

The Promise of Green Growth: A Pathway to Prosperity while achieving National and Global Ambitions

**Public lecture, Centre for Sustainability, Equality and Climate Action and
the School of Social Sciences, Education and Social work at Queen's University Belfast**

Dr Stelios Grafakos, Global Green Growth Institute (GGGI)



How has your life changed in the last year?



- Significantly changed
- Slightly changed
- Not changed

Coronavirus is significant, but is it a true black swan event?

May 1, 2020 2.09am AEST

The covid-19 pandemic was predicted – here's how to stop the next one

Covid-19 isn't the first pandemic humanity has faced and it won't be the last. What has happened offers lessons about how to judge and respond to virus warnings in future



HEALTH 16 September 2020

By [Debora Mackenzie](#)





The COVID19-Crisis

- COVID-19 has changed our lives more rapidly than anyone could imagine.
- For many it is a sign that our old system was not sustainable.
- Air pollution and obesity are aggravating factors for COVID-19
- Can we go back to our old lives?



Covid19 crisis as a wake - up call for the climate crisis

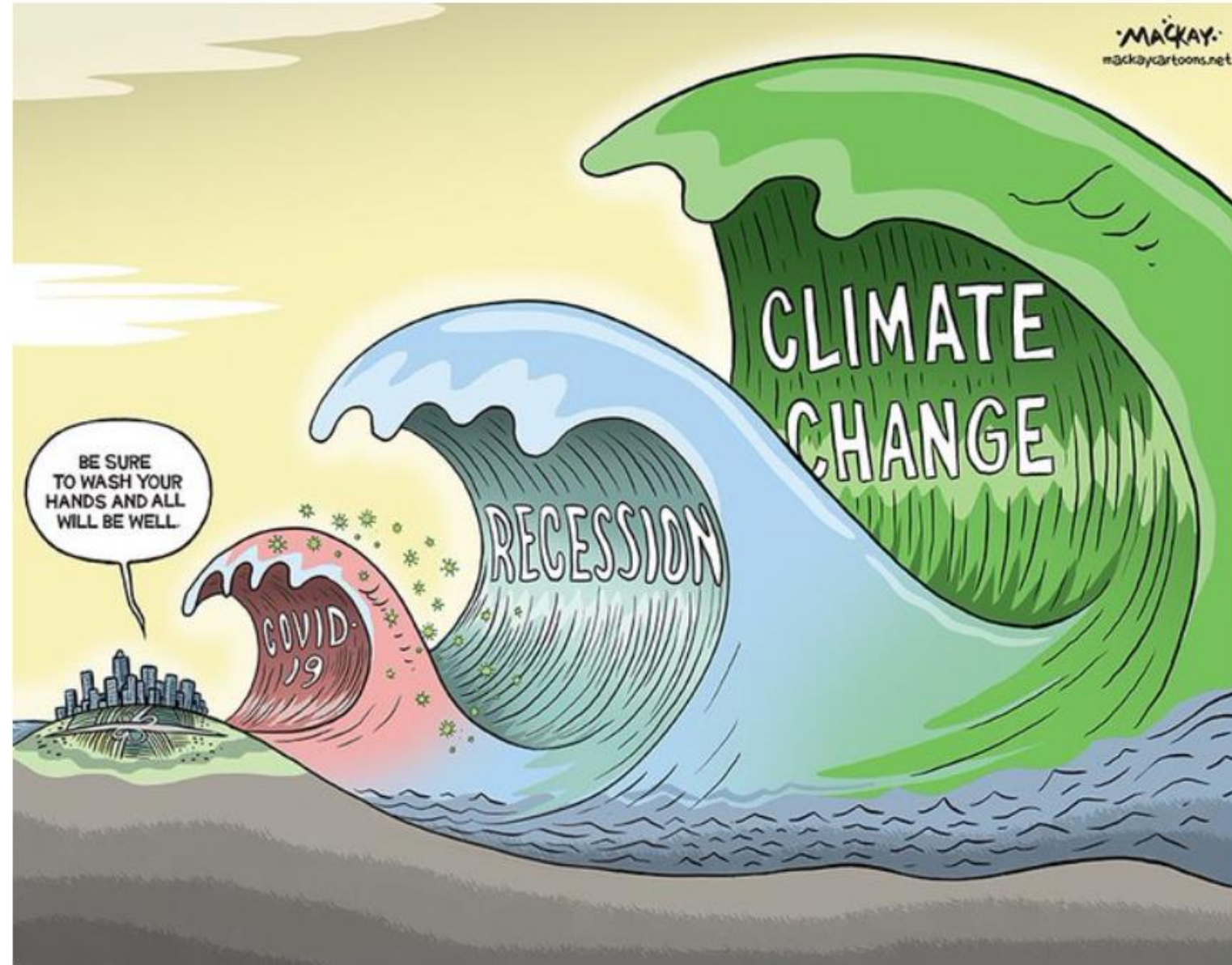
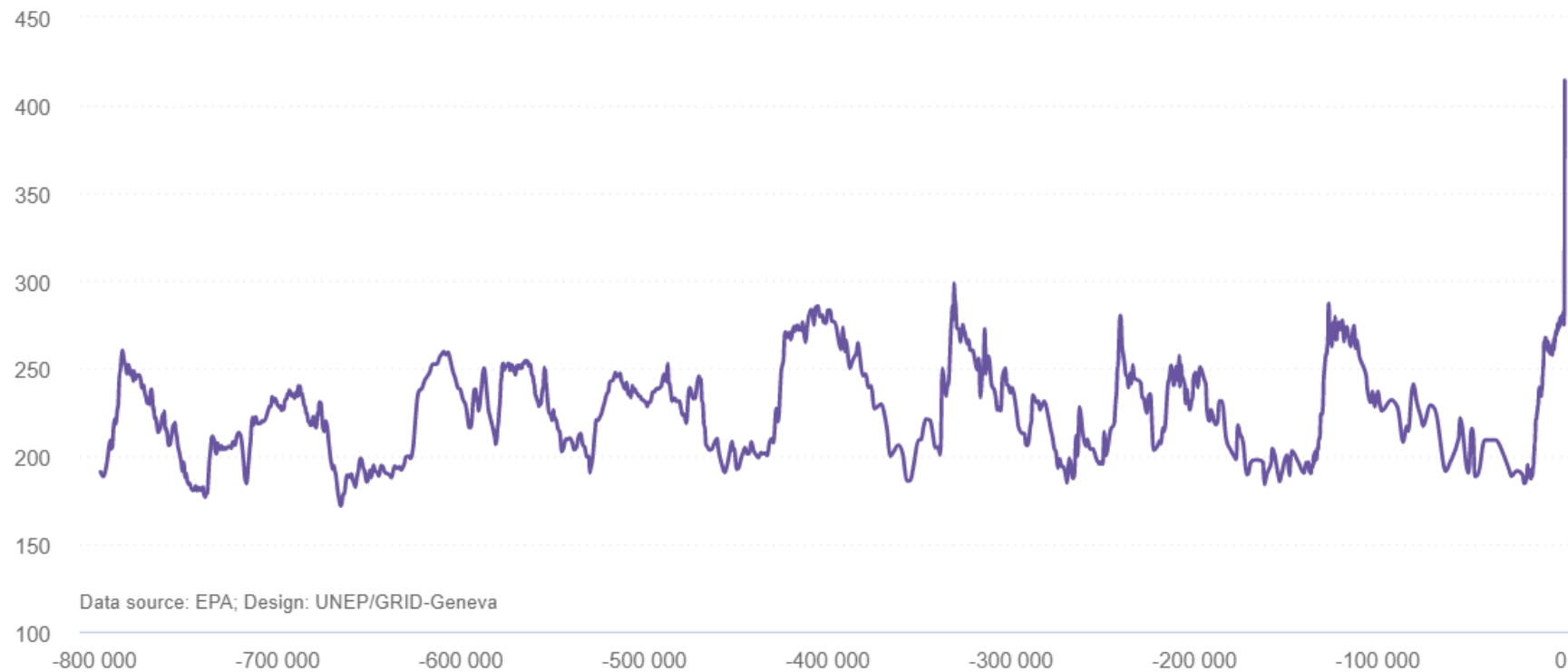
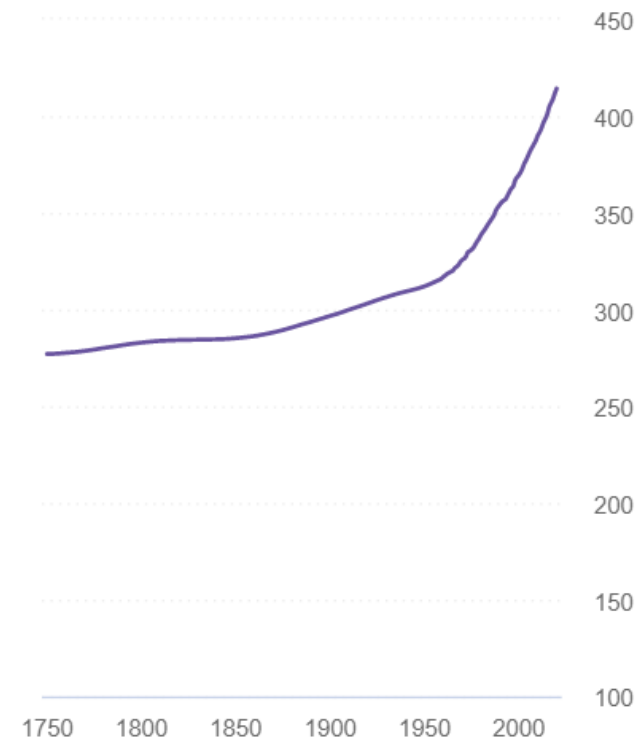


