ENEA
Italian National Agency for New Technologies, Energy and Sustainable Economic Development

LCS·R Net

LCS-RNet 11th Annual Meeting
Technology Transfer and international collaboration to achieving Low Carbon Societies
Roma, 18 October 2019
Plenary 3: How to steer investments towards carbon neutral, resource efficient and resilient economy

Sustainable Finance Taxonomy and Carbon Pricing

Aldo Ravazzi Douvan

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IRP (International Resource Panel), Steering Committee
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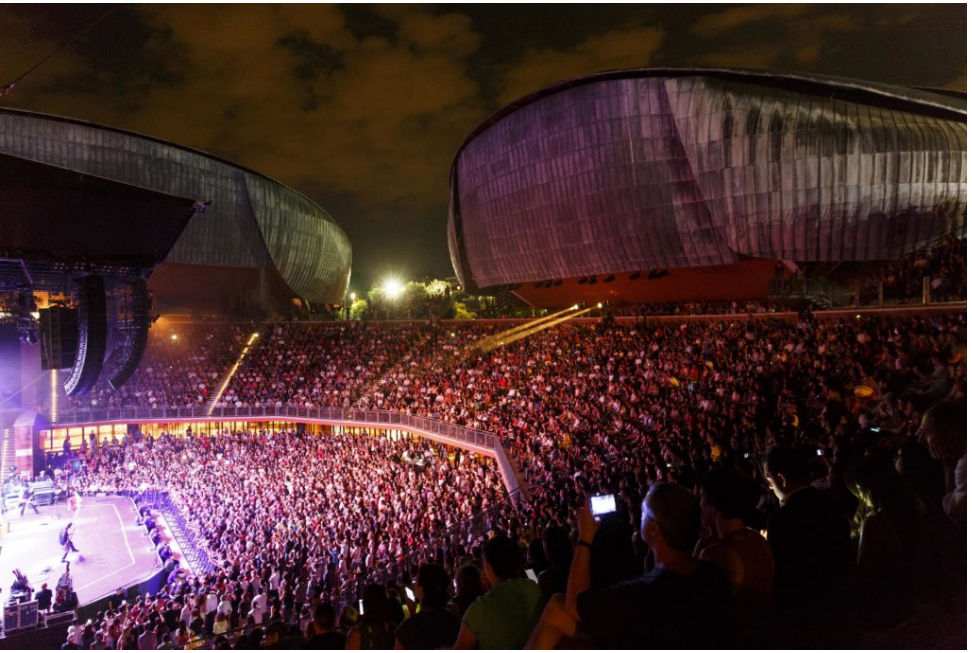
Contents presented do not necessarily match the positions of the Italian Ministry of Environment or T.A. Sogesid with which he cooperates

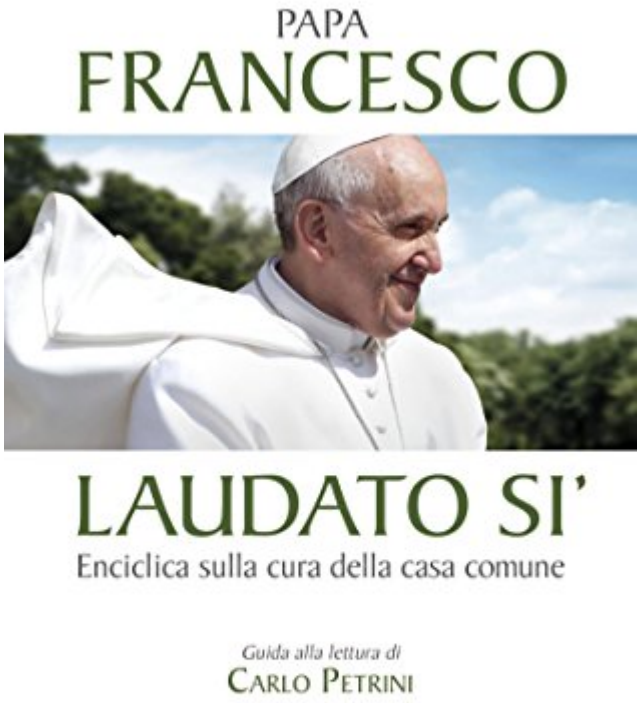
MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE

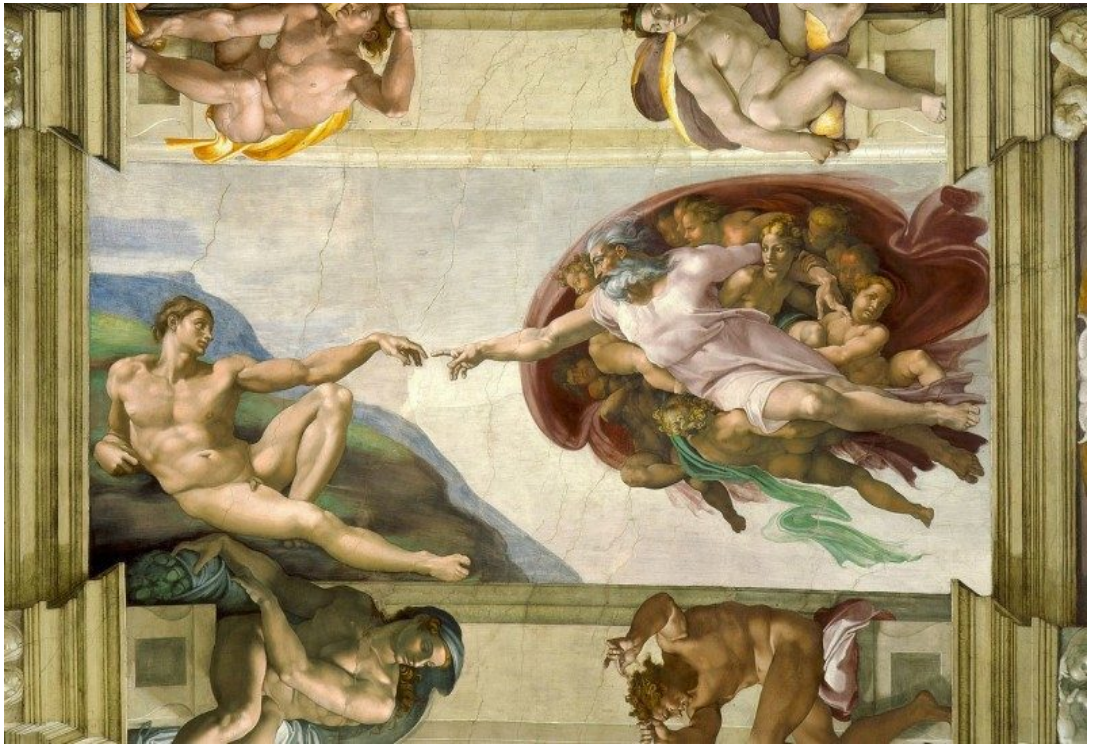
SOGESID

[1] Benvenuti a Roma! Welcome (back) to



[2] Benvenuti a Roma! Welcome (back) to Rome!



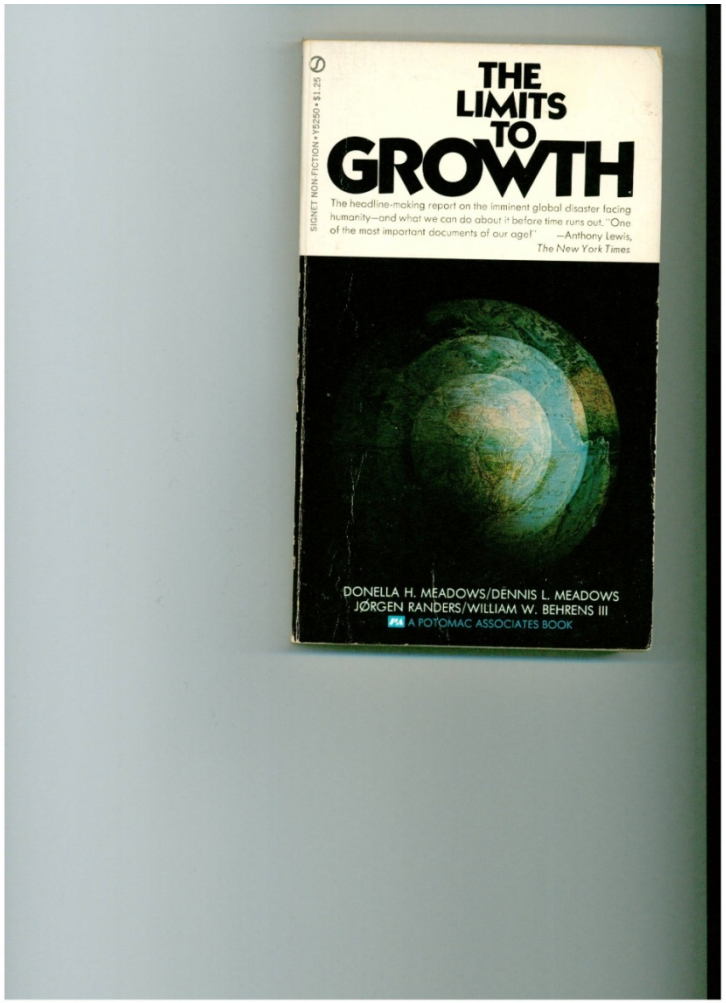


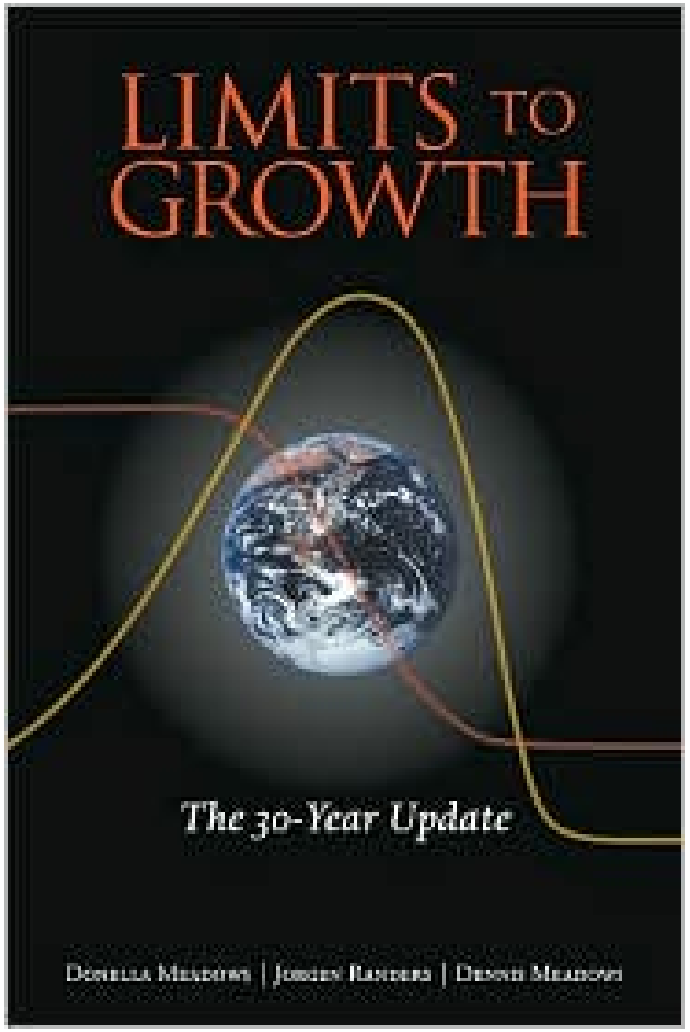
«I will be the defense lawyer of the Italian People» C.1
«Green new deal, climate & biodiversity, renewables» C.2

[3] Benvenuti a Roma! Welcome (back) to Rome!

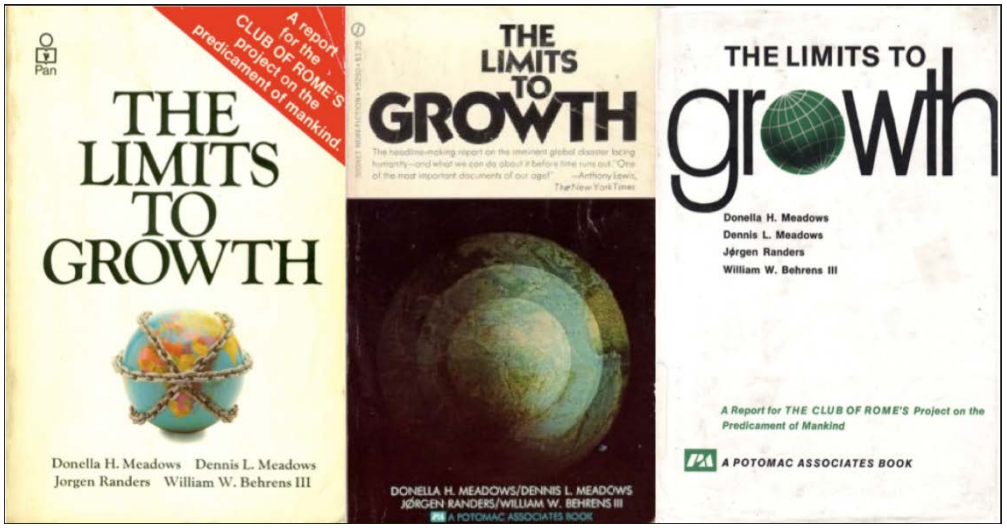
Club of Rome (1968): the MIT study 1972

Oct. 2018: 50 years celebration in Rome

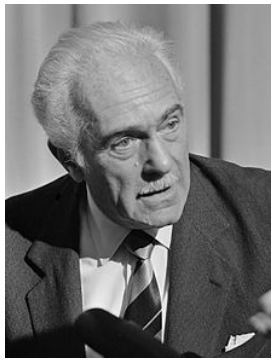




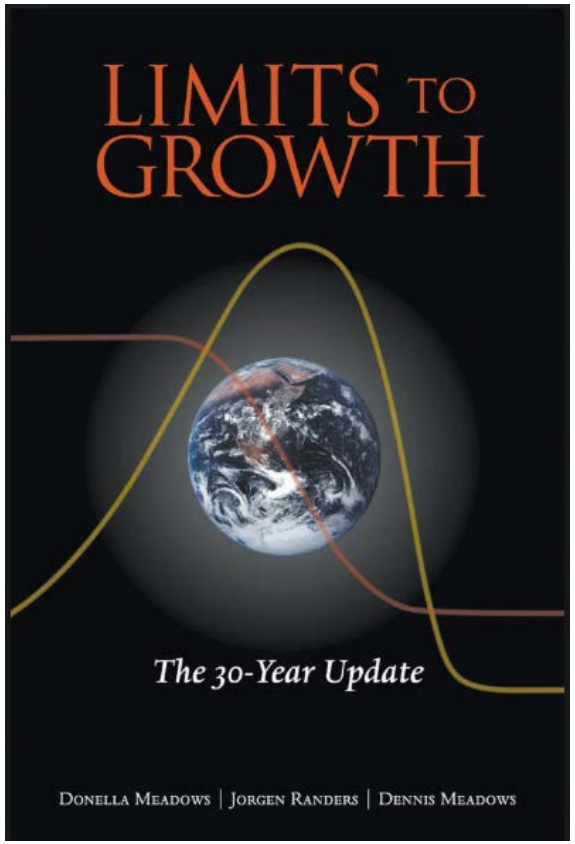
Club of Rome (1968): the MIT study 1972 – Oct. 2018 (50 years celebration in Rome)



1968



"It is not impossible to foster a human revolution capable of changing our present course". **Aurelio Peccei**.



