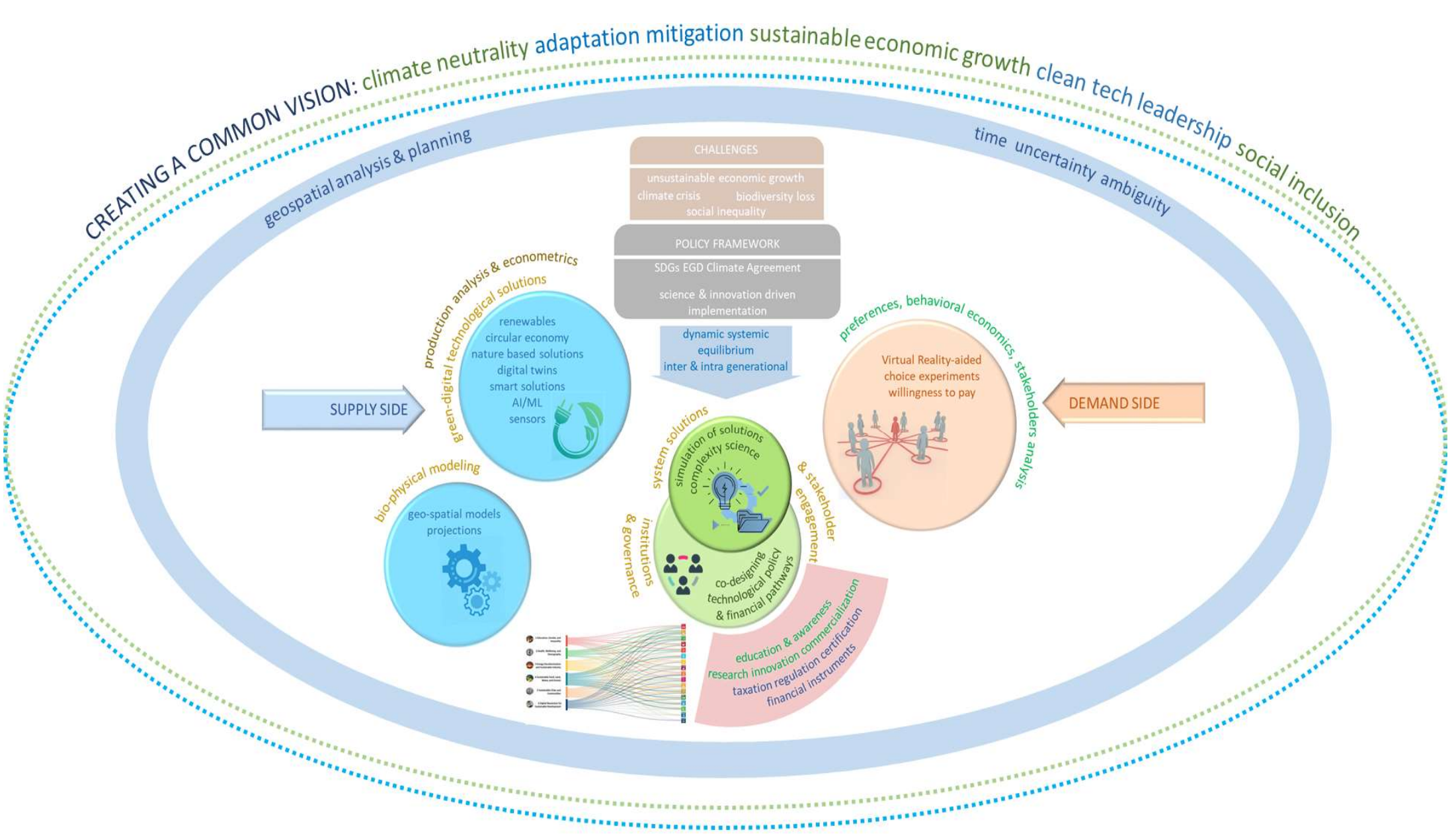
SDSN GREECE

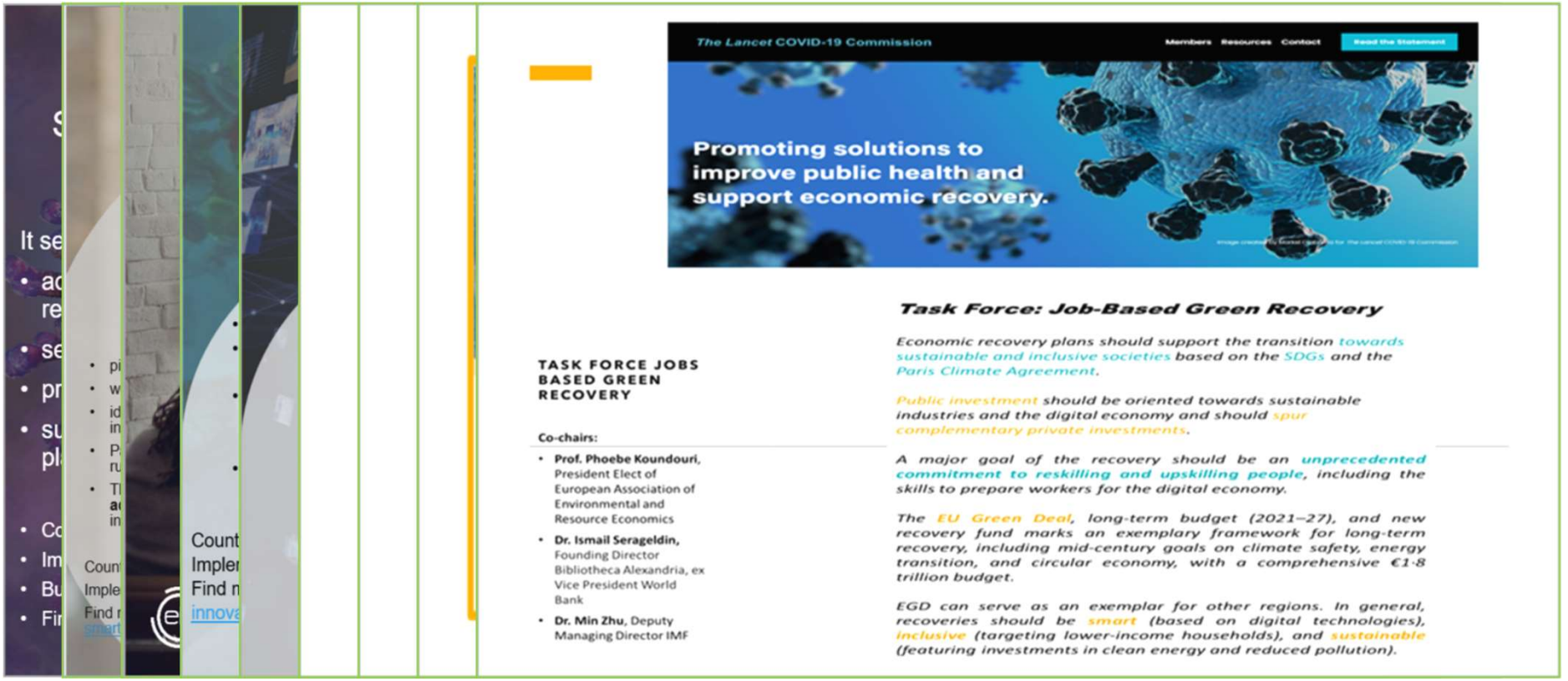

CREATING A COMMON VISION: climate neutrality adaptation mitigation sustainable economic growth clean tech leadership social inclusion
geospatial analysis & planning
time uncertainty ambiguity
CHALLENGES
unsustainable economic growth
climate crisis biodiversity loss
social inequality
POLICY FRAMEWORK
SDGs EGD Climate Agreement
science & innovation driven implementation
dynamic systemic equilibrium inter & intra generational
SUPPLY SIDE
production analysis & econometrics
green-digital technological solutions
renewables
circular economy
nature based solutions
digital twins
smart solutions
AI/ML
sensors
bio-physical modeling
geo-spatial models projections
system solutions
simulation of solutions
complexity science
institutions & governance
& stakeholder engagement
co-designing technological policy & financial pathways
education & awareness
research innovation commercialization
taxation regulation certification
financial instruments
preferences, behavioral economics, stakeholders analysis
Virtual Reality-aided choice experiments willingness to pay
DEMAND SIDE

Projects

Scientific Director
Prof. Koundouri

Transformations: Energy Decarbonization and Sustainable Industry / Health and Wellbeing/ Sustainable Cities and Communities/ Digital Revolution

Thematic Areas:
Climate Change Mitigation and Adaptation, Green-Digital-Just Recovery Pathways, Circular Economy and Nature-Based Solutions, Systems Innovation Approach



Transformation: Sustainable Seas and Oceans

Projects
Scientific Director: Prof. Koundouri

SEAwise: Shaping ecosystem based fisheries management (EBFM)

HORIZON 2020

Duration: 2021 - 2025

Budget: € 8,000,000 (Horizon 2020)

Objective:
To provide a fully operational approach for European Ecosystem Based Fisheries Management based on persistent networks and co- designed innovation.

This will be achieved by:

1. Creating a network of stakeholders, advisory bodies, decision-makers, and scientists to co-design EBFM priorities and methodologies;
2. Collecting data on European fisheries connections with social and ecological systems from scientists and stakeholders;
3. Developing predictive models of fisheries interactions with social and ecological systems to assess, select, and execute EBFM policies across Europe;
4. Providing ready-for-uptake advice for EBFM for Mediterranean, western and northern European waters.

Transformation on Sustainable Land-Use and Water

Projects, Scientific Director: Prof. Koundouri

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

EIT Climate KIC **HUB Greece, Director Prof. Koundouri**

Deep Demonstration - Research Commercialization - Innovation Acceleration Training for Up-Skilling and Re-Skilling