Image courtesy of Graeme MacKay, *The Hamilton Spectator*, March 11th 2020

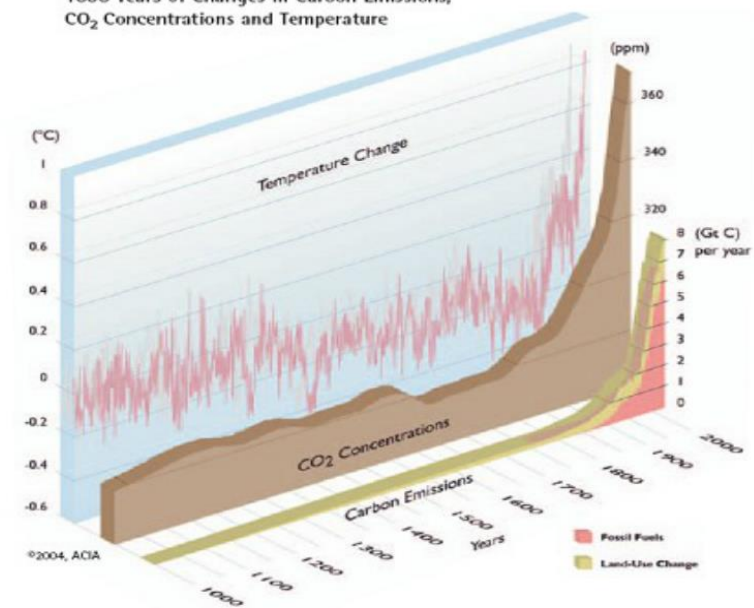
ppm 800.000 BC to 2019



1750 to 2019 ppm



1000 Years of Changes in Carbon Emissions, CO₂ Concentrations and Temperature



The Climate Crisis



2018: Floods in **Kerala** worst in a hundred years

2019: Cyclone Idai destroys **Mozambique**



2018: Republic of **Korea** sets all-time record high temperature amid deadly heat wave

2019: Record heat waves in **Europe**



2018-20: Increasingly massive forest fires in **Arctic, Australia, California** and intense droughts affecting millions of people









Air Quality Category and Behavioral Guidelines

(Unit: $\mu\text{g}/\text{m}^3$ per day)

PM 2.5

PM 10

Behavioral Guidelines

| | | |
|---------|-----------------------------|--|
| 0~15 | Good 0~30 |  |
| 16~35 | | |
| 36~75 | Moderate 31~80 |  No particular restrictions during outdoor activities but work along physical conditions. |
| Over 76 | Bad 81~150 |  Avoid long or excessive outdoor activities. Asthma patients need to use inhalers more often during outdoor activities. |
| | |  Avoid long or excessive outdoor activities. People with eye pain, a sore throat or cough should avoid outdoor activities. |
| | Very bad Over 151 |  Avoid long or excessive outdoor activities. People with eye pain, a sore throat or cough should avoid outdoor activities. |
| | |  Avoid long or excessive outdoor activities. People with a sore throat or cough should avoid outdoor activities. |