2018

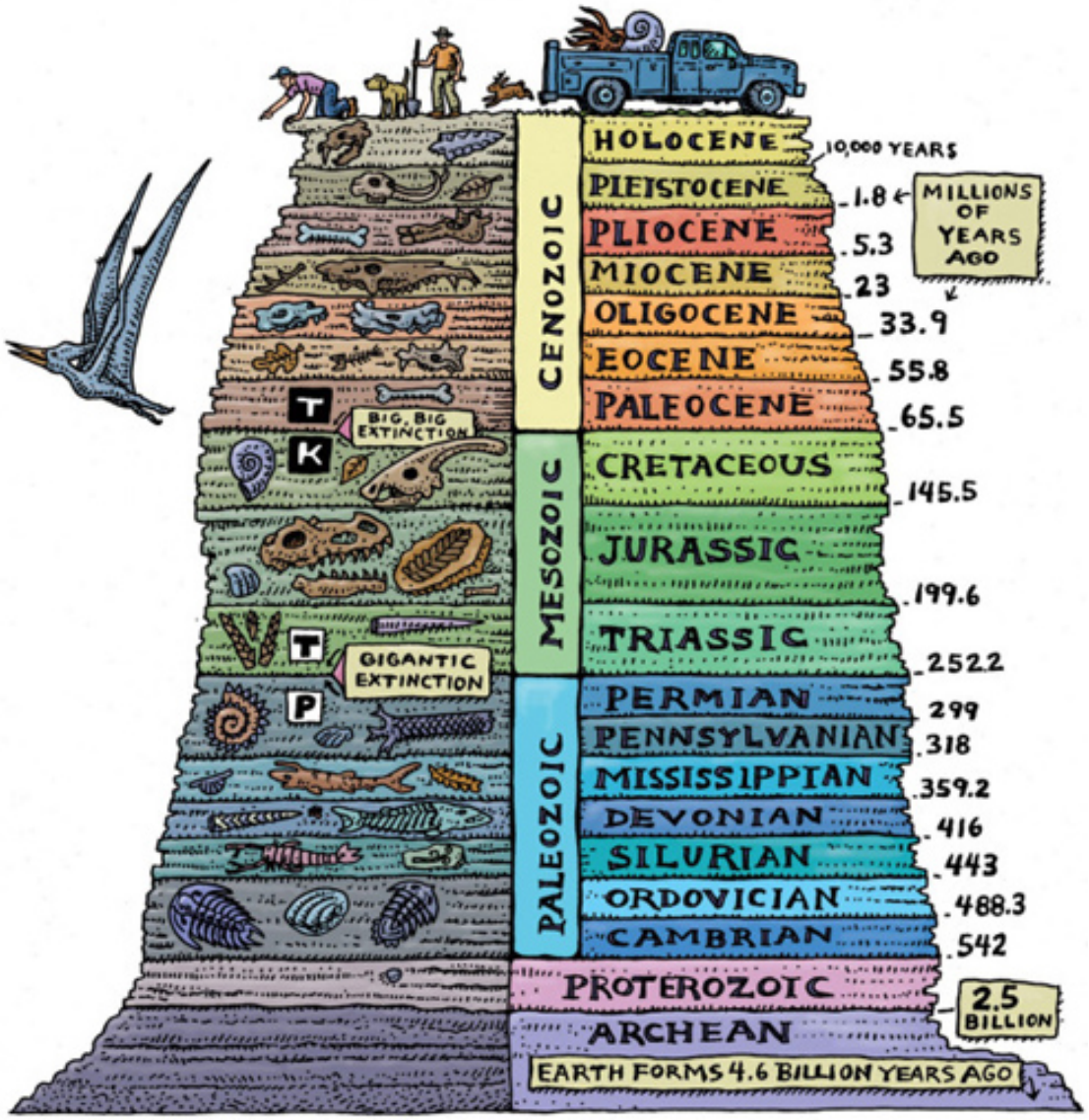
The Club of Rome

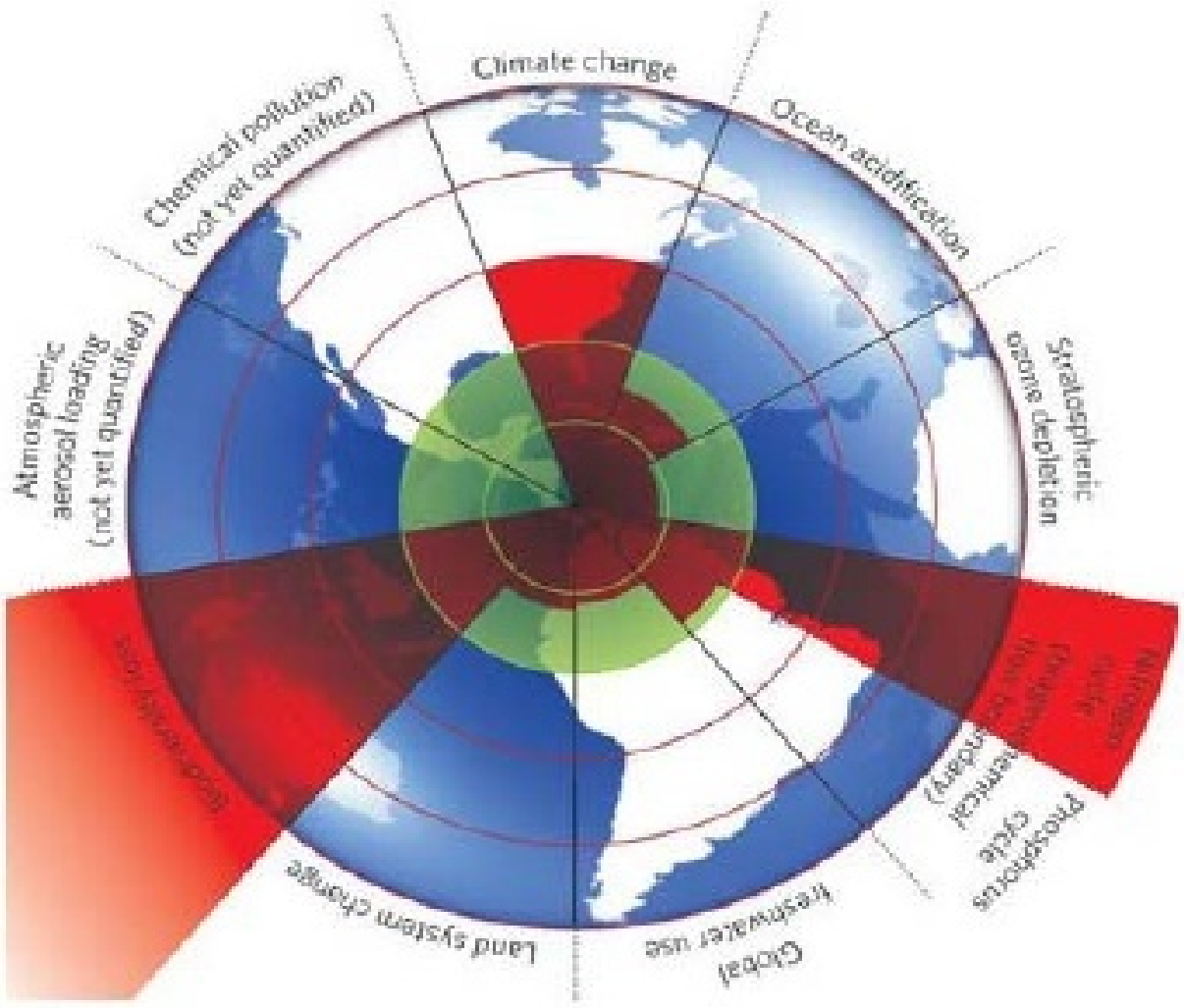
- In the same years, on the initiative of the Club of Rome, a reflection starts on the limits of growth and the problems of economic growth when coupled with environmental and social problems.
- Aurelio Peccei (Fiat International Manager)
- The Club of Rome commits a group of researchers at the Massachusetts Institute of Technology (Mit), a study project for investigating causes and long term consequences of growth on 5 variables:
- • population
- • industrial capital
- • food production
- • natural resources consumption
- • pollution

The limits to growth

- The conclusions of the study affirm that the evolution of the chosen variables, keeping fixed the model of growth, would reach their limits within a century, with a sudden and uncontrollable decline of the level of production and of the industrial system.
- It is necessary to modify the growth model choosing an option of development based on ecological and economical stability.
- Catastrophism or intuition?
- NB Italian translation: “Limits to development” instead of “Limits to growth”
- Long-sighted wisdom
- Recent convergence

From Holocene to Anthropocene?



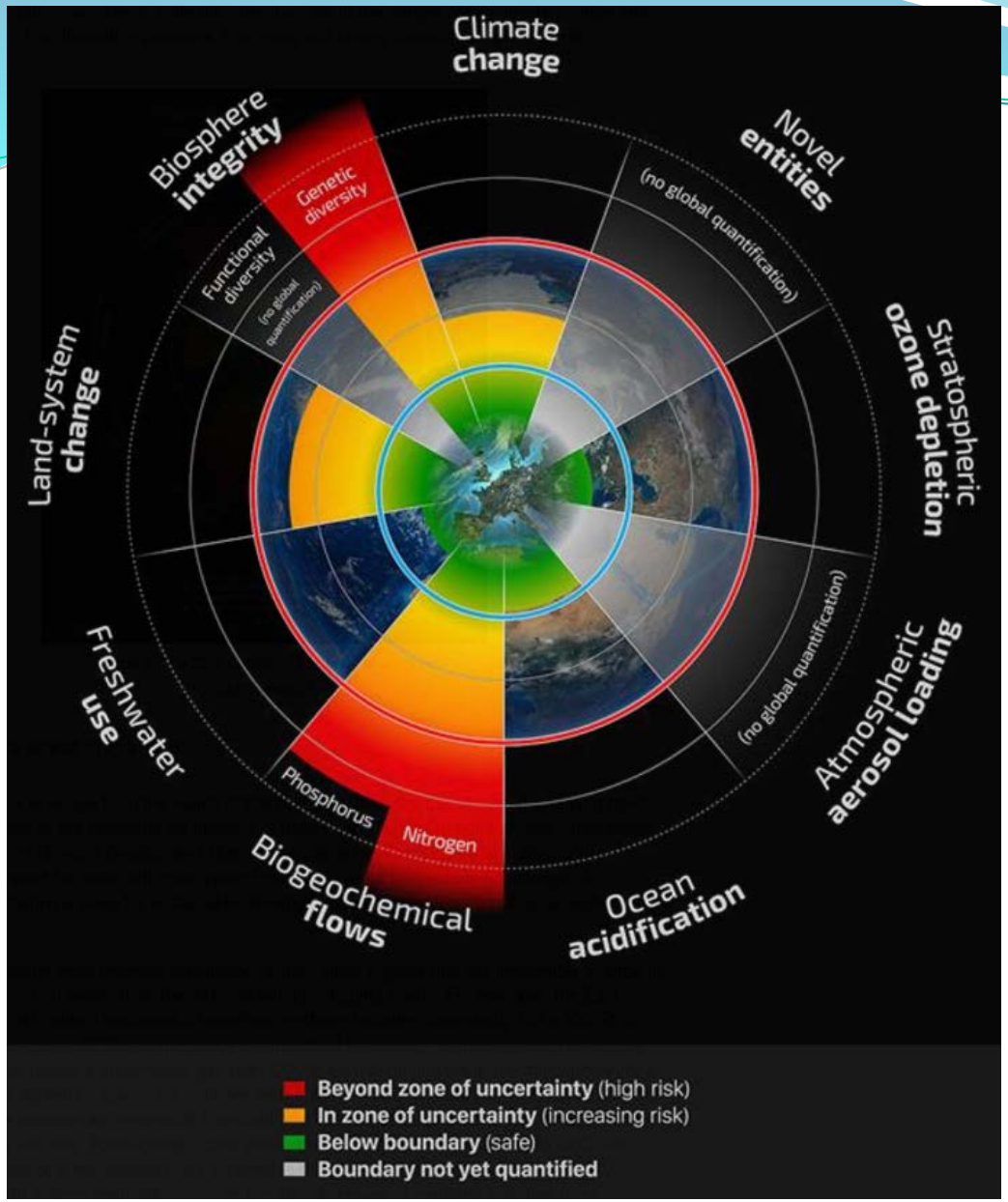


Source: Rockstrom et al (2009)

BE BASED ON AVAILABLE SCIENCE: THE PLANETARY BOUNDARIES

10 Planet Ecosystems to be kept under control:

1. Climate change
2. Biodiversity loss
3. Nitrogen cycle
4. *Phosphorus cycle*
5. Stratospheric ozone depletion
6. *Ocean acidification*
7. *Global freshwater use*
8. *Land system change*
9. Atmospheric aerosol loading
10. Chemical pollution



Source: Rockstroem et al. (2009) and Steffen et al. Planetary Boundaries: Guiding human development on a changing planet, Science, 16.1.2015; http://www-ramanathan.ucsd.edu/files/pr210.pdf

9 Planet Boundaries to be kept under control:

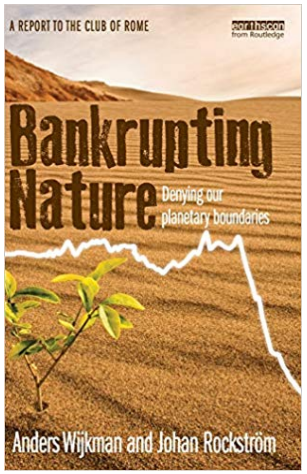
1. *Climate Change*
2. Biosphere integrity (*Biodiversity*)
3. Stratospheric ozone
4. Atmospheric aerosol
5. Ocean acidification
6. Biogeochemical flows (*P, N*)
7. *Land-system change*
8. *Freshwater use*
9. Novel entities ...

An economic and ecological reference

Anders Wijkman

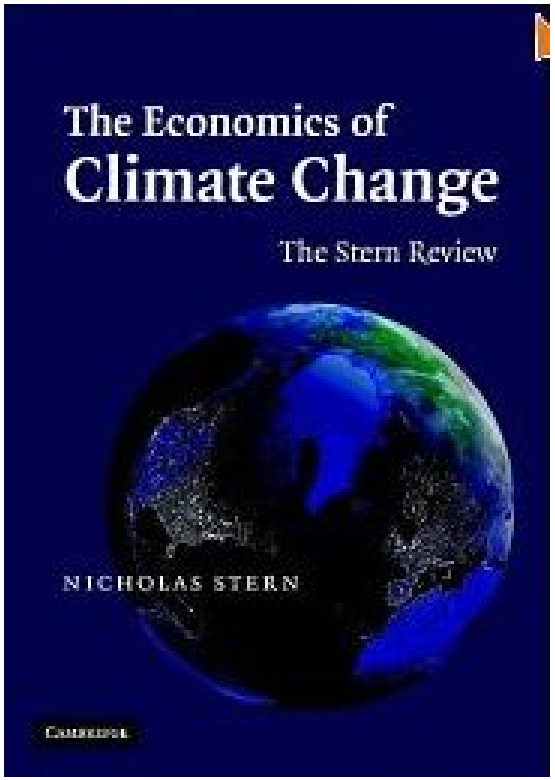
Johan Rockström
(2012)

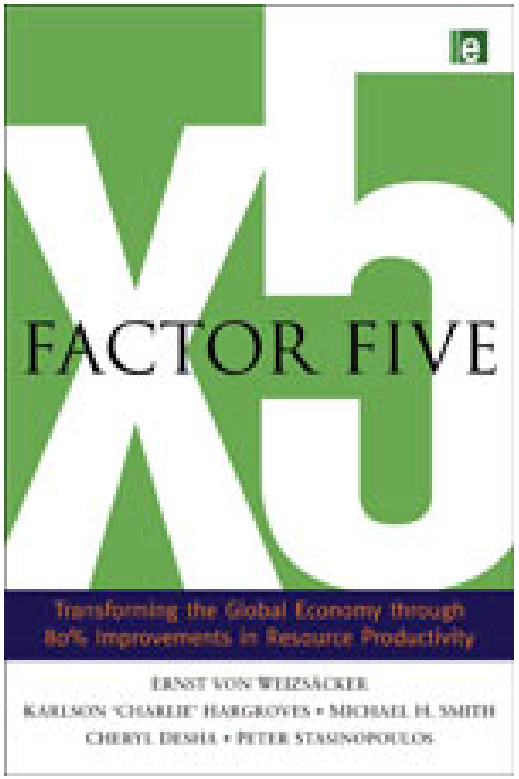
"**Bankrupting Nature: Denying Our Planetary Boundaries - A report to the Club of Rome**", Earthscan-Routledge.



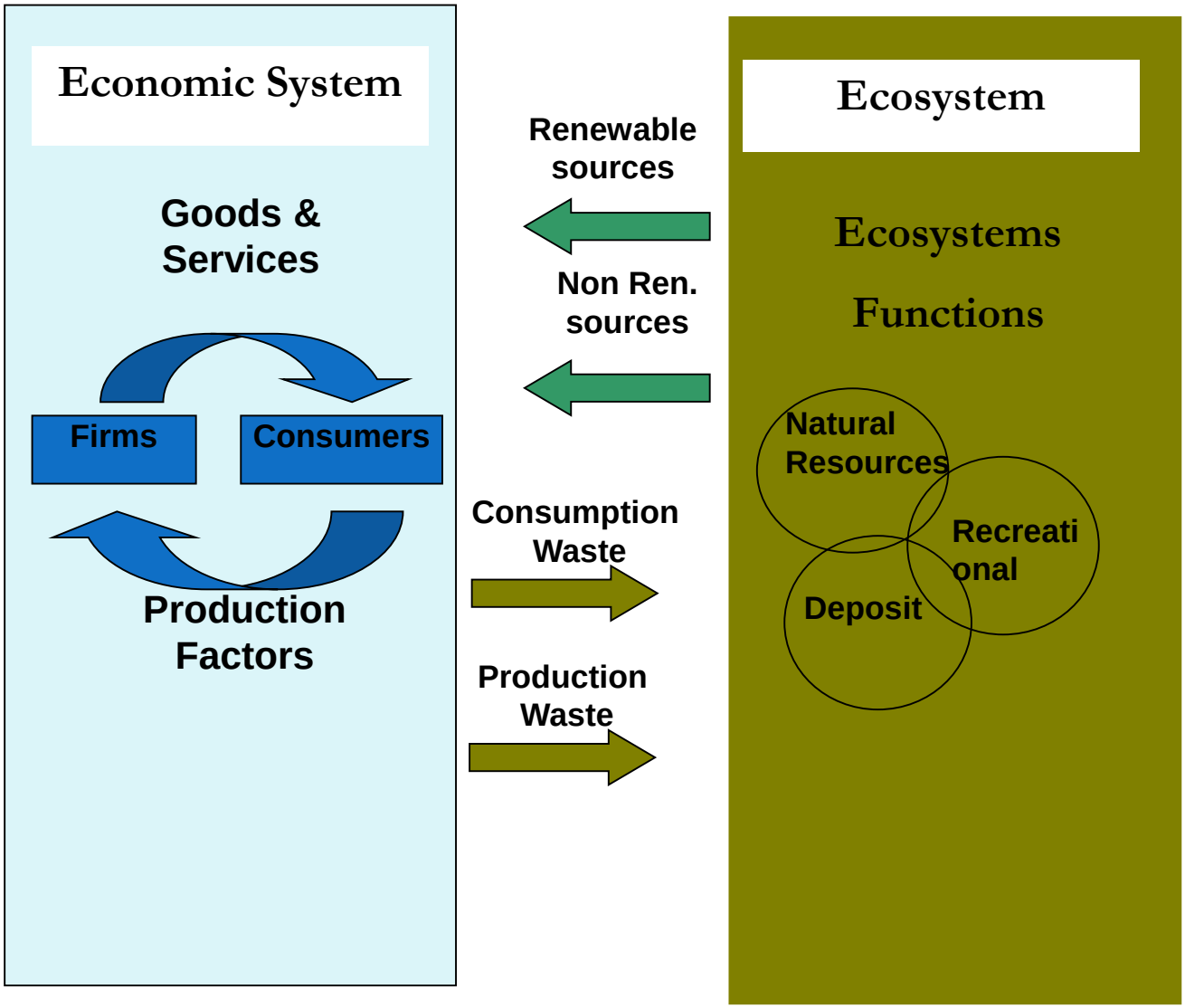
(Available also in Italian:
"**Natura in bancarotta. Perché rispettare i confini del pianeta. Rapporto al Club di Roma**", Edizioni Ambiente, 2014)

[4] Sustainable Development Economics (Green Growth, Green Economy, Resource Efficiency, Low-Carbon Economy, Circular Economy, etc.)