Sensitive Group

(children, elderly, people with lung or heart diseases)

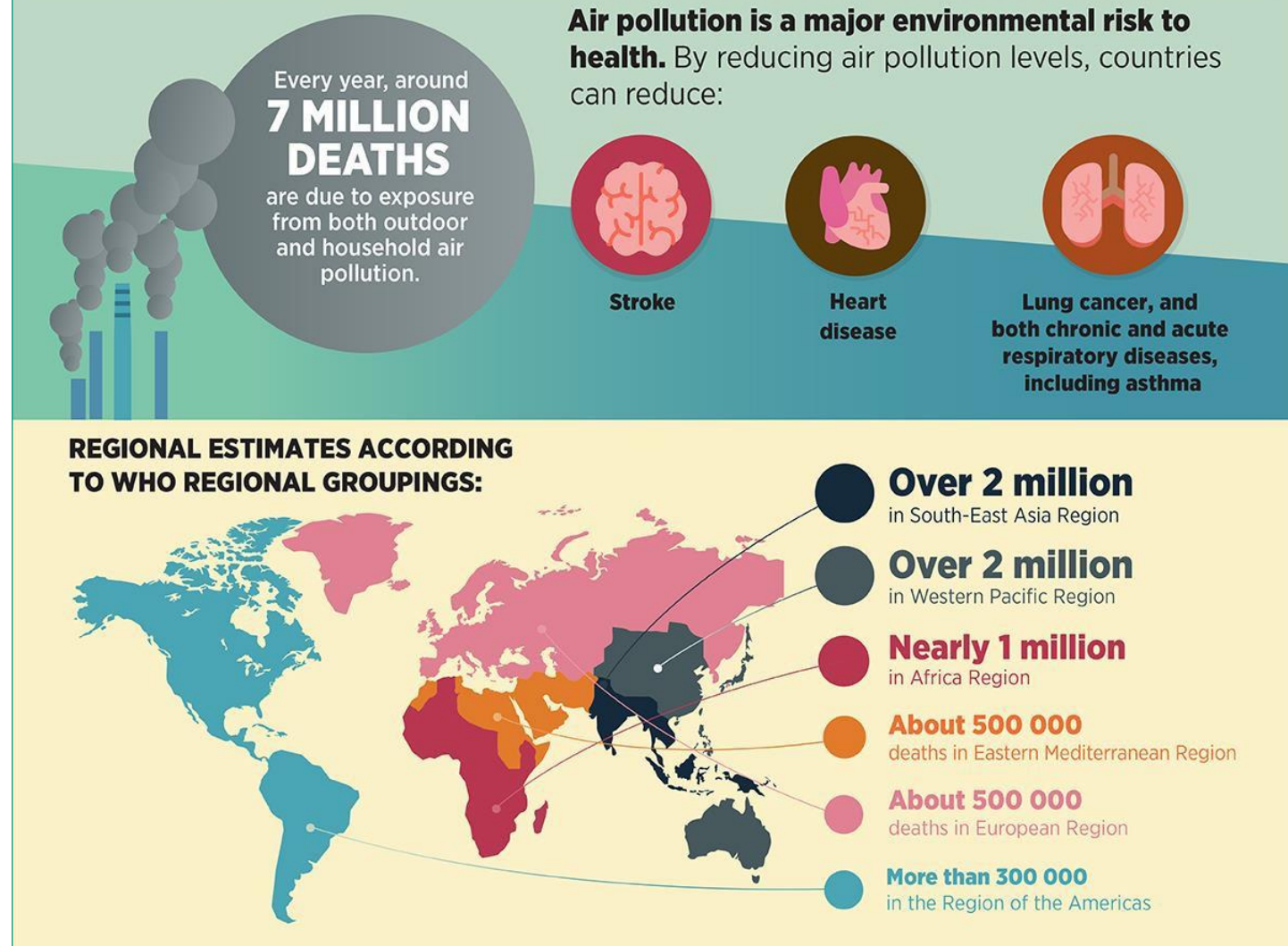


General Group

The Air Pollution Crisis

- Every year, an estimated **7 million people die from illnesses** attributable to air pollution.
- **Blue skies** are the top priority throughout Asia, from Mongolia to China to Bangkok – but blue skies will also help address the **climate crisis**.
- Combating climate change and meeting the goals of the Paris Agreement **could save around a million lives a year worldwide by 2050** solely through reductions in air pollution.

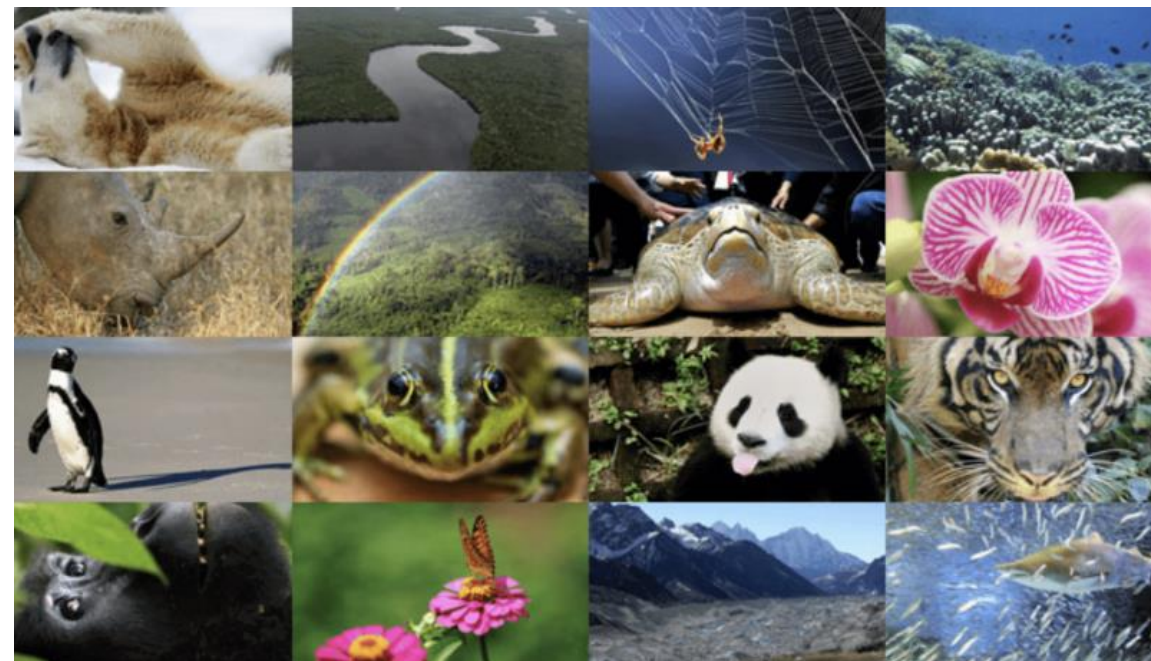
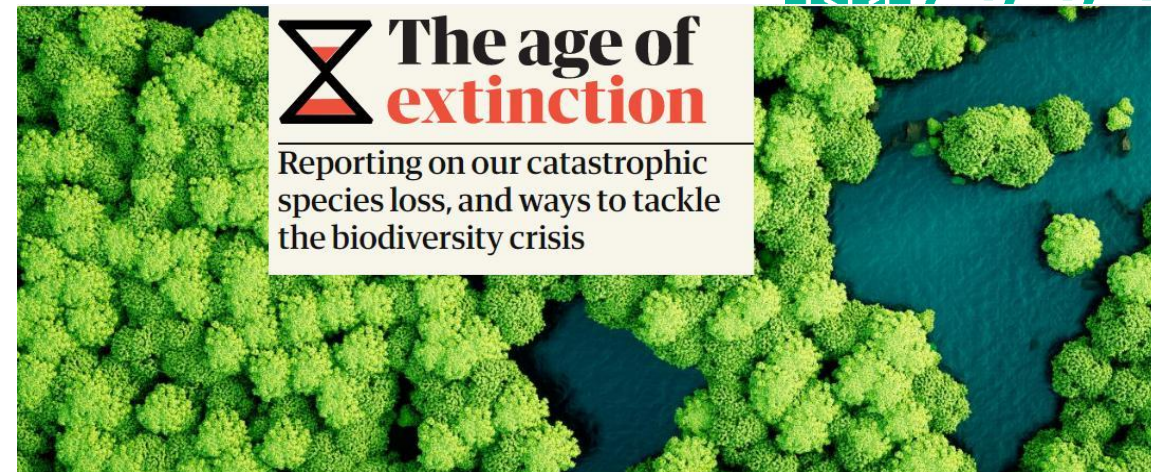
AIR POLLUTION – THE SILENT KILLER