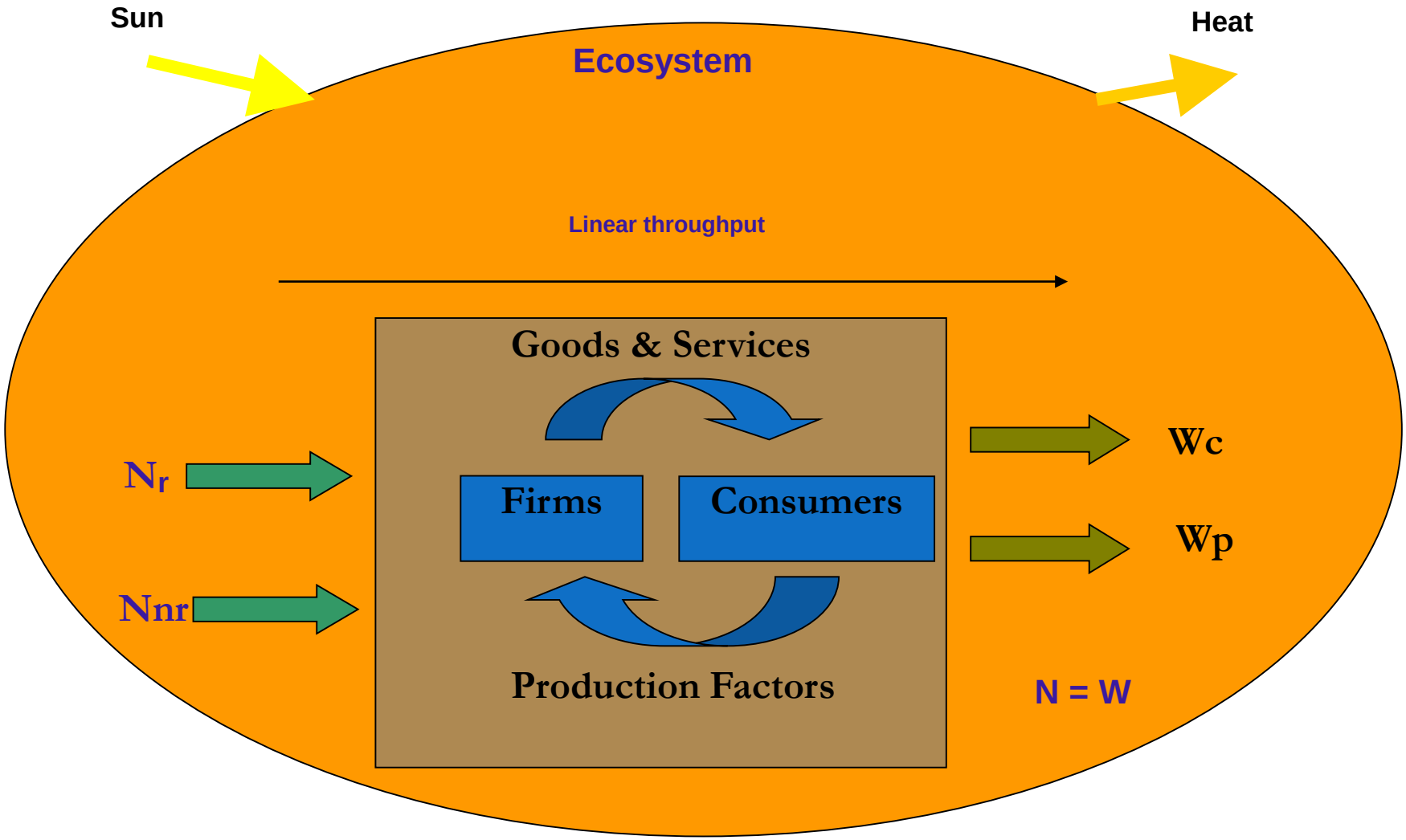


Traditional relation between Economic and Environmental Systems

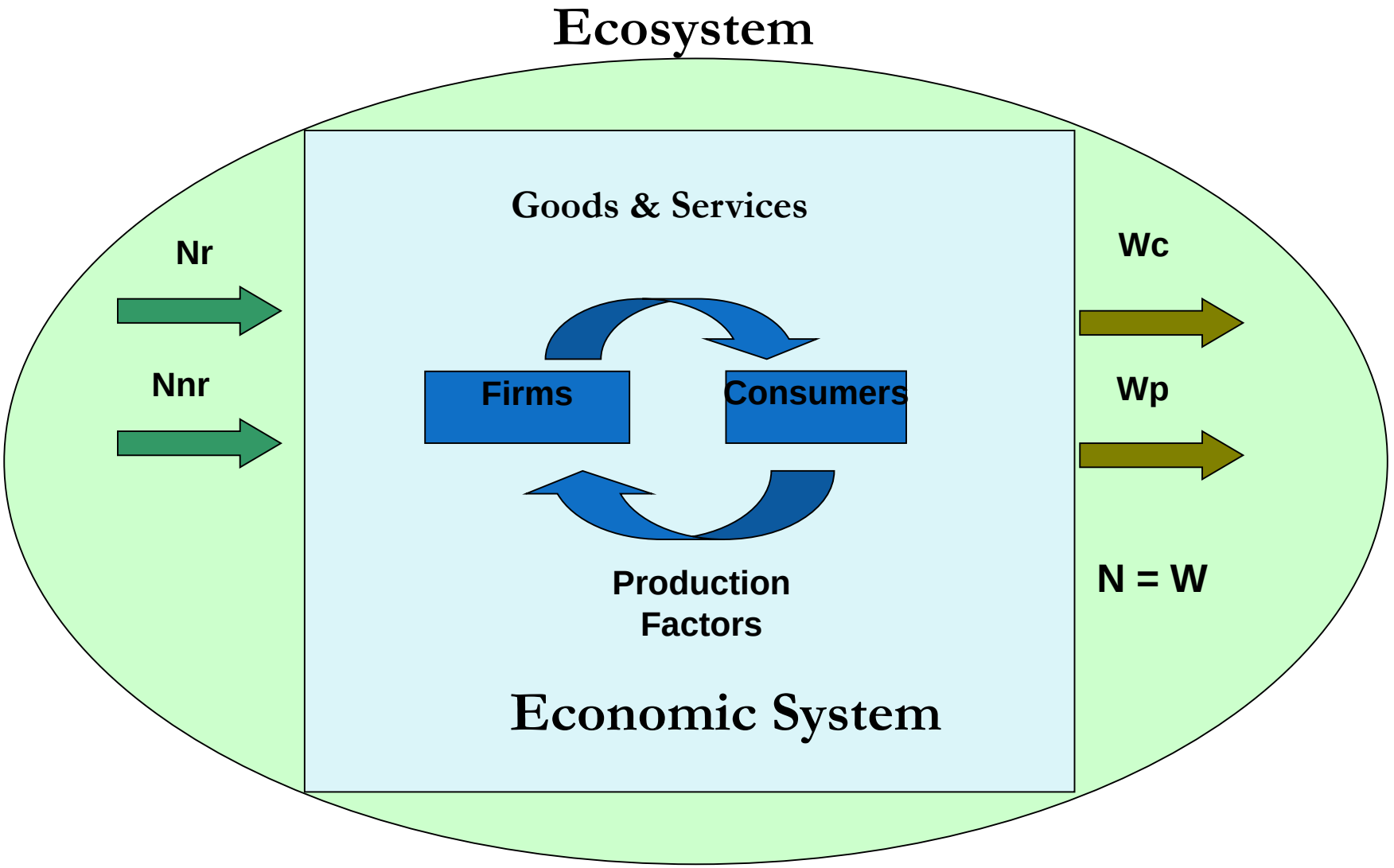


Sustainability: a change of paradigm

(Daly – La Camera)



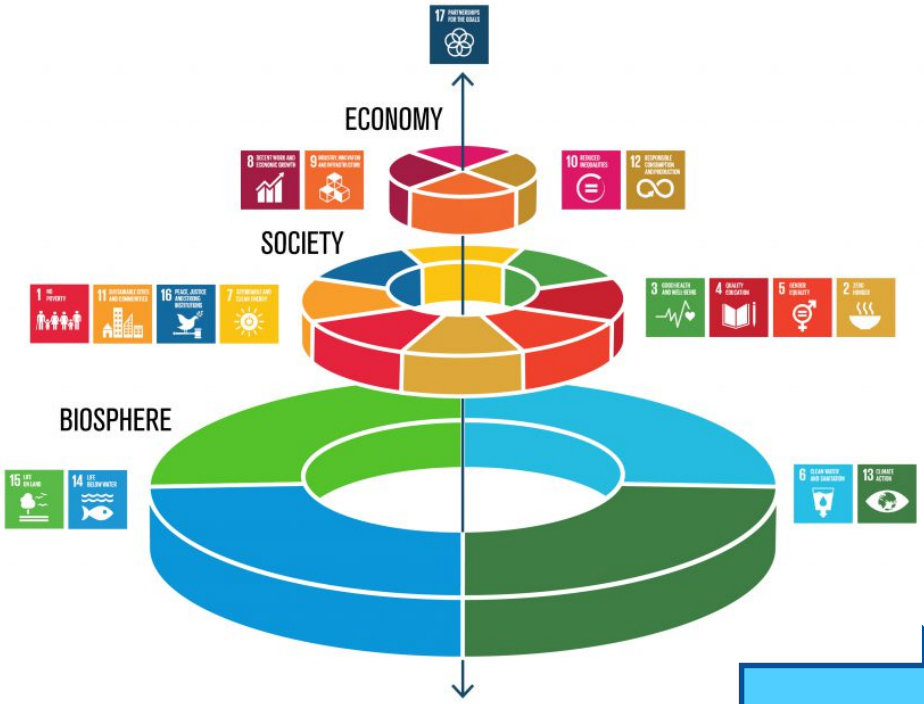
Sustainability:
from an Empty World to a Full World



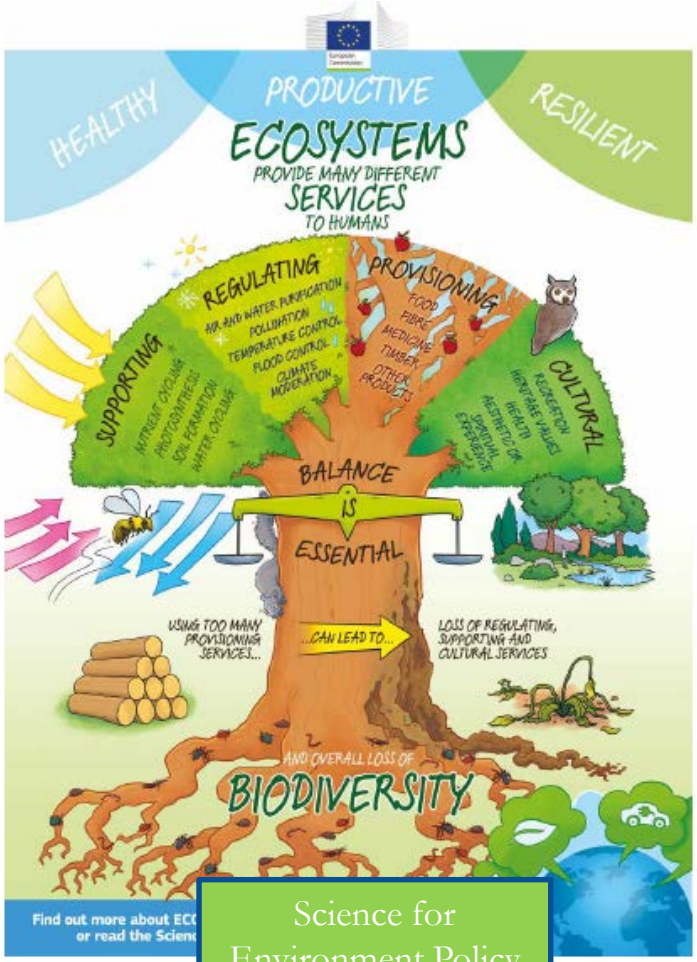

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE 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


PEOPLE
End poverty and hunger in all forms and ensure dignity and equality
PLANET
Protect our planet's natural resources and climate for future generations
Sustainable Development
PROSPERITY
Ensure prosperous and fulfilling lives in harmony with nature
PARTNERSHIP
Implement the agenda through a solid global partnership
PEACE
Foster peaceful, just and inclusive societies

NATURAL CAPITAL CRUCIAL FOR SUSTAINABILITY



Stockholm Resilience Center



Science for Environment Policy (2017) *Taking stock: progress in natural capital accounting.*

THE ENVIRONMENTAL «ISSUE»

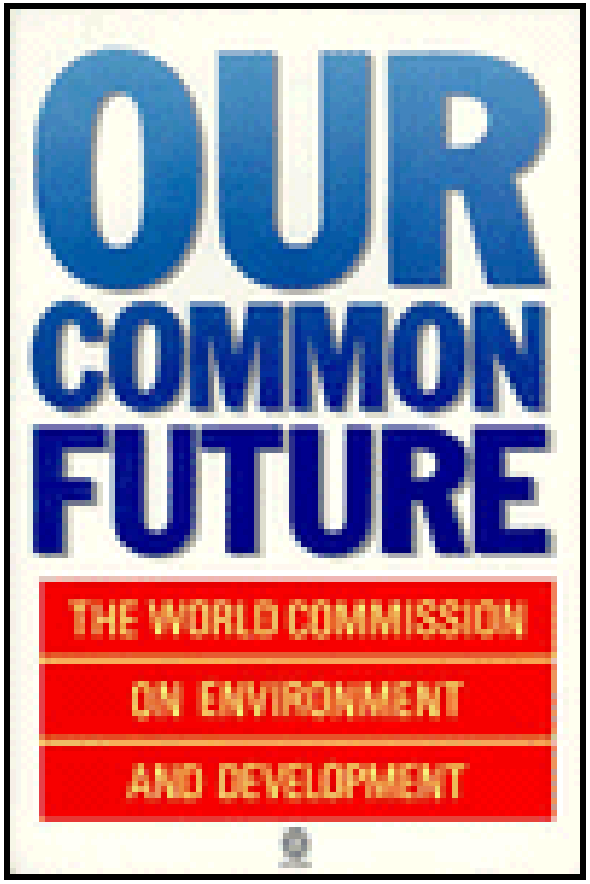
Rachel Carson's environmental ethics
Philip Cafaro

In 1962 Silent Spring (Rachel Carson)

In 1971 Closing Circle (Barry Commoner)

In 1973 Small is beautiful (E.F. Schumacher)

The Brundtland Report



- The most known definition of sustainable development is certainly that coming out of the Brundtland Report (1987) defining as sustainable *development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs.*

Definitions of Sustainable Development

- Ideas and proposals:
  - Growth
  - Development
  - Sustainable Development - UN
  - Développement Durable - France/Québec/FR
  - Green Growth - OECD
  - Green Economy - UNEP
  - Sustainable Economy - UK against (eq. to assisted economy)
  - Sustainable Prosperity - Canada
  - Prosperity without growth - Tim Jackson (UK SD Commission)
  - Planetary Boundaries - Rockstroem et al.
  - Limits to Growth - Club of Rome
  - Degrowth - Smart degrowth - Happy degrowth - Serge Latouche
  - Sustained Growth - LDCs - WB

Definitions of Sustainable Development

- Ideas from economists:

- GDP introduced afetr the 1929 Crisis
- But even Kuznets in front of the American Congress …
- Limits of GDP
- GDP is measuring economic activities
- GDP is not enough to measure welfare

- GDP and economists
- GDP and politicians
- GDP and journalists

- We need more
- We need to integrate environmental and social aspects in welfare

The Paris Agreement

"This agreement will need to be differentiated, **fair**, **sustainable**, dynamic, balanced and **legally binding**, and will need to ensure that, in 2020 [and in 2030, 2050, 2100], the global temperature does not rise by 2°C – or even 1.5°C – compared to the pre-industrial era because of greenhouse gas emissions".

Paris 2015 | COP 21 - Speech by Laurent Fabius, French Minister of Foreign Affairs & International Development, President of CoP21

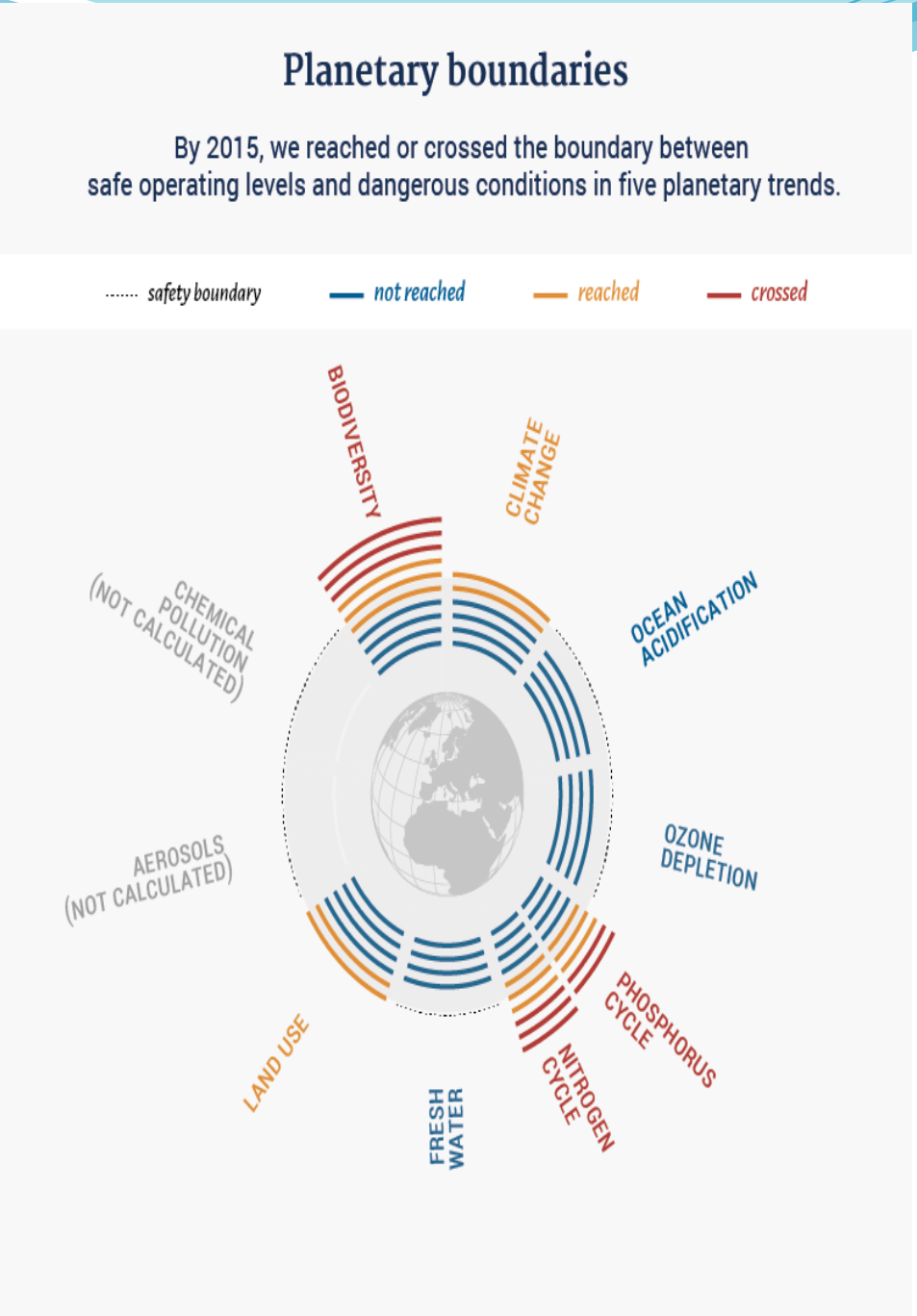
- 100 billion U$ by 2020 mobilized from DCs to LDCs.
- Measuring, Reporting, Monitoring

Janez Potocnik, IRP-GRO
(International Resources Panel, Global Resources Outlook 2019)

For the first time in a human history we face the emergence of a single, tightly coupled human social-ecological system of planetary scope.

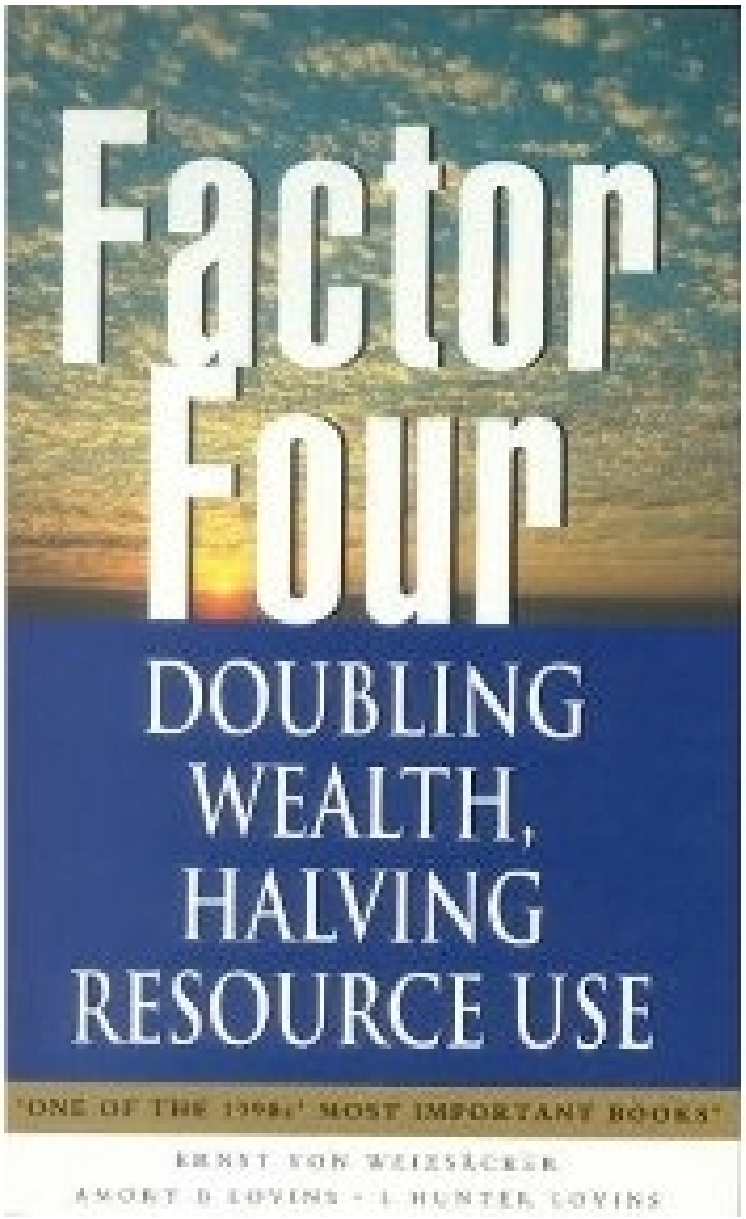
We are more interconnected and interdependent than ever.

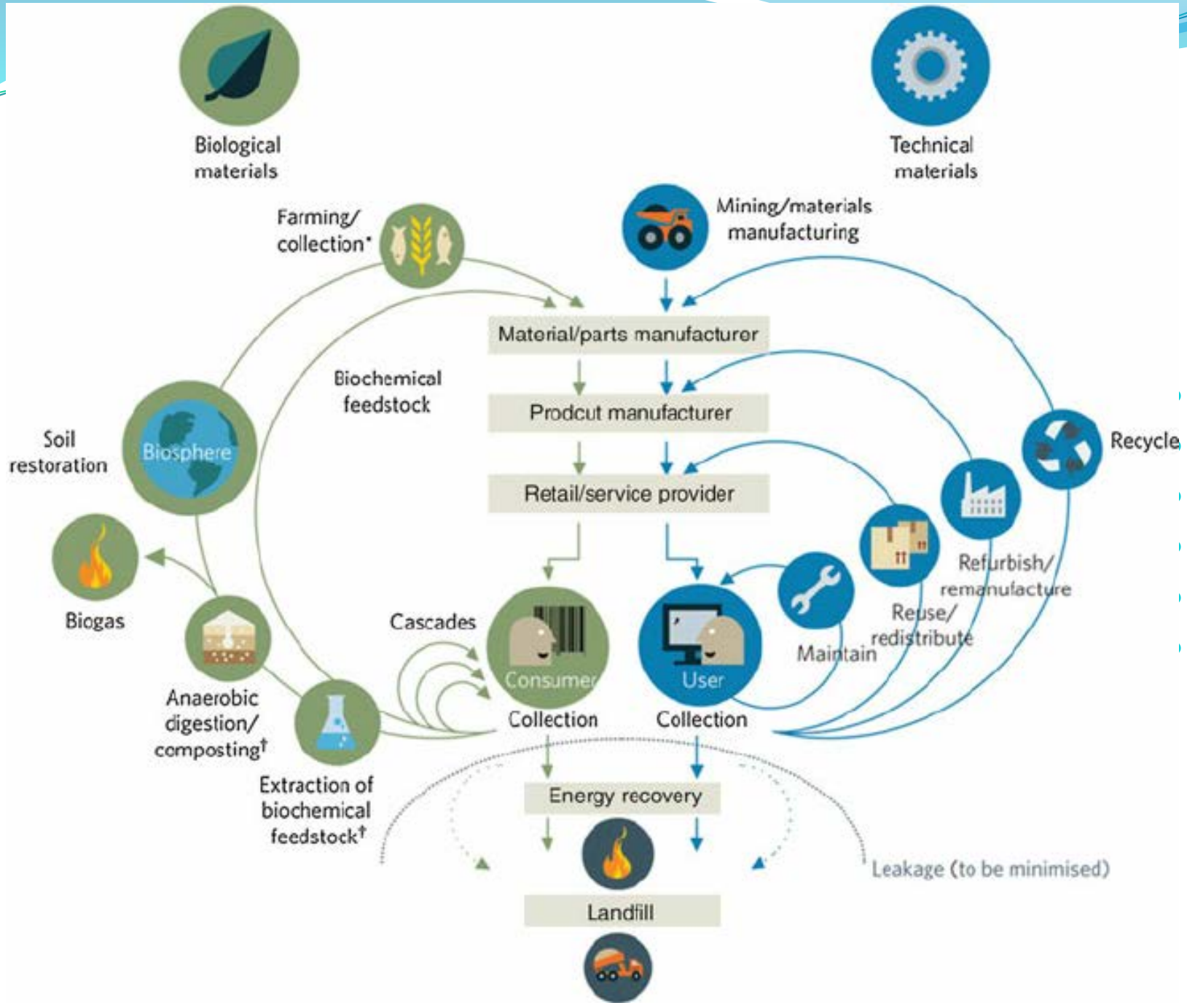
Our individual and collective responsibility has enormously increased.



Origins of Resource Efficiency: "Factor 4"

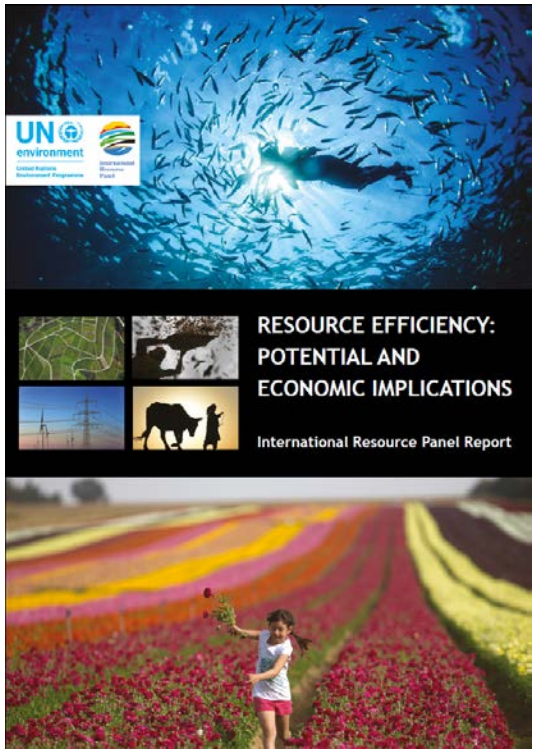
- Factor 4: the goal of being twice as productive with half the resources (materials and energy), leading to a factor 4 improvement in efficiency.
- In other words: practices which are just as productive with 1/4 of the resources or 4 times as effective with the same resources.
- The concept was introduced in the 1998 book, Factor 4, written by L. Hunter Lovins and Amory Lovins of the Rocky Mountain Institute, and Ernst von Weizsäcker, founder of the Wuppertal Institute for Climate, Environment & Energy.
- Firms maximise Resource Efficiency every day, they practice Circular economy whenever it is convenient: they reduce costs, they maximize profits: why is the cumulative behaviour at economy level insufficient, why do we need public intervention? And how?

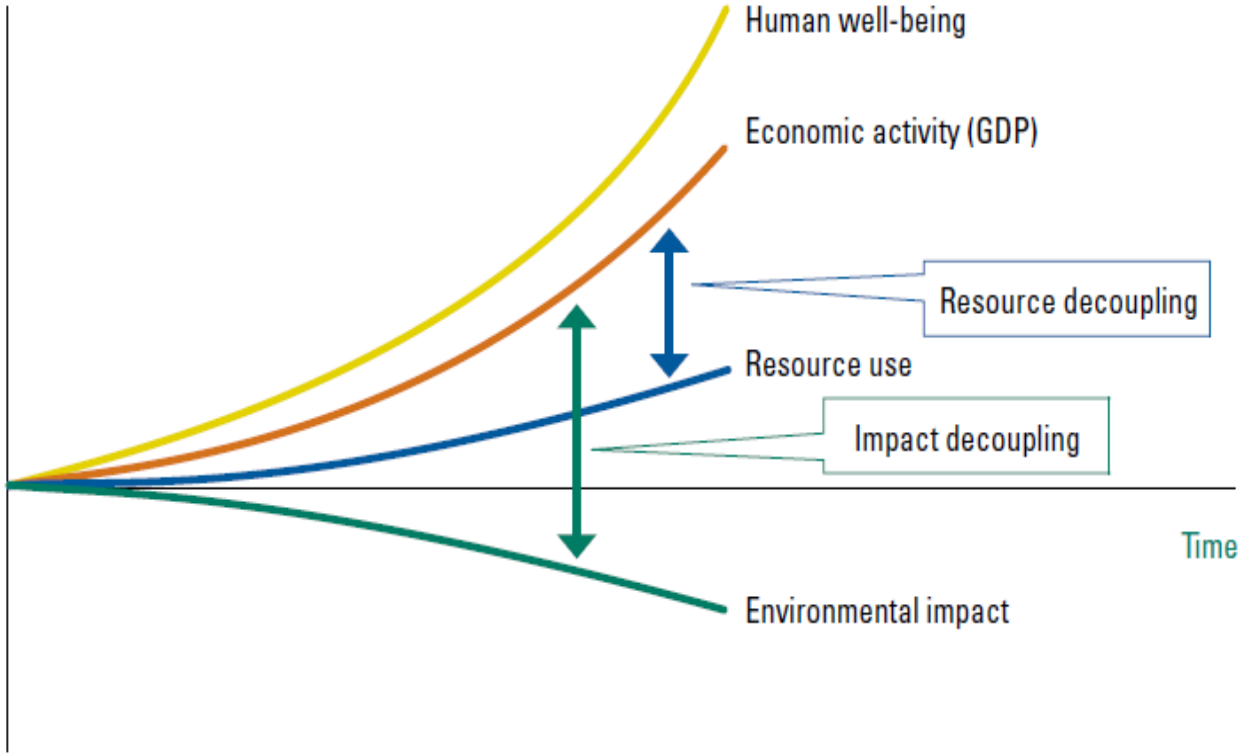




- Source: Ellen Mc Arthur Foun-dation (2012)

[5] CIRCULAR ECONOMY: DECOUPLING





Source: IRP (International Resource Panel) 2017
Paul Ekins (UCL), report leader

[6] Environmental Accounting public *and* private (1): Beyond GDP

- Firms' efforts for environmental/sustainability accounting: UN Global Compact - GRI Global Reporting Initiative - WBCSD World Business Council on Sustainable Development - ...
- Beyond GDP – limits of GDP – Green GDP and Satellite Accounts (SEEA)

  Measuring production/wealth/welfare/happiness – the Stiglitz-Sen-Fitoussi Commission
- Evolution of definition and measurement of GDP
- Evolution of company's traditional accounts

[7] Environmental Accounting public *and* private (2): Non-Financial Reporting

- Improvement of traditional company accounts thru the years (demand of transparency, accountability, minority shareholders rights, guarantee for the stock market, data availability thanks to I.T., …)
- Encourage the 5% of existing best practices (vanguard)
- Bring along the 95% of less involved actors
- Are times ripe for environmental/sustainability minimum contents in company reporting? (just as there are minimum contents for profits & losses, balance sheet, financial statement?)
- EU Directive on NFR (Non-Financial Reporting)

Environmental Taxation as a tool for carbon pricing
The challenges

- Economic instruments, in many cases, are more effective, efficient and bring to more welfare gains with respect to regulatory instruments, not to mention voluntary instruments.

- If poorly designed, however, they might increase economic costs of taxation, while bringing low environmental gains:
  - Differences between «flow» and «stock» pollutants;
  - High information requirements to efficiently tackle emissions;
  - Heterogeneity in abatement costs within industries and sectors

Carbon Pricing as a policy tool - Cap and Trade

- «Cap-and-trade system»: Not knowing differences in abatement costs, firms with lower abatement costs will trade allowances with firms with higher abatement costs;
- Emissions will be reduced where it is cheapest and efficient to do so;
- Drawbacks:
  - Potential oversupply of permits might need options for the «market creator» to buy-in allowances;
  - Uncertainty for polluters on how much they will pay over time.

Carbon pricing as a policy tool - Environmental taxes

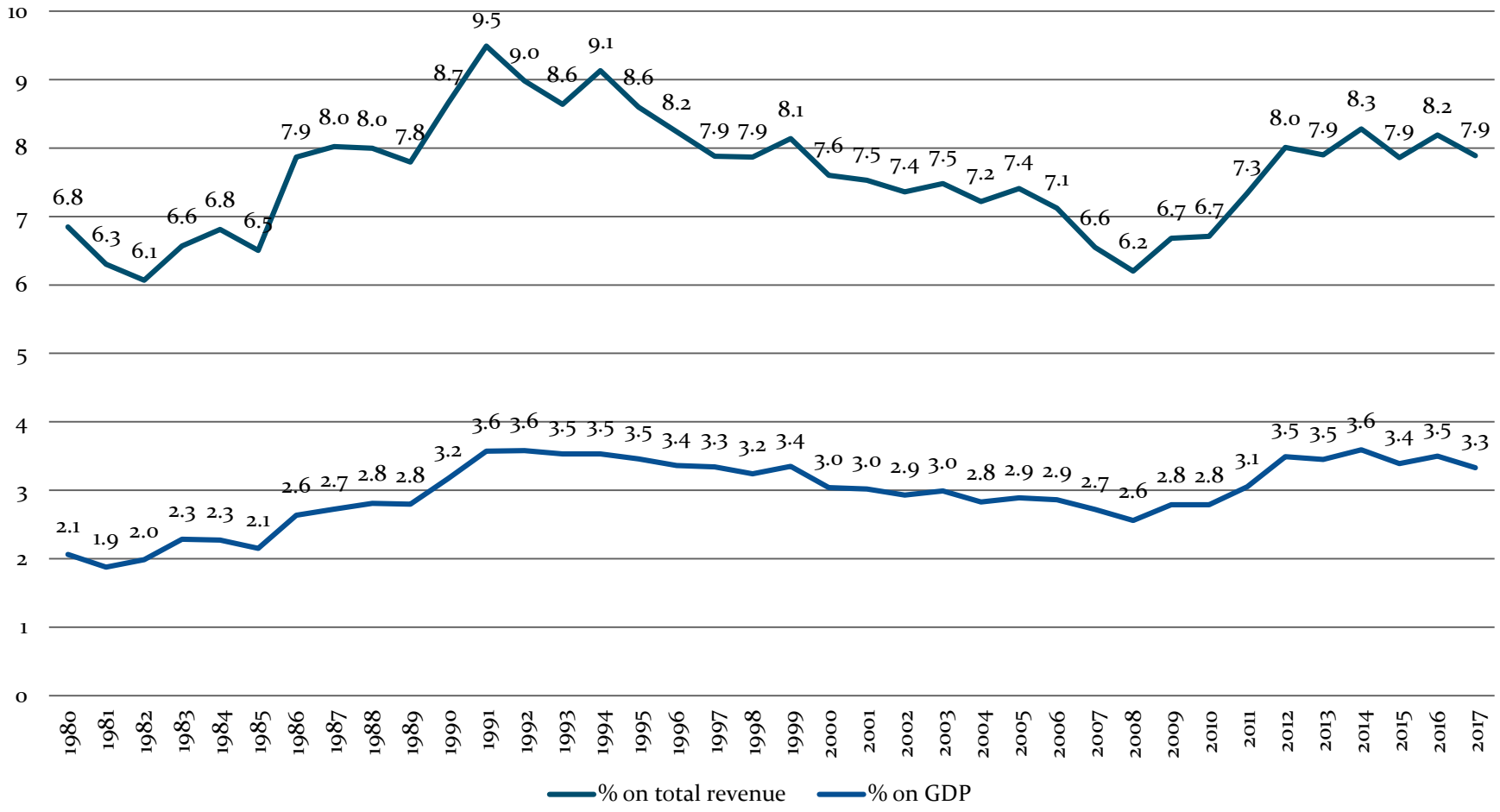
- If there is significant uncertainty on the costs of lowering emissions, taxes are preferable;
- Potential for double dividends: reducing socially damaging activities and the needs to raise tax revenues in other welfare-reducing ways:
  - E.g., env. tax revenues might be used to pay for cuts in labour income which harm work incentives.
- Drawbacks:
  - Env. taxes might increase prices in the economy somewhere else causing inflation effects to be compensated.

Is the double-dividend possible in the Italian tax system? And in the EU?

- If current tax system is suboptimal (negative spillovers and externalities not taxed high enough and taxes in other domains too high), raising taxes on polluting activities would conduce to a double dividend, because of the initial poor design of the tax system as a whole.

- Is this the case in Italy? And in the EU?

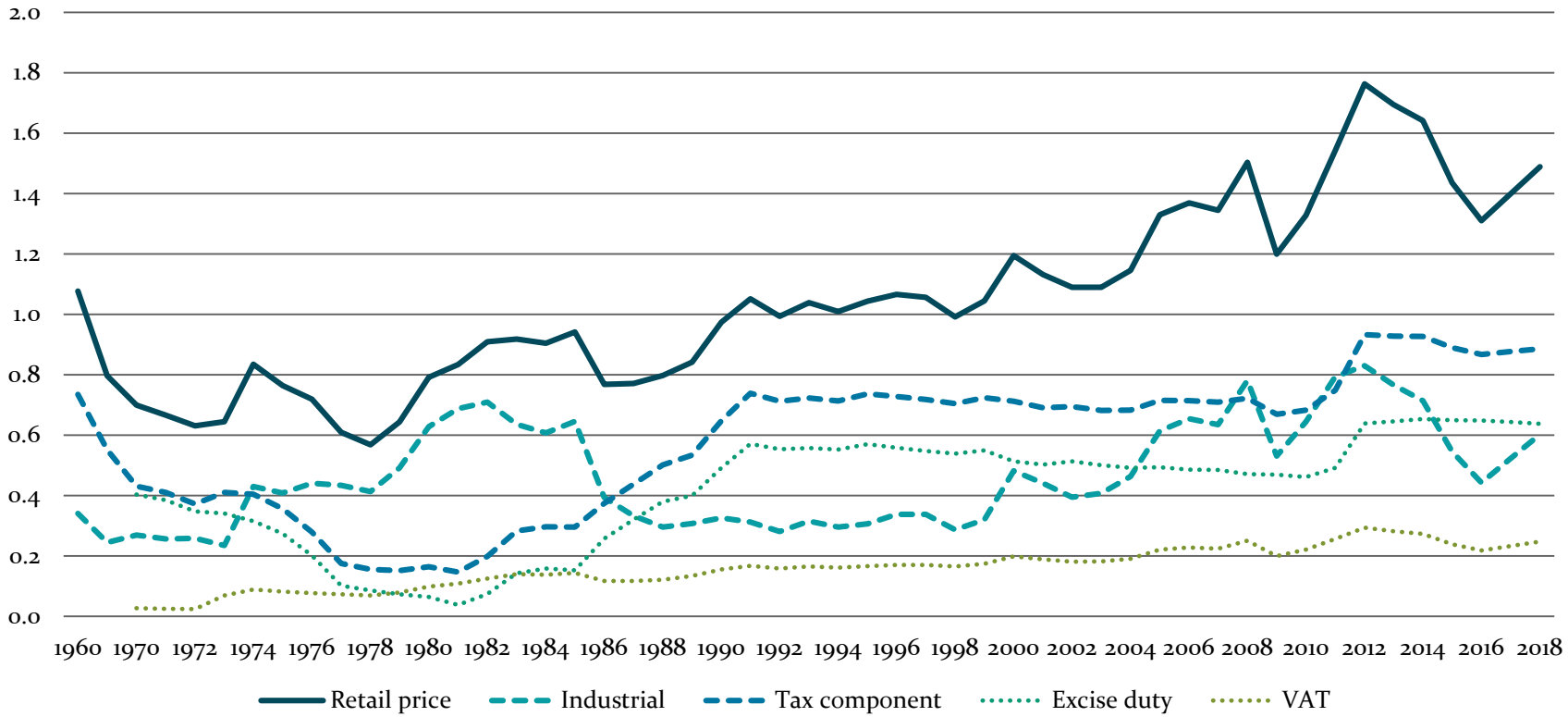
Environmental taxation: revenue on GDP and on total revenue (%)
Source: ISTAT (2019)



Price of diesel with tax component

(Euro constant 2018 per litre)

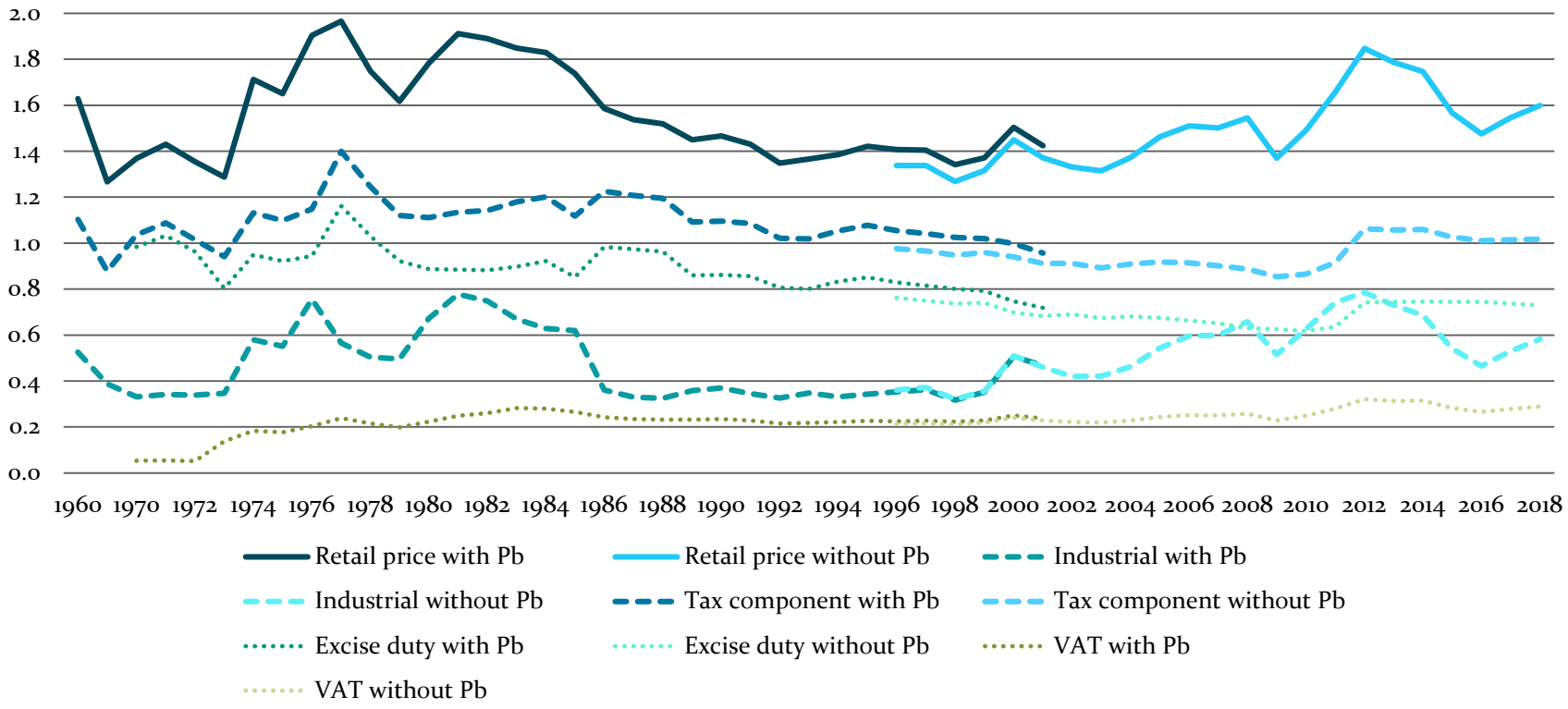
Source: Mattm processing on MiSE and UP data (Istat GDP deflator)



Price of gasoline with tax component

(Euro constant 2017 per litre)

Source: Mattm processing on MiSE and UP data (Istat GDP deflator)



European Semester Recommendations in 2017 and removal of EHSs (Environmentally Harmful Subsidies)

- "Shift the tax burden from the factors of production onto taxes less detrimental to growth in a budgetary neutral way by taking decisive action to reduce the number and scope of tax expenditures";

- Reducing subsidies that are detrimental to the environment, instead of introducing taxes on the same polluting activities, is another way of providing the correct price signal on polluting activities.

The Catalogue on EHS and EFS in Italy

- The first edition of the CES was transmitted to the Parliament in 2017 and identified 131 measures for a total financial effect of an estimated 41 bl. €
  - 16.2 bl. € of EHS (FFS estimated at 12.2 bl. €)
  - 15.7 bl. € of EFS;
- The second edition identified 161 measures for a total financial effect of an estimated 41 bl. €
  - 19.3 bl. € of EHS (FFS are estimated at 16.1 bl. €)
  - 15.2 bl. € of EFS

  75% of EHS are tax expenditures

- **EHSs: Environmentally Harmful Subsidies**
- **EFSs: Environmentally Friendly Subsidies**
- **FFSs: Fossil Fuel Subsidies**

Climate-change is a global issue

- Climate-change is a stock problem rather than a flow problem: many GHGs stay in the atmosphere for long time;

- No single country (except, maybe, for China and USA) can make a significant impact on this global problem just by cutting its own emissions (Italy responsible for 2,79% in OECD total in 2016);

- European efforts must be at stake.

[8] A reform of the European Union budget

- The High Level Group on Own Resources (HLGOR) was established in February 2014 to search for more transparent, simple, fair and democratically accountable ways to finance the EU.

- In 2014, the Chair of the Group was Mario Monti, who said:

  "*The EU budget is one of the main tools for the EU to achieve its objectives and needs in depth rethinking. It should focus more on common challenges such as securing our external borders, stabilizing our neighbourhood or tackling* ***climate change****…*".

The final report and recommendations, "Future financing of the EU", was published in December 2016 and presented to the European Parliament and Council in January 2017.

- The key environmental recommendation was:

A new mix of own resources should be considered such as those improving the functioning of the Single Market and fiscal coordination (e.g. a corporate income tax-based own resource), or those that relate to the Energy Union, environment, climate or transport policies (e.g. a CO_2 levy).

A reform of the European Union budget (1)

In 2017 June, the report confirmed previous findings and it proposed more environmentally ambitious proposals:

"..related to the **Energy Union**, environment, climate or transport policies include a **CO_2 levy**, proceeds from the European emission trade system, an **electricity tax**, a **motor fuel levy** (or excise duties on **fossil fuels in general**), and indirect taxation of imported goods produced in third countries with high emissions".

".. in particular if they accompanied priority policy objectives such as the **decarbonisation** of the European economy…".

Source: Reflection paper on the future of EU finances, 2017 June

A reform of the European Union budget (2)

2 May 2018: "Proposal for a COUNCIL REGULATION laying down implementing measures for the system of Own Resources of the European Union".

The key environmental recommendations are:

Building on recommendations from the High-Level Group on the "Future Financing of the EU", the Commission proposes to modernise and simplify the current overall financing – "Own Resources" – system and diversify the budget's sources of revenue.

The proposed basket of new Own Resources includes:

1. 20% of the revenues from the Emissions Trading System;

2. A 3% call rate applied to the new Common Consolidated Corporate Tax Base (to be phased in once the necessary legislation has been adopted);

3. A national contribution calculated on the amount of non-recycled plastic packaging waste in each Member State (0.80 € per kilo).

1. & 3. are linked to policies on the environment and climate action.

[9] State and Trends of Carbon Pricing 2019 - CPLC

CARBON PRICING INITIATIVES AROUND THE WORLD

57 implemented or scheduled for implementation

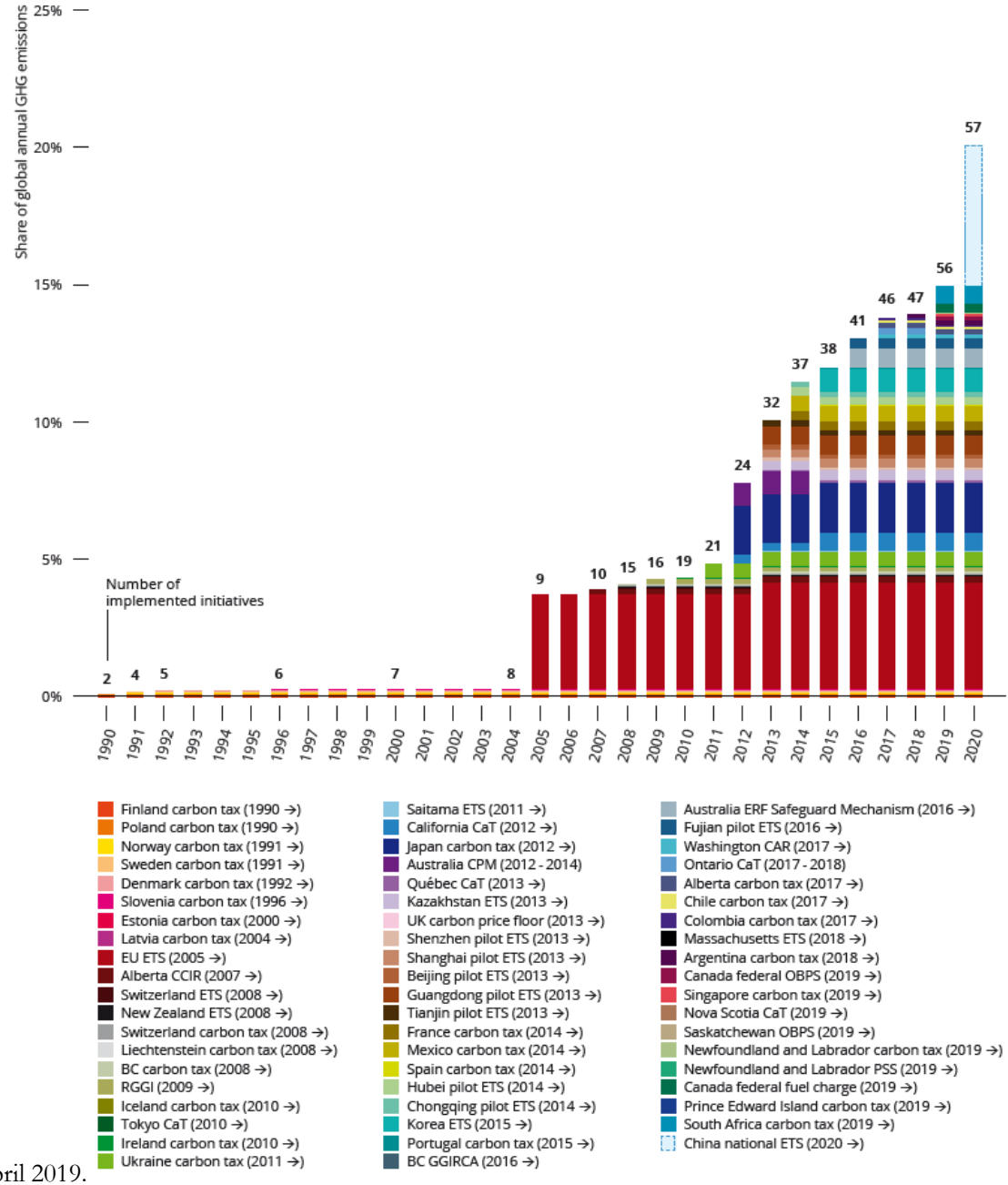
46 NATIONAL
28 SUBNATIONAL
jurisdictions

11 $GtCO_2e$ = 20%
of GHG emissions covered

Range of prices in existing initiatives
US$1 - 127/$tCO_2e$

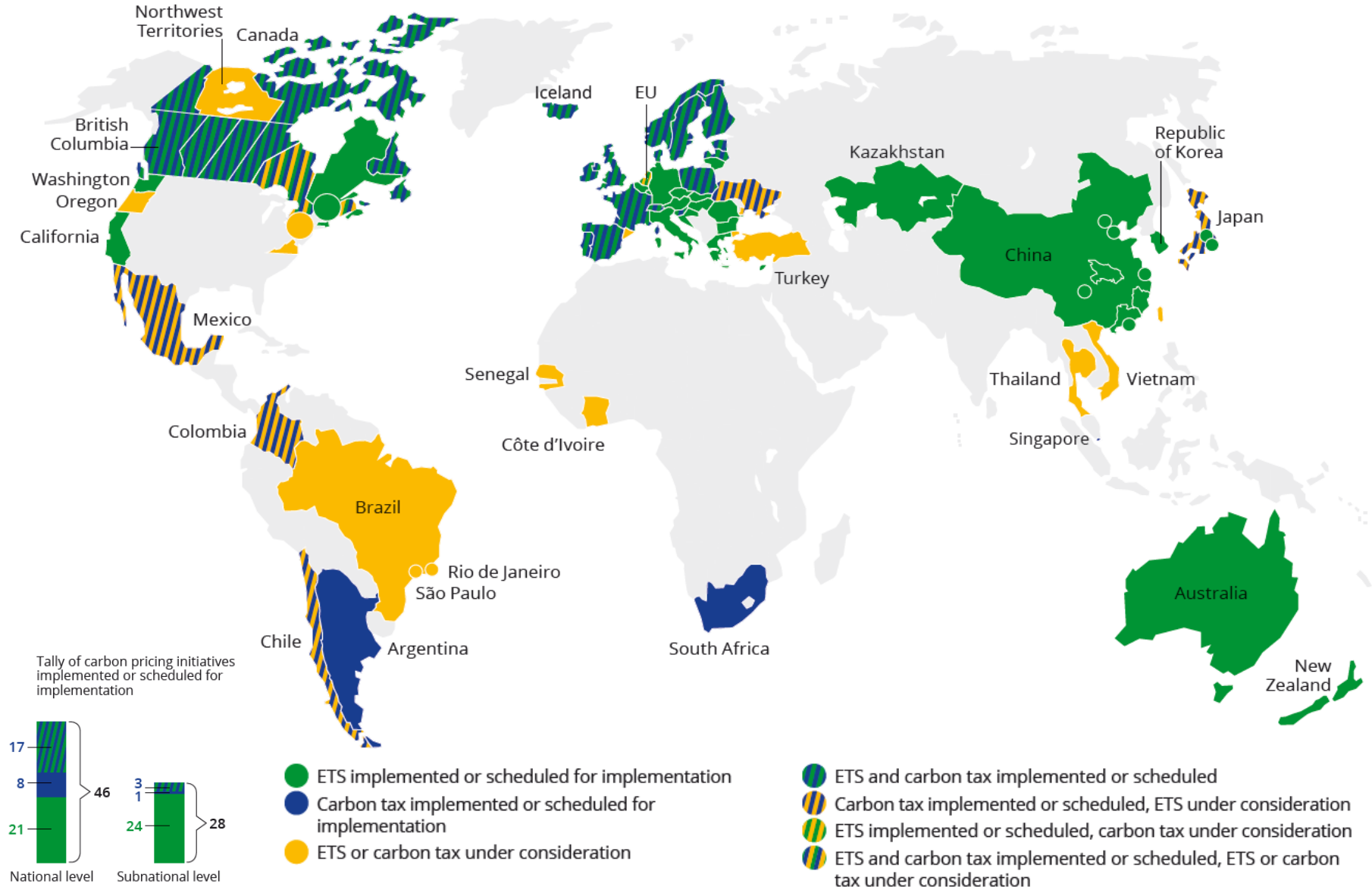
51% of the emissions covered are priced < US$10/$tCO_2e$

US$44 BILLION
raised in carbon pricing revenues in 2018.



Source: «State and Trends of Carbon Pricing 2019», World Bank – April 2019.

[10] State and Trends of Carbon Pricing 2019



Source: «State and Trends of Carbon Pricing 2019», World Bank – April 2019.

Carbon Pricing (CP) – The Faster Principles for Successful CP (CPLC)

- **Fairness**

Italy identifies, through the first Catalogue of environmentally harmful and friendly subsidies (respectively, EHS and EFS), sectors benefitting of subsidies damaging the environment. Encouraging a reform helps to restore, in accordance with the Polluter Pays Principle (henceforth PPP)), fairer market conditions and contributes to an environmental fiscal reform (fiscal pressure on labour and firms to consumption and production damaging the environment).

- **Alignment of Policies and Objectives**

Italy participates to the G20 FFS self-report with Indonesia. This encourages to remove FFS and align energy policy with climatic objectives, providing consistent signals to consumers, producers and investors. The reports recommend an ex-ante environmental impact assessment for future incentives in order to ensure alignment with climatic and environmental policies.

- **Stability and Predictability**

In the Catalogue, Italy considers free allocation of ETS allowances as a EHS. The reduction of free allocations and hence the extension of the PPP has to keep a stable, fast and predictable pace towards full auctioning.

- **Transparency**

Italy published the Catalogue on EHS and EFS to make transparent statement on the environmental impact of fiscal policy. The participation to the 2018 G20 FFS self-report aims at enhancing further transparency on FFS through the disclosure of data and legislative measures.

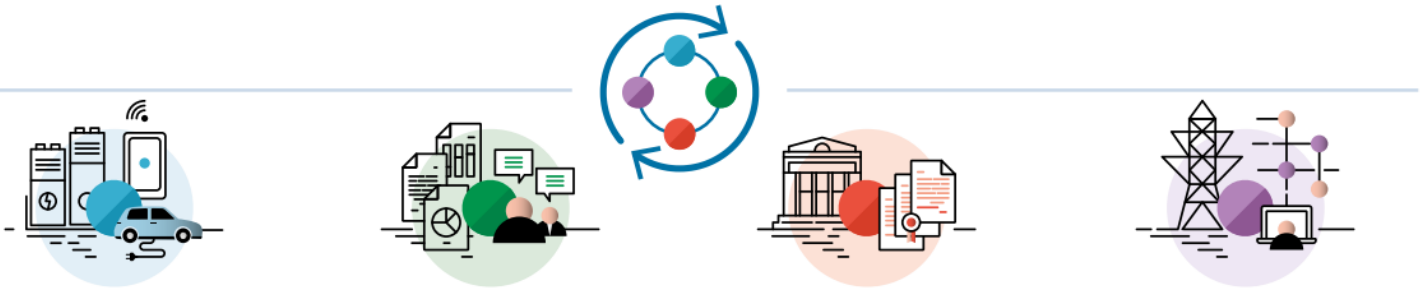
- **Efficiency and Cost-Effectiveness**

Through the Catalogue, Italy identifies exemptions from current taxes (e.g. excise duties). Removing these barriers leaves place to EFR and increase taxes in different polluting sectors. This enables affected entities to adjust decision-making process.

- **Reliability and Environmental Integrity**

Removing EHS is the first step to discourage environmentally harmful behaviours. Improving the EU-ETS scheme and enhancing EFR will ensure environmental integrity and contribute to reach the Paris Agreement and UN 2030 Agenda SDGs. ("Measuring Fossil Fuel Subsidies in the Context of the SDGs" UNEP-IISD/GSI-OECD, SDG indicator 12.c.1).

[11] 4 dimensions of Innovation for the Energy Transition



ENABLING TECHNOLOGIES	BUSINESS MODELS	MARKET DESIGN	SYSTEM OPERATION
1 Utility-scale batteries 2 Behind-the-meter batteries	12 Aggregators 13 Peer-to-peer electricity trading 14 Energy-as-a-service	17 Increasing time granularity in electricity markets 18 Increasing space granularity in electricity markets 19 Innovative ancillary services 20 Re-designing capacity markets 21 Regional markets	25 Future role of distribution system operators 26 Co-operation between transmission and distribution system operators
3 Electric-vehicle smart charging 4 Renewable power-to-heat 5 Renewable power-to-hydrogen	15 Community-ownership models 16 Pay-as-you-go models	22 Time-of-use tariffs 23 Market integration of distributed energy resources 24 Net billing schemes	27 Advanced forecasting of variable renewable power generation 28 Innovative operation of pumped hydropower storage
6 Internet of things 7 Artificial intelligence and big data 8 Blockchain			29 Virtual power lines 30 Dynamic line rating
9 Renewable mini-grids 10 Supergrids			
11 Flexibility in conventional power plants			

Source: IRENA (2019b)

Source: Solutions to integrate high shares of variable renewable energy: A report from the International Renewable Energy Agency (IRENA) to the G20 Energy Transitions Working Group (ETWG) – 2019

4 dimensions of Innovation for the Energy Transition (1)

Enabling technologies: battery storage, demand-side management and digital technologies are changing the power sector, opening doors to new applications that unlock system flexibility. Electrification of end-use sectors is emerging as a new market for renewables but could also provide additional ways of flexing demand, if applied in a smart way.

Business models: innovative business models are key to monetizing the new value created by these technologies and therefore enable their uptake. At the consumer end, numerous innovative business models are emerging, alongside innovative schemes that enable renewable electricity supply in places with limited options, such as off-grid or densely populated areas.

Market design: adapting market design to the changing paradigm – towards low-carbon power systems with high shares of Variable Renewable Energy (VRE) – is crucial for enabling value creation and adequate revenue streams.

System operation: with new technologies and sound market design in place, innovations in system operation are also needed and are emerging in response to the integration of higher shares of VRE in the grid. These include innovations that accommodate uncertainty and the innovative operation of the system to integrate distributed energy resources (DER).

Source: Solutions to integrate high shares of variable renewable energy: A report from the International Renewable Energy Agency (IRENA) to the G20 Energy Transitions Working Group (ETWG) – 2019

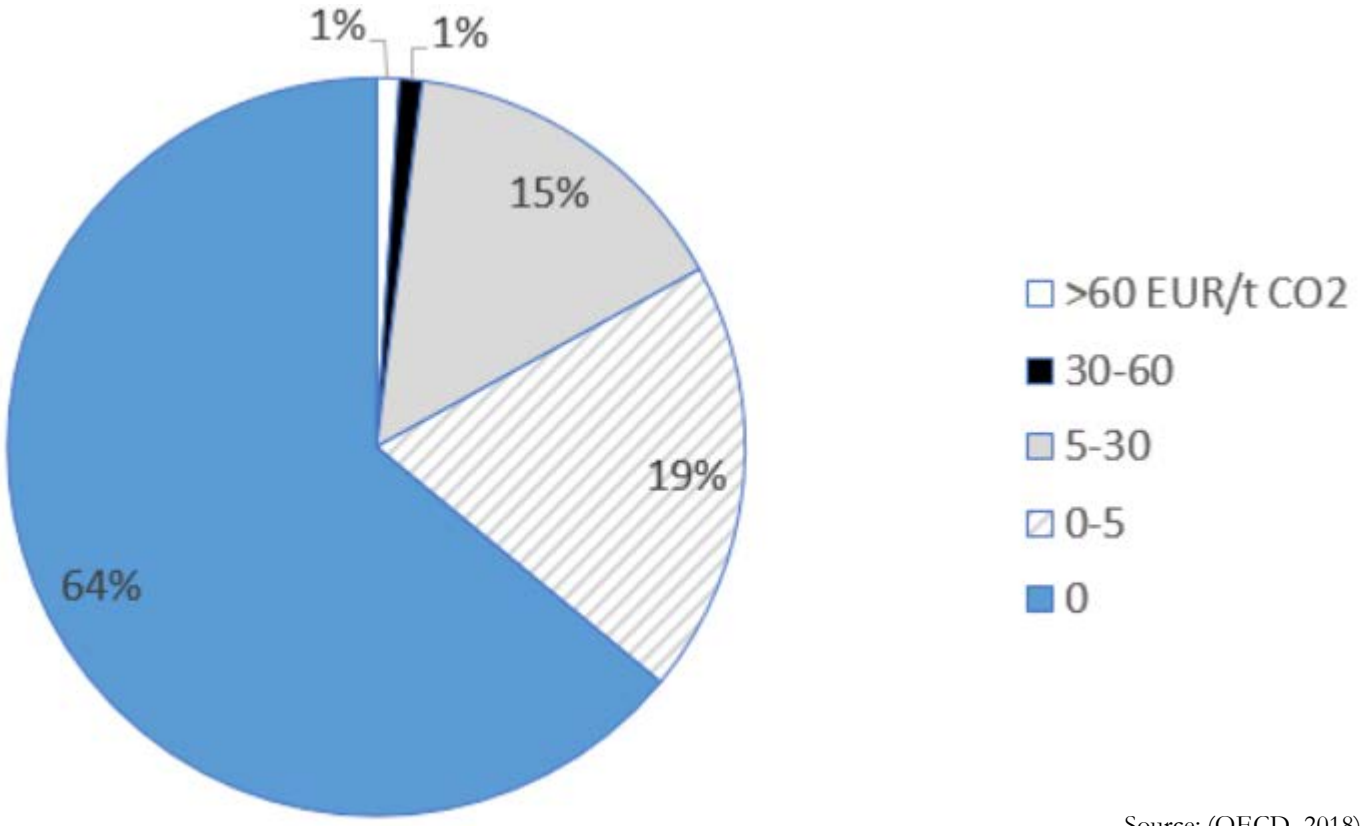
4 dimensions of Innovation for the Energy Transition (2)

Such a major transition is not trivial.

- Energy systems are both complex and highly integrated, making them difficult to change. On the policy side, they are highly dependent on entrenched regulations, **taxes and subsidies**, which require considerable political will to adjust.
- Even where there is political will, transforming markets and supply chains – e.g., the global car industry to electric vehicles (EVs) or home heating to heat pumps – may still take many years.
- People replace heating equipment and cars every 10-15 years, and in some parts of the world the building stock is being renovated at a rate of less than 1% per year (IRENA, 2019d).
- Any transition also creates winners and losers, and those who do not benefit may resist change. The distribution of costs and benefits needs to be fair and just in order to achieve broad acceptance.

Source: Solutions to integrate high shares of variable renewable energy: A report from the International Renewable Energy Agency (IRENA) to the G20 Energy Transitions Working Group (ETWG) – 2019

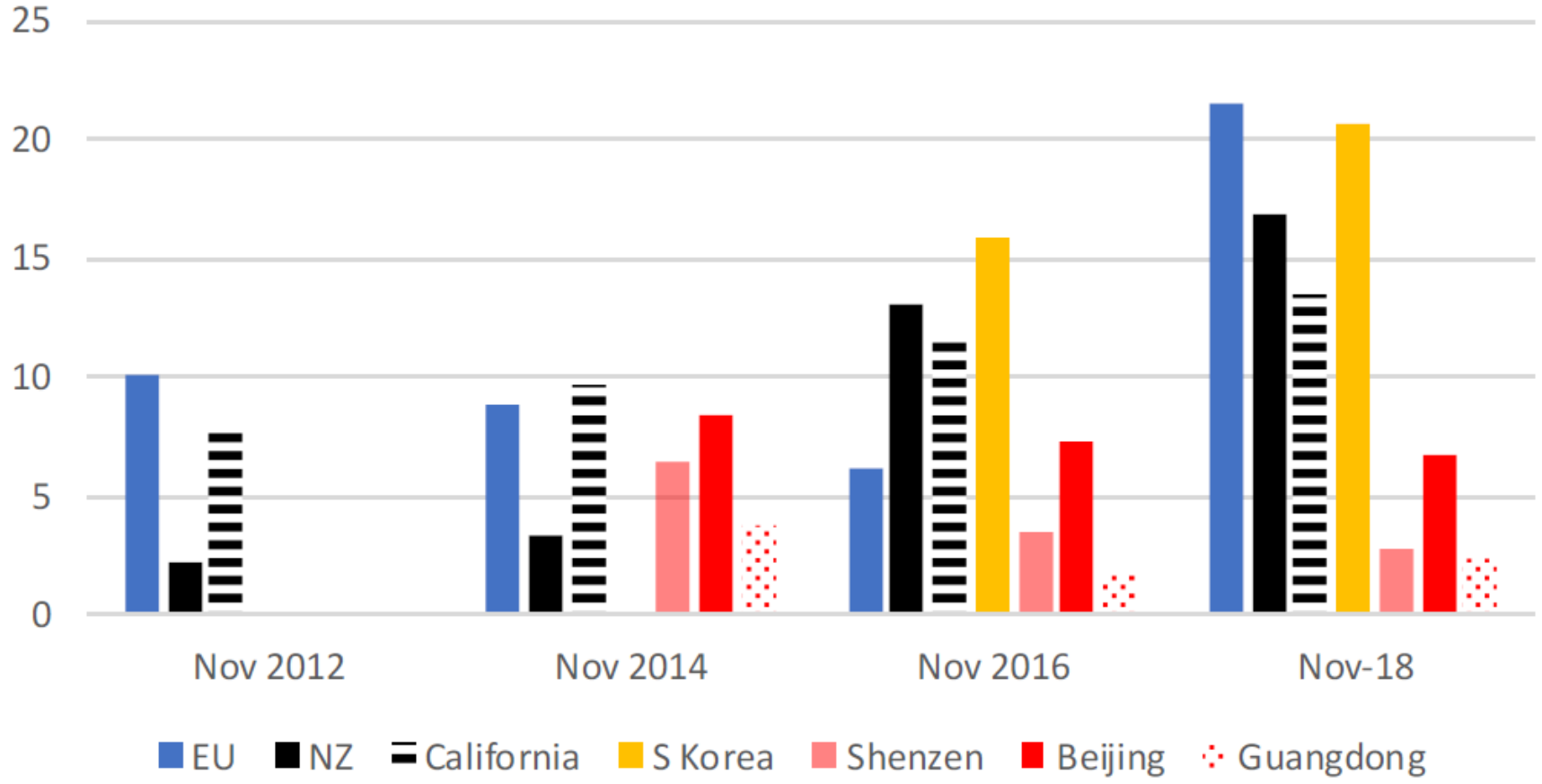
Proportion of OECD and G20 industrial CO_2 emissions priced at different levels in 2015



Source: (OECD, 2018)

The level of carbon taxes levied on industry is also low or zero in the majority of cases. This is because while some countries have put carbon taxes in place, there are many exemptions for industrial sources. The same holds true for excise taxes on fossil fuels which can be considered as implicit carbon taxes. Thus, overall in OECD and G20 countries, almost two-thirds of industrial GHG emissions are unpriced, and only 2% are priced at 30 EUR/t CO_2 or higher.

[12] CO2 Prices of selected ETSs at selected snapshots (U$/tCO$_2$-eq)



These price levels of different emissions trading schemes vary significantly over time both in absolute and relative terms. For example, prices in the EU ETS were just over 10 USD/t CO_2 in November 2012[1], dropped to under 6 USD/t CO_2 in 2013, and rose to more than 21 USD/t CO_2 in November 2018. In terms of relative carbon prices, EU ETS prices were more than double those of the Guangdong ETS in November 2014, but were almost ten times those of the Guangdong ETS in November 2018.

[1] Equals EUR 7,58 based on the exchange rate on 31 December 2012.

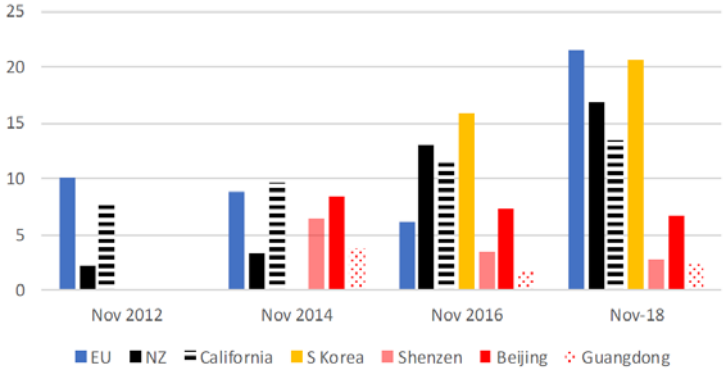
Source: Authors, based on ICAP price monitor - Carbon Pricing and Competitiveness: Are they at Odds? (OECD, 2019)

[13] Carbon Prices of selected ETSs at selected snapshots (U$/tCO$_2$-eq)

IMF
Carbon tax hyp.
(externalities)
450-600 €/t

Sweden
Carbon tax
130-170 €/t

ETS
5-25 €/t



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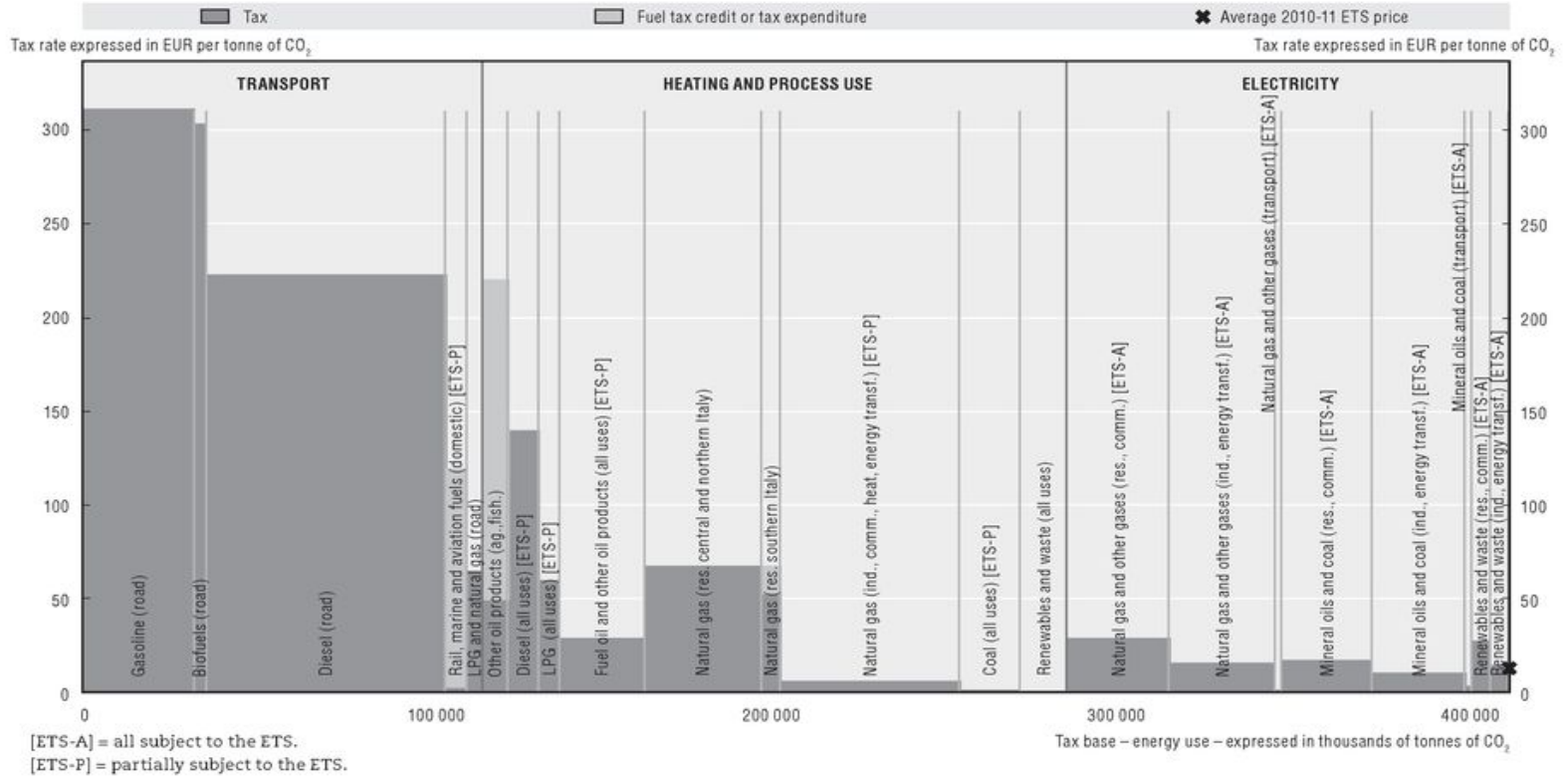
[1] Equals EUR 7,58 based on the exchange rate on 31 December 2012.

Source: Authors, based on ICAP price monitor - Carbon Pricing and Competitiveness: Are they at Odds? (OECD, 2019)

POINTS OF VIEW ON ENERGY TAXATION IN ANY COUNTRY (E.G. ITALY (1/5) 2012 ANALYSIS (OECD)

Figure 17.2. **Taxation of energy in Italy on a carbon emission basis**



[ETS-A] = all subject to the ETS.
[ETS-P] = partially subject to the ETS.

Abbreviations: Res. = residential; comm. = commercial; ind. = industrial; ag. = agricultural; fish. = fishery; energy transf. = energy transformation; heat = merchant heat.
Source: OECD calculations based on IEA data and country-specific tax information (detailed in Annex A). Tax rates are as of 1 April 2012; emissions are based on IEA data for 2009.

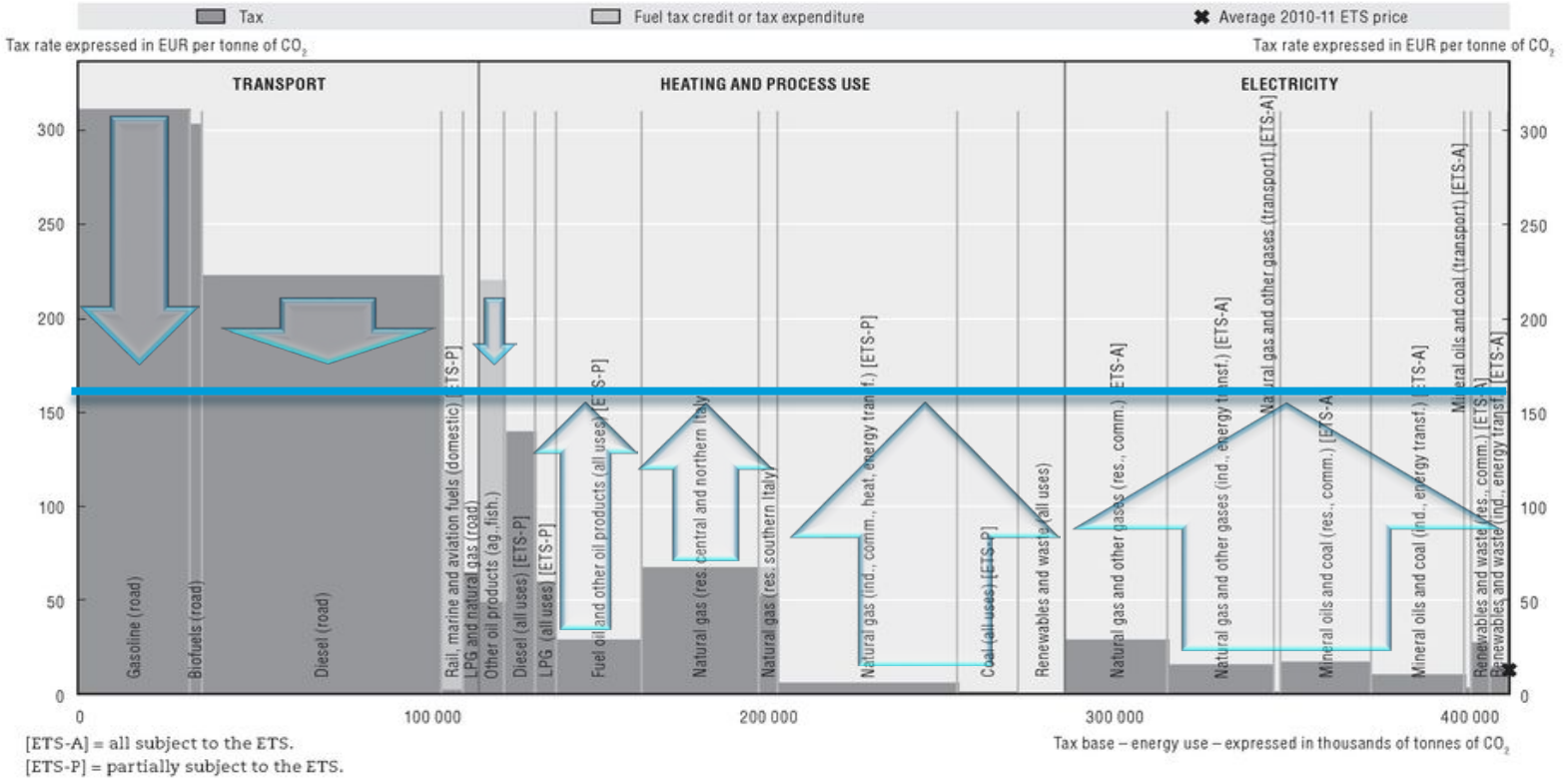
StatLink http://dx.doi.org/10.1787/888932766548

OECD - TAXING ENERGY USE: GRAPHICAL ANALYSIS - PUBLISHED ON 19 FEB 2013

POINTS OF VIEW ON ENERGY TAXATION IN ANY COUNTRY (E.G. ITALY (2/5)

A LIKELY MINISTRY OF ECONOMY & FINANCE: HARMONIZE TAXATION (LEVEL PLAYING FIELD)

Figure 17.2. **Taxation of energy in Italy on a carbon emission basis**



Abbreviations: Res. = residential; comm. = commercial; ind. = industrial; ag. = agricultural; fish. = fishery; energy transf. = energy transformation; heat = merchant heat.

Source: OECD calculations based on IEA data and country-specific tax information (detailed in Annex A). Tax rates are as of 1 April 2012; emissions are based on IEA data for 2009.

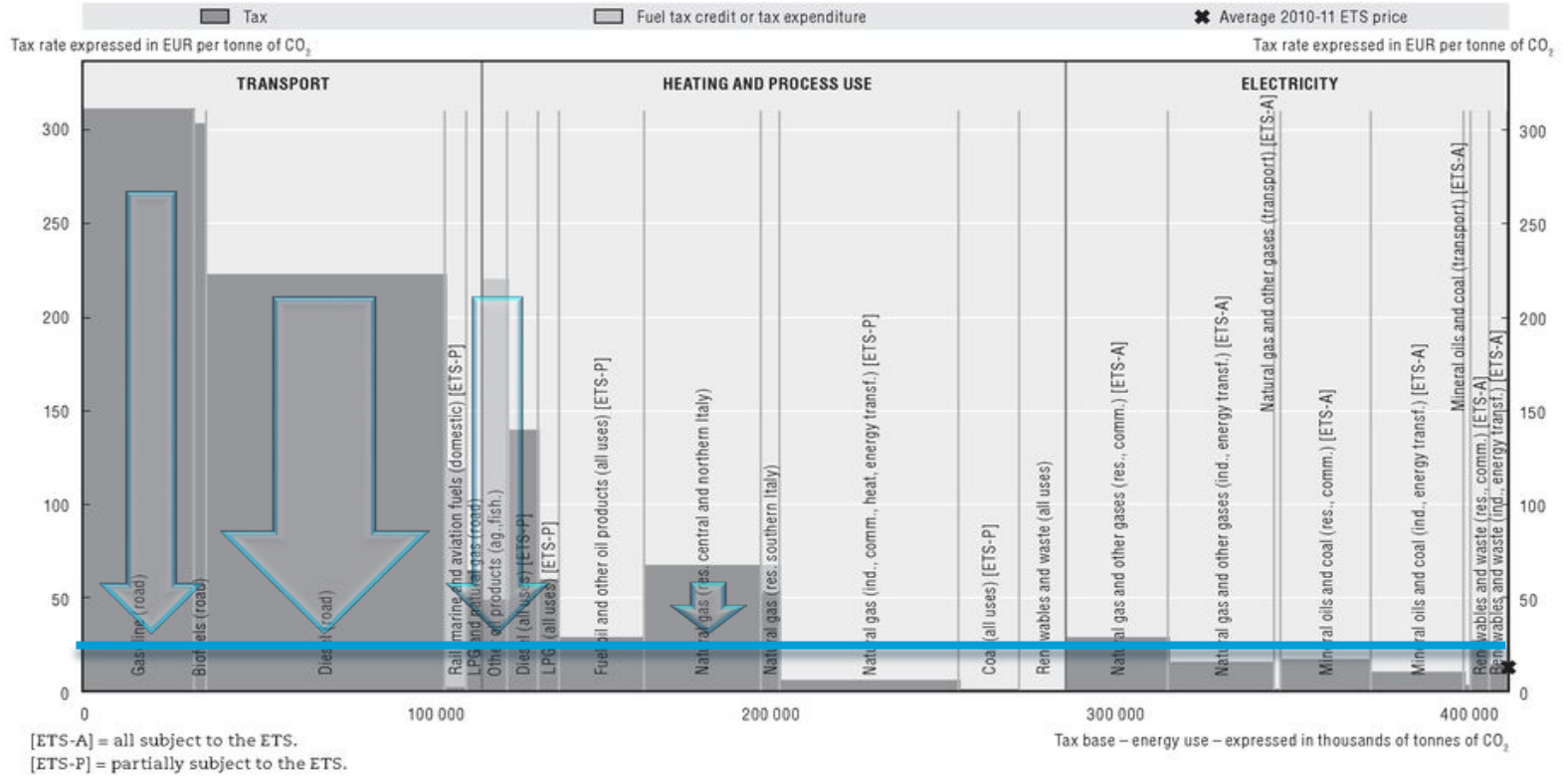
StatLink http://dx.doi.org/10.1787/888932766548

OECD - TAXING ENERGY USE: GRAPHICAL ANALYSIS - PUBLISHED ON 19 FEB 2013

POINTS OF VIEW ON ENERGY TAXATION IN ANY COUNTRY (E.G. ITALY (3/5)

A LIKELY MINISTRY OF ECONOMIC DEVELOPMENT (INDUSTRY, ENERGY, TRADE): HARMONIZE TAXATION AT THE LOWEST LEVEL TO INCREASE COMPETITIVITY

Figure 17.2. **Taxation of energy in Italy on a carbon emission basis**



Abbreviations: Res. = residential; comm. = commercial; ind. = industrial; ag. = agricultural; fish. = fishery; energy transf. = energy transformation; heat = merchant heat.

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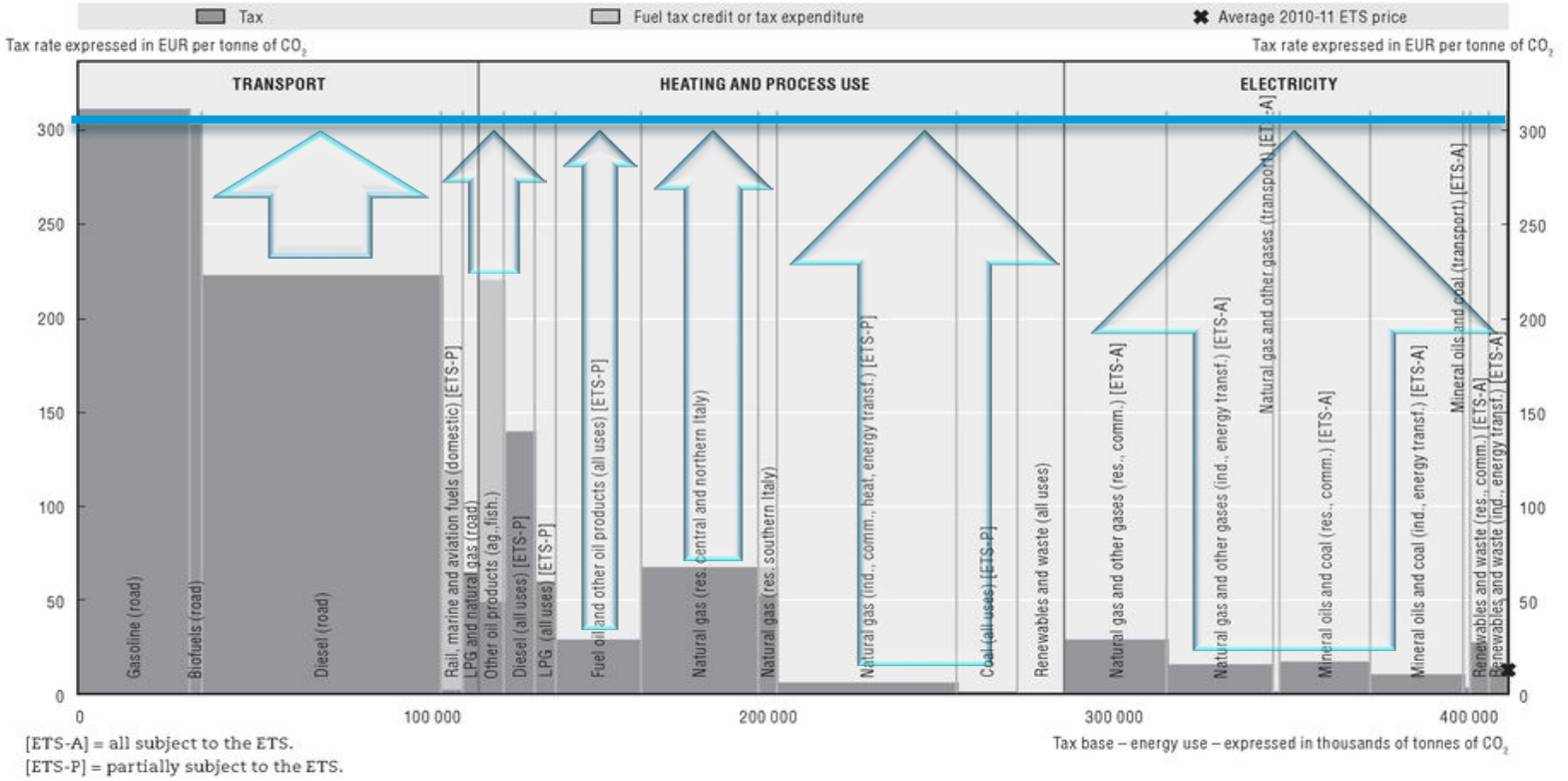
StatLink http://dx.doi.org/10.1787/888932766548

OECD - TAXING ENERGY USE: GRAPHICAL ANALYSIS - PUBLISHED ON 19 FEB 2013

POINTS OF VIEW ON ENERGY TAXATION IN ANY COUNTRY (E.G. ITALY (4/5)

A LIKELY MINISTRY OF ENVIRONMENT (ECOLOGY, SD): HARMONIZE TAXATION AT THE HIGHEST LEVEL TO PROTECT THE ENVIRONMENT

Figure 17.2. **Taxation of energy in Italy on a carbon emission basis**



Abbreviations: Res. = residential; comm. = commercial; ind. = industrial; ag. = agricultural; fish. = fishery; energy transf. = energy transformation; heat = merchant heat.

Source: OECD calculations based on IEA data and country-specific tax information (detailed in Annex A). Tax rates are as of 1 April 2012; emissions are based on IEA data for 2009.

StatLink http://dx.doi.org/10.1787/888932766548

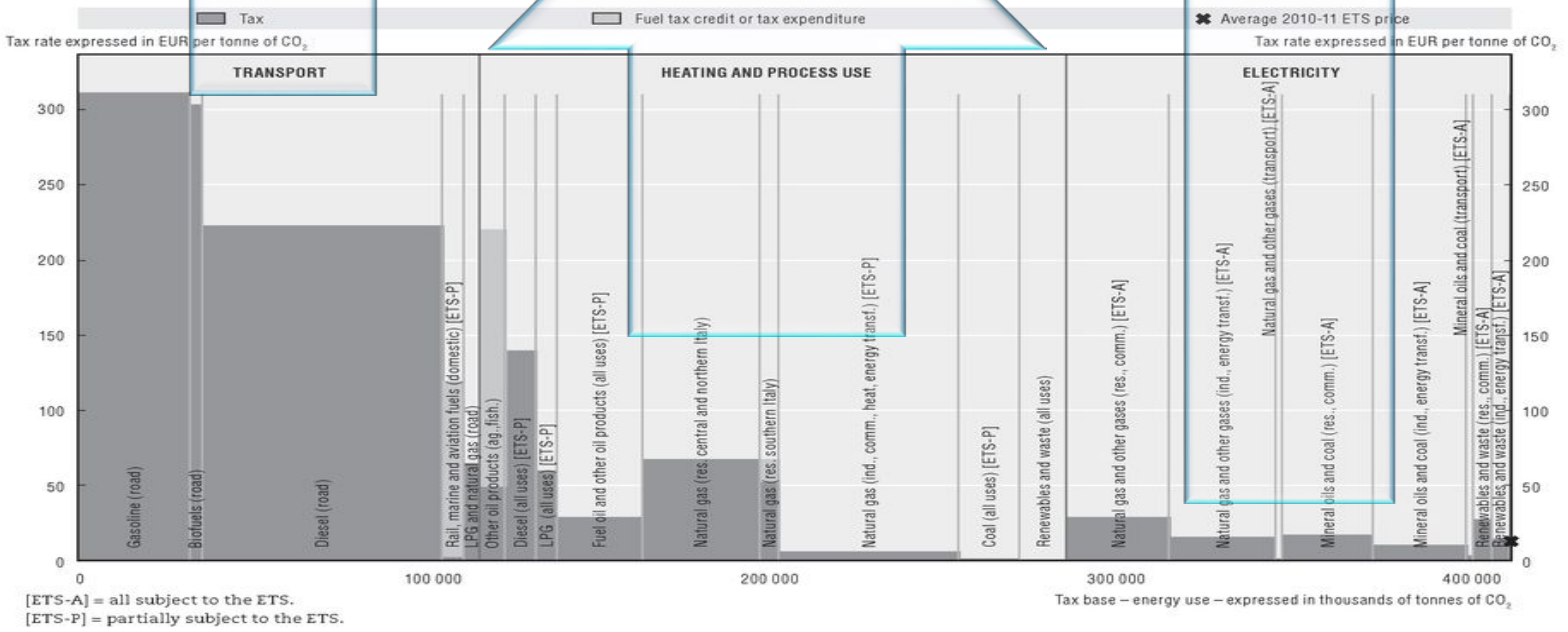
OECD - TAXING ENERGY USE: GRAPHICAL ANALYSIS - PUBLISHED ON 19 FEB 2013

POINTS OF VIEW ON ENERGY TAXATION IN ANY COUNTRY (E.G. ITALY (5/5)

SCIENTIFIC COMMUNITY:

INCREASE ALL TAXES ON GOODS AND SERVICES WITH AN IMPACT ON EMISSIONS SO TO MAINTAIN THE PLANET WITHIN +2 C° AND POSSIBLY 1,5C° OF AVERAGE GLOBAL WARMING

Figure 17.2. **Taxation of energy in Italy on a carbon emission basis**



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OECD - TAXING ENERGY USE: GRAPHICAL ANALYSIS - PUBLISHED ON 19 FEB 2013

OECD Policy Instruments

Policy Instruments for EP-GG-SD-LC

(Environmental Policy – Green Growth – Sustainable Development – Low Carbon)

1. Regulatory Instruments
2. Voluntary Instruments
3. Economic Instruments

- + Environmental Assessment Instruments (IA/SDIA/RIA-SEA-EIA-Emas-Ecolabel)

Economic Instruments for EP-GG-SD-LC

a) Environmental Taxes or Taxes with an environmental impact
b) Environmental Fees/Charges/Tariffs
c) Deposits systems
d) Sanctions-penalties
e) Creation of markets where they do not exist
(e.g. ETS-Insurance-GPP-GreenCertificates-WhiteCertificates)

[14] OECD Data, Analysis & Policy Work

- Effective Carbon Rates
- Inventory of Fossil Fuel Subsidies
- Economic & Financial Instruments for Climate Policy
- Paris Collaborative on Climate Finance
- Paris Collaborative on Green Budgeting
- Environmental Performance Country Reviews

[15] Sustainable Finance in Italy

- The **National Dialogue** on Sustainable Finance (MoE with UNEP Inquiry on the design of a sustainable financial system), Bank of Italy Feb. 2017, 18 Recs
- The **Italian Observatory** on Sustainable Finance OIFS
- Creating a Financial Centre for Sustainability in Milano
- The G7 Environment 2017 (Italian Presidency) blessing and encouraging an international network of **Financial Centres for Sustainability (FC4S)**, then launched at One Planet Summit in Paris (Dec. 2017), first meeting in Milano (May 2018)

Sustainable Finance seen by the EU

The following slides are materials from the EC

The Case for Sustainable Finance

The EU committed to **three ambitous climate and energy targets for 2030** in line with the UN 2030 Agenda, the SDGs and the Paris Agreement.
In its **long-term strategy**, the EU strives for **net-zero GHG emissions by 2050.**

Minimum **40%** cut in greenhouse gas emissions compared to 1990 levels

At least a **32%** share of renewables in final energy consumption

At least **32,5%** energy savings compared with the business-as-usual scenario

Public money

The yearly investment gap to meet these targets is estimated to be **between € 175 to 290 billion.**

Private money

Public supporting schemes alone will not be sufficient to meet those investment needs. The private sector will have to play a huge role and a smart policy framework is needed to incentivise private investment.

Sources: EIB: Restoring EU competitiveness (2016) European Commission: A clean planet for all (2018) European Commission: Commission Work Programme 2019.

European Commission

Sustainable Finance in EU Sustainability Policies

EU Sustainability Policies

Climate and Energy	Environment	Investment and Growth	Sustainable Finance
▪ 2030 Climate and Energy Framework ▪ Energy Union Package ▪ EU Strategy on Adaptation to Climate Change	▪ Natural Capital Management ▪ Air ▪ Water ▪ Land ▪ Biodiversity ▪ Circular Economy	▪ Investment Plan for Europe (Fund for Strategic Investment (EFSI); InvestEU; EU Cohesion Policy funds) ▪ External Investment plan ▪ Horizon 2020	▪ Sustainable Finance within the Capital Markets Union

▪ Long-term strategy to reach carbon neutrality by 2050

▪ EU Environmental Action Plan

Sustainable Finance is one of the EU Sustainability Policy Pillars.

European Commission

Scaling up sustainable finance : a global challenge

Industry-led initiatives:

UN Environment Programme Finance Initiative (UNEP-FI), Principles for Responsible Investment (PRI),

Task force on climate-related financial disclosures (FSB-TCFD),

Int. Network of Financial Centers for Sustainability (FC4S),

Governments: *etc.* Coalition of Finance Ministers for Climate Action (CAPE), International Platform on Sustainable Finance

Central banks, supervisors and market authorities: *Sustainable Banking Network (IFC-SBN), Network for Greening the Financial System (NGFS), Sustainable Insurance Forum (SIF),*

IOSCO-Sustainable Finance Network

THE COALITION OF FINANCE MINISTERS FOR CLIMATE ACTION

HELSINKI PRINCIPLES

These fora provide innovative ideas to mainstream sustainable finance

The EU and Sustainable Finance

Dec. 2016: the EC establishes a **High Level Experts Group** (20 senior from the financial community)
HLEG publishes the **EU Strategy** on Sustainable Finance: an interim report in July 2017, the **final report in January 2018**, with the support of the EC.
March 2018: European Commission **Action Plan** on Sustainable Finance ready: 10 priorities – 3 proposals of Regulation

A **TEG** (Technical Experts Group, 35 from the financial community) is established in July 2018.
A **MSEG** (Member States Experts Group, 2x28 from MoE and Treasury) is established later.

Beyond EU: the **International Platform on Sustainable Finance** (IPSF), a forum for cooperation on green finance is being launched on **18 October 2019** at the IMF headquarters in Washington.

The Technical Expert Group on Sustainable Finance

The TEG was established in June 2018 to assist the Commission in the **implementation of the Action Plan.** In particular in the development of:

1. Technical screening criteria for environmentally sustainable economic activities under the **EU taxonomy**;

2. An EU **Green Bond Standard**;

3. Minimum standards for methodologies of **climate benchmarks** and ESG disclosures of benchmarks; and

4. Metrics allowing improving **Corporate disclosure on climate-related information**.

The Technical Expert Group on Sustainable Finance

The TEG assists the Commission in implementing four specific actions.

- Established in June 2018
- Mandate extended until end 2019
- 35 experts (17 women) selected from 240 qualified candidates

Working Groups	Mandate
Taxonomy	Technical screening criteria for environmentally sustainable economic activities
EU Green Bond Standard	An EU Green Bond Standard
Benchmarks	Minimum standards for climate benchmarks and benchmarks' ESG disclosures
Corporate Disclosures	Metrics allowing improving corporate disclosure on climate-related information

Stakeholder inclusion and transparency

- Meeting minutes **publicly available** at the Register of Commission expert groups
- **Workshops** and targeted interviews to inform TEG work
- **Open feedback** on TEG reports

In 2019, TEG delivered 4 ground-breaking reports

Janu
ary

Report on climate-related disclosure

In June, the Commission followed up on this report by publishing **new guidelines for companies on how to report climate-related information.**

June

Report on the EU Taxonomy

Report on the EU Green Bond Standard

Interim report on climate benchmarks and benchmarks' ESG disclosures

European Commission

EU Timeline on Sustainable Finance

Action Plan on Financing Sustainable Growth

One comprehensive strategy | Three main objectives | Ten Actions

1. **Reorienting capital flows** towards sustainable investment
2. **Mainstreaming Sustainability in risk Management**
3. **Fostering transparenc y and Long-termism**

Actions

1 **Establish EU Sustainable Taxonomy**	COM is progressively developing the EU taxonomy. The technical details (screening criteria) are developed by the Technical Expert Group (TEG) that published their report in June 2019.
2 **Create Standards and Labels**	COM explores the use of the EU Eco-Label framework for green financial products together with the JRC. In June 2019, the TEG delivered a report on an EU Green Bond Standard building on current best practices.
3 **Foster Investment in Sustainable**	COM explores measures that will improve the efficiency and impact of instruments aiming at investment support. A mapping on investment gaps and financing took place in Q3 2018, best practices for sustainable investments were exchanged on (inter-)national and EU level in Q4 2018.
4 **Incorporate Sustainability in Investment Advice**	COM will ensure that advisors will take into account the sustainable preference of clients. The current version of draft delegated acts was published in January 2019, taking into account stakeholder feedback.
5 **Develop Sustainability Benchmarks**	COM will increase the transparency of sustainability benchmarks. The TEG is currently assisting the Commission in developing minimum standards for climate benchmarks and benchmark's ESG disclosures. It published an interim report in June 2019 and will deliver final report in September.

Source: European Commission: Action Plan on Financing Sustainable Growth (2018).

European Commission

Action Plan on Financing Sustainable Growth

One comprehensive strategy | Three main objectives | Ten Actions

1. **Reorienting capital flows** towards sustainable investment
2. **Mainstreaming Sustainability into risk Management**
3. **Fostering transparency and Long-termism**

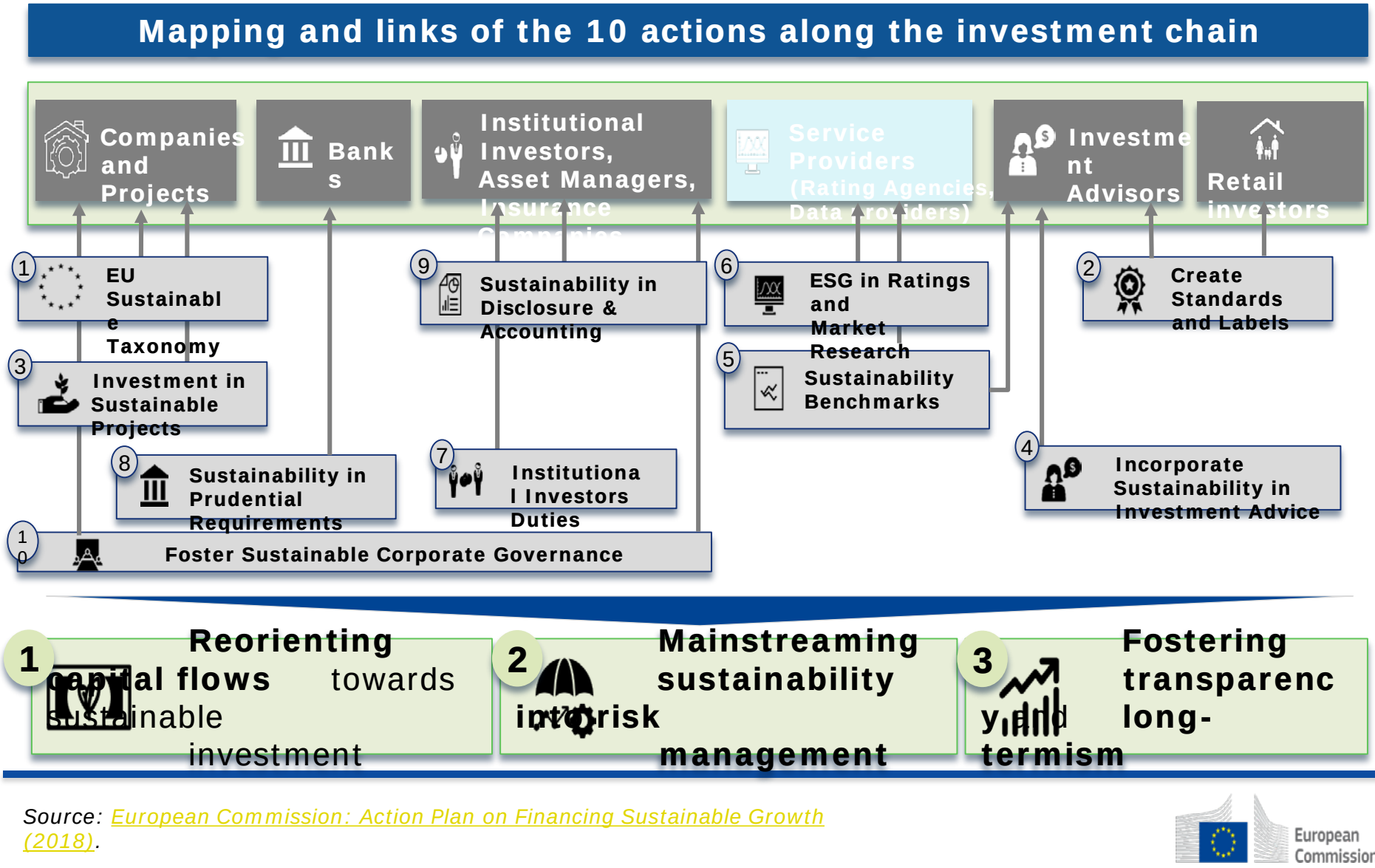
Actions

6	**Integrate ESG in Ratings and Market Research**	COM is gathering information on ratings and research. ESMA will update Guidelines related to disclosure of ESG factors by CRAs and report to COM on current practices in CRA market during the summer. COM will launch a study on sustainability in research and ratings.
7	**Clarify institutional investors and asset managers duties**	The disclosures regulation will provide greater transparency on how financial market participants and financial advisers consider sustainability. COM is also preparing changes to sectoral rules based on advice from ESMA and EIOPA on integrating sustainability risks in the investment process, risk management, the organisation as well as conflicts of interest.
8	**Incorporate sustainability in prudential requirements**	COM will explore the feasibility of a green supporting factor when it is justified from a risk perspective to safeguard financial stability. COM has also asked EIOPA to analyse the impact of Solvency II on sustainable investments.
9	**Strengthen Sustainability Disclosure & Accounting**	COM is evaluating the current reporting requirements for companies. The TEG helped the COM to integrate TCFD recommendations in the guidelines on climate-related reporting, which were updated in June 2019. COM will further analyse the impact of accounting rules (IFRS standards) on sustainable and long-term investments.
10	**Foster Sustainable Corporate Governance**	COM is exploring how improved corporate governance can enhance sustainability and is collecting evidence from the ESAs on short term market pressure arising from capital markets.

Source: European Commission: Action Plan on Financing Sustainable Growth (2018).

European Commission

Action Plan on Financing Sustainable Growth



Source: *European Commission: Action Plan on Financing Sustainable Growth (2018).*

European Commission

The Legislative Proposals

The most urgent actions from the AP were taken forward as Legislative Proposals in May 2018.

1 **Establish EU Sustainable Taxonomy**

Taxonomy Proposal: Proposal setting out criteria to determine the environmental sustainability of an economic activity (**'taxonomy'**).

5 **Develop Sustainability Benchmarks**

Draft rules on benchmarks: Political agreement was reached on creating two new categories of climate benchmarks and benchmarks' ESG disclosures.

7 **Clarify institutional investors and asset managers duties**

Draft Disclosure regulation: political agreement was reached to (i) introduce consistency on **how institutional investors and asset managers should integrate sustainability** in investment decision- making processes; (ii) increase transparency towards end-investors.

4 **Incorporate Sustainability into Financial advice**

Ensuring that sustainability preferences are taken into account in the suitability assessment when providing financial advice by investment firms and insurance distributors.

The Taxonomy Proposal

What is the Taxonomy?

A list of economic activities that are considered environmentally sustainable for investment purposes.

What is set out in the Proposal?

The framework to develop the taxonomy. For an economic activity to be on the list, it has to comply with four conditions:

(a) **Substantially contribute** to at least one of the six environmental objectives as defined in the proposed Regulation*

+

(b) **Do no significant harm** to any of the other six environmental objecties as defined in the proposed Regulation*

+

(c) Comply with **minimum safeguards**

+

(d) Comply with quantitative or qualitative **Technical Screening Criteria**

*The six environmental objectives as defined in the proposed Regulation are: (1) climate change mitigation; (2) climate change adaptation; (3) sustainable use and protection of water and marine resources; (4) transition to a circular economy, waste prevention and recycling; (5) pollution prevention and control; (6) protection of healthy ecosystems.

Source: *European Commission: Proposal on the establishment of a framework to facilitate sustainable investment (2018).*

European Commission

What is the EU Taxonomy?

EU Taxonomy is a list of economic activities with performance criteria for their contribution to six environmental objectives.

IS	IS NOT
A list of economic activities and relevant criteria	A rating of good or bad companies
Flexible to adapt to different investment styles and strategies	A mandatory list to invest in
Based on latest scientific and industry experience	Making a judgement on the financial performance of an investment – only the environmental performance
Dynamic, responding to changes in technology, science, new activities and data	Inflexible or static

Environmental objectives

1. Climate change mitigation
2. Climate change adaptation
3. Sustainable use and protection of water and marine resources
4. Transition to a circular economy, waste prevention and recycling
5. Pollution prevention and control
6. Protection of healthy ecosystems

Key features of the Taxonomy

- **Reflecting technological and policy developments:** The Taxonomy will be updated regularly by the Platform on Sustainable Finance which will replace the TEG after its mandate.
- **Building on market practices and existing initiatives**
- **What's not green is not necessarily brown.** Activities that are not on the list, are not necessarily polluting activities. The focus is simply on activities that contribute substantially to environmental objectives.
- **Facilitating transition of polluting sectors**
- **Technology neutral**

The "spotlight on taxonomy" provides a useful summary of the taxonomy and its features.

European Commission

Who will use the Taxonomy and how?

The proposed regulation has two mandatory users:

1. **Financial market participants**

2. **EU Member States**

Under the Non-Binding Guidelines for Non-Financial Reporting, **Companies** are also encouraged to disclose in line with the Taxonomy.

The Taxonomy can be used on a voluntary basis by **credit institutions** and other **issuers**, such as local authorities.

Voluntary use by investors

- Expressing investment preferences
- Selecting holdings
- Designing green financial products
- Measuring the environmental performance of a security or product
- Engaging with investees

Intended Impact of an EU Taxonomy

Market practice

Different taxonomies among Member States and institutions hinder cross-border capital flows

Costs for real economy to raise capital and for financial institutions to provide clarity

Burdensome for investors to check and compare information

Hampering investments into a more sustainable economy

EU Sustainable Taxonomy

A harmonised **list of economic activities**

that can be considered **environmentally sustainable** for investment purposes.

Intended impact

- **Certainty for economic actors** and financial market participants
- **Protection of private investors** and mitigation of Greenwashing
- **Easier for real economy** to raise capital
- **Mitigation of** market fragmentation
- **Basis for further policy action**

Reorienting capital flows towards sustainable investment

Conclusions: key issues

a) What is low carbon: -0,1% -1,0 -10 -80 -95 -100 and when is low carbon: 2100, 2050, 2030, 2025, 2020
b) What is "green/sustainable" finance and when
c) Green or greener
d) The dominant opinion from the Climate community seems to privilege voluntary agreements, technology and innovation policies, education & information; carbon pricing is considered marginally

- Economists tend to think the contrary: carbon pricing is key; without it, no rapid and efficient achievement of Paris Agreement and Agenda 2030 SDGs

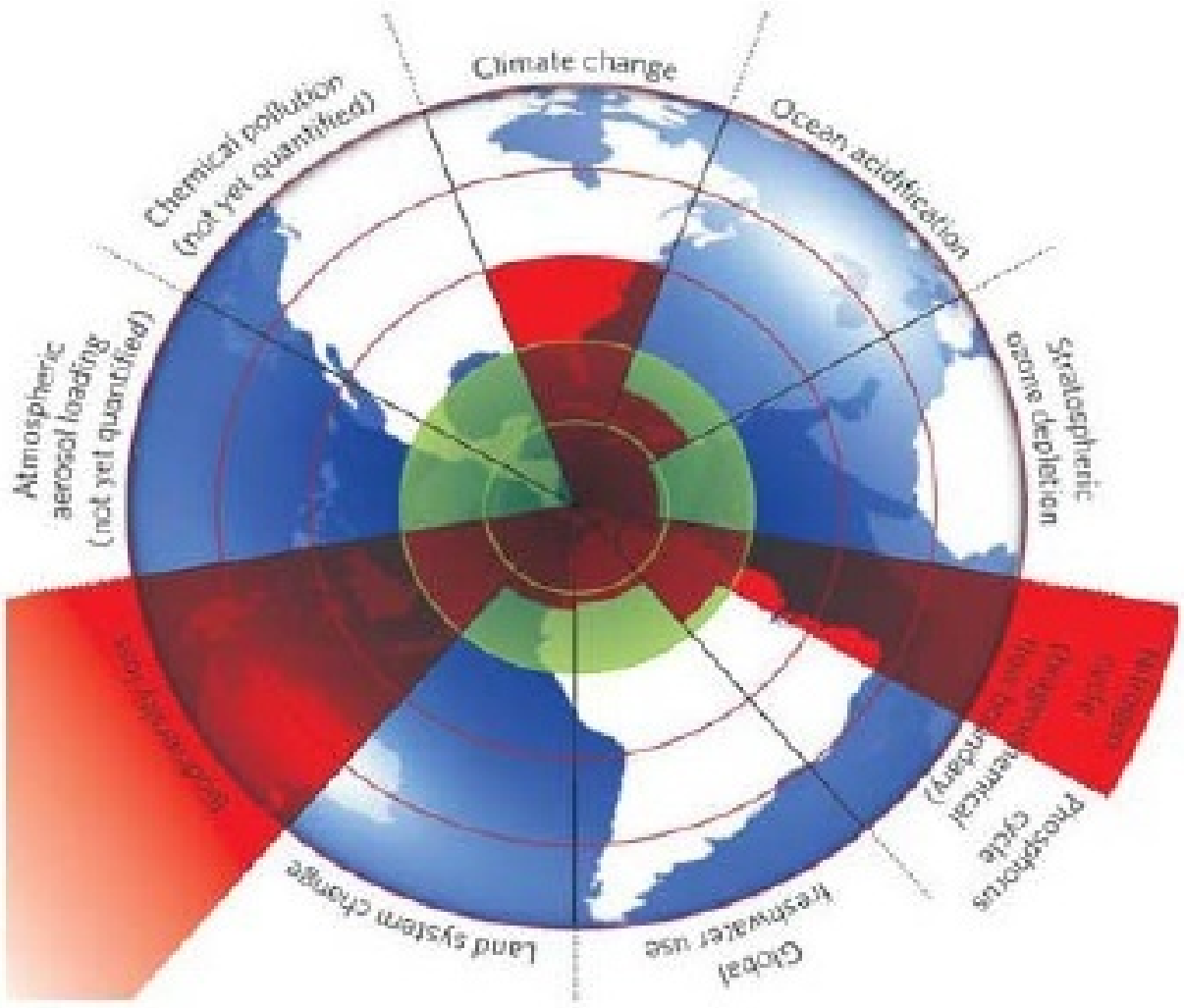
EU Economists' Statement on Carbon Pricing

Launched at EAERE 2019 Manchester in June (over 1600 economists signed (available at https://www.eaere.org/statement/)

Global climate change - serious problem calling - immediate & ambitious action.

1. **A price on carbon** offers the most **cost-effective** lever to reduce carbon emissions at the scale and speed that is necessary. …
2. Action should be taken to ensure that the price on carbon **gradually increases** until the **goals of the Paris Agreement are met**. … A carbon price can be set through a tax or an emissions trading system.
3. The **EU** has established an **ETS** … **the cap needs to be tightened** further, the share of auctioned permits increased. A **border carbon adjustment** system could be considered in a multilateral context.
4. In parallel to the EU ETS, a **carbon tax** in transport and housing. In particular, the **tax exemption of the international aviation and maritime sectors** needs to be addressed.
5. … **revenues** could be used to support **innovation** and to address **social and distributional impacts** of carbon pricing.

European economists **encourage** the emergence of a global carbon price.



Source: Rockstrom et al (2009)

BE BASED ON AVAILABLE SCIENCE: THE PLANETARY BOUNDARIES

10 Planet Ecosystems to be kept under control:

1. Climate change
2. Biodiversity loss
3. Nitrogen cycle
4. *Phosphorus cycle*
5. Stratospheric ozone depletion
6. *Ocean acidification*
7. *Global freshwater use*
8. *Land system change*
9. Atmospheric aerosol loading
10. Chemical pollution