CLEAN AIR FOR HEALTH

#AirPollution

The Biodiversity and Deforestation Crisis

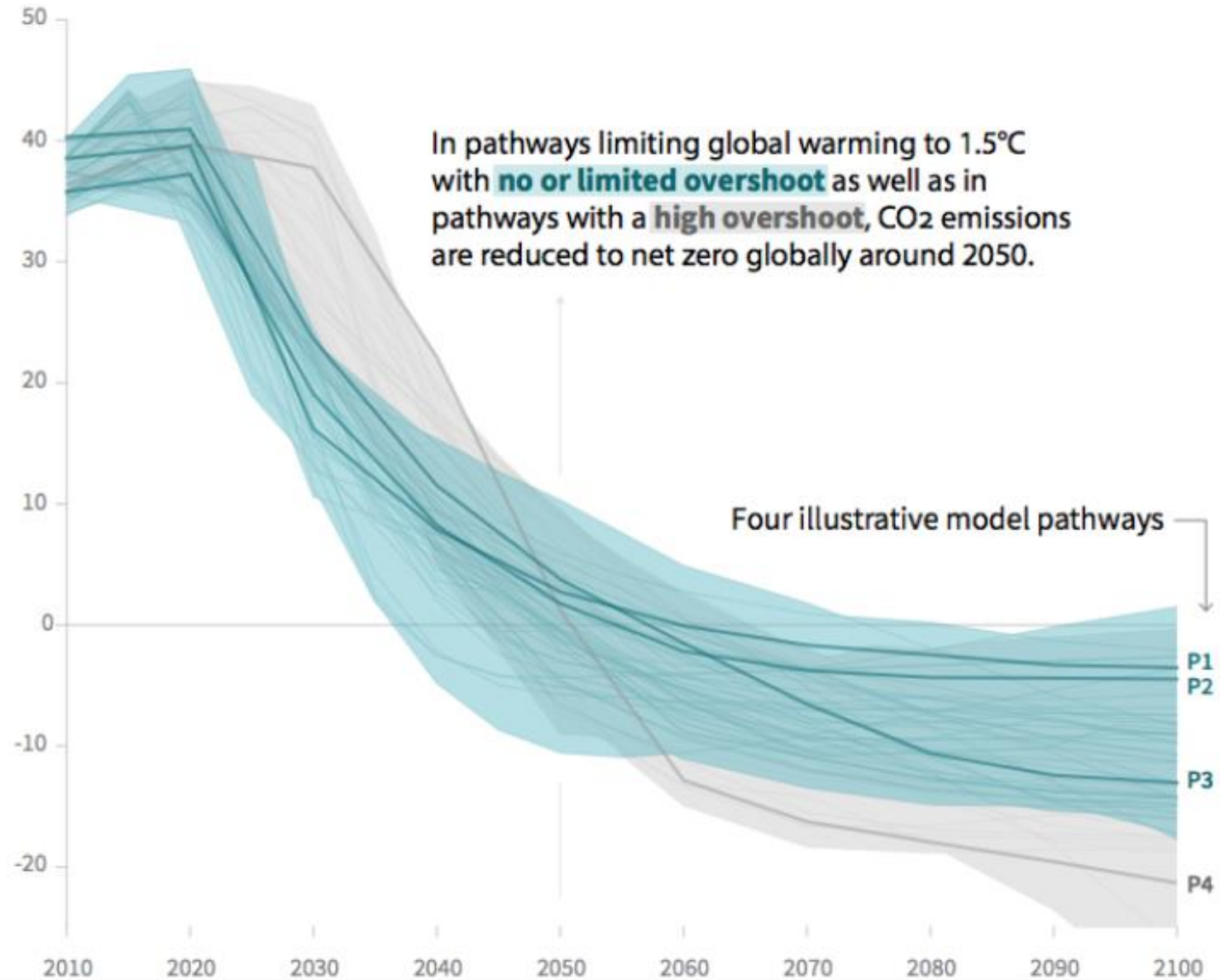


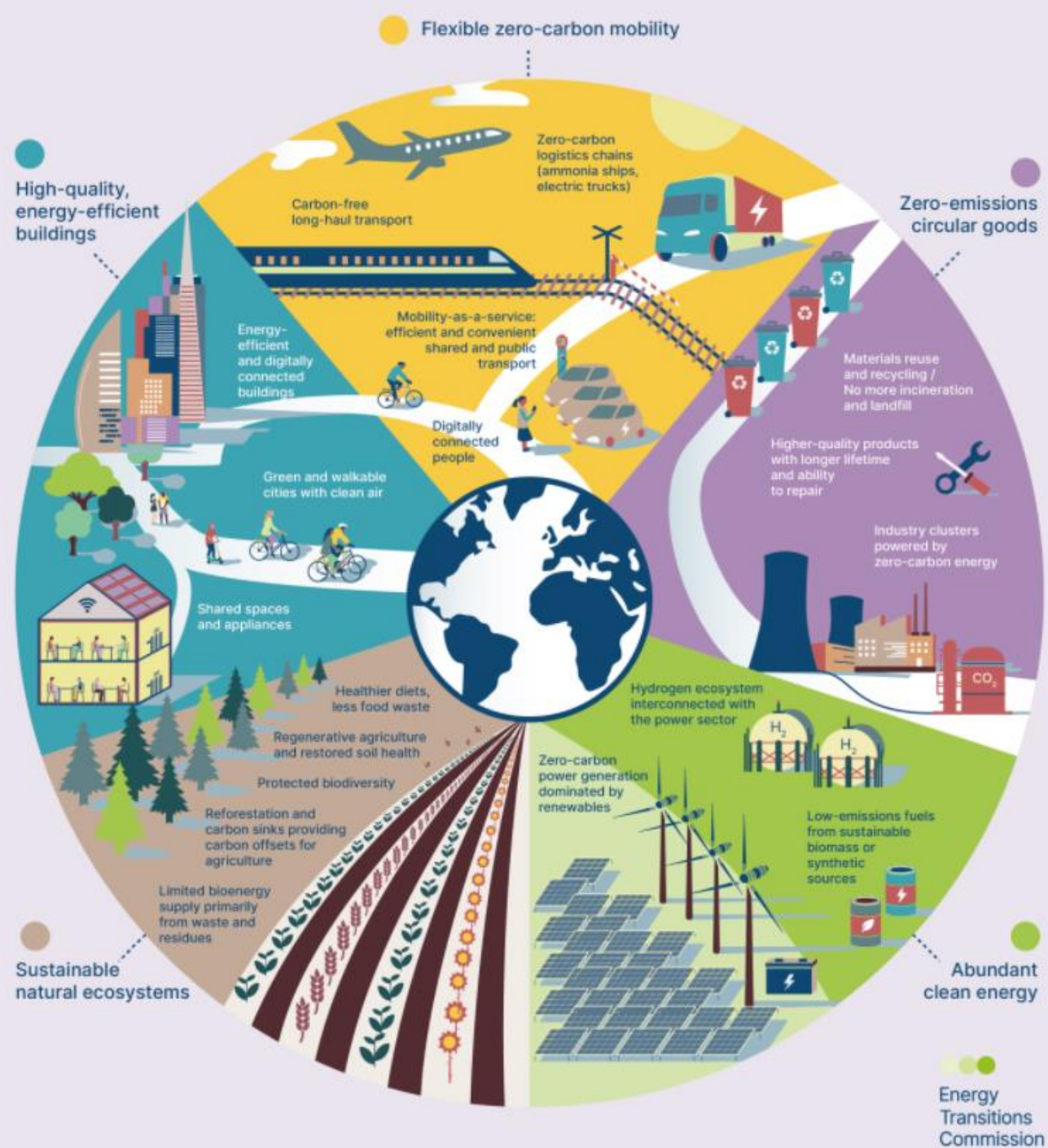
**How can we avoid
catastrophic climate
change?**

Net zero emissions

Global total net CO₂ emissions

Billion tonnes of CO₂/yr





The Good News

FINANCIAL TIMES

US COMPANIES TECH MARKETS CLIMATE OPINION WORK & CAREERS LIFE & ARTS HOW TO SPEND IT

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e in 2020

Opinion **Renewable energy**

The costs of tackling climate change keep on falling

Investments in a zero-carbon economy should boost economic growth

ADAIR TURNER [+ Add to myFT](#)



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Adair Turner DECEMBER 12 2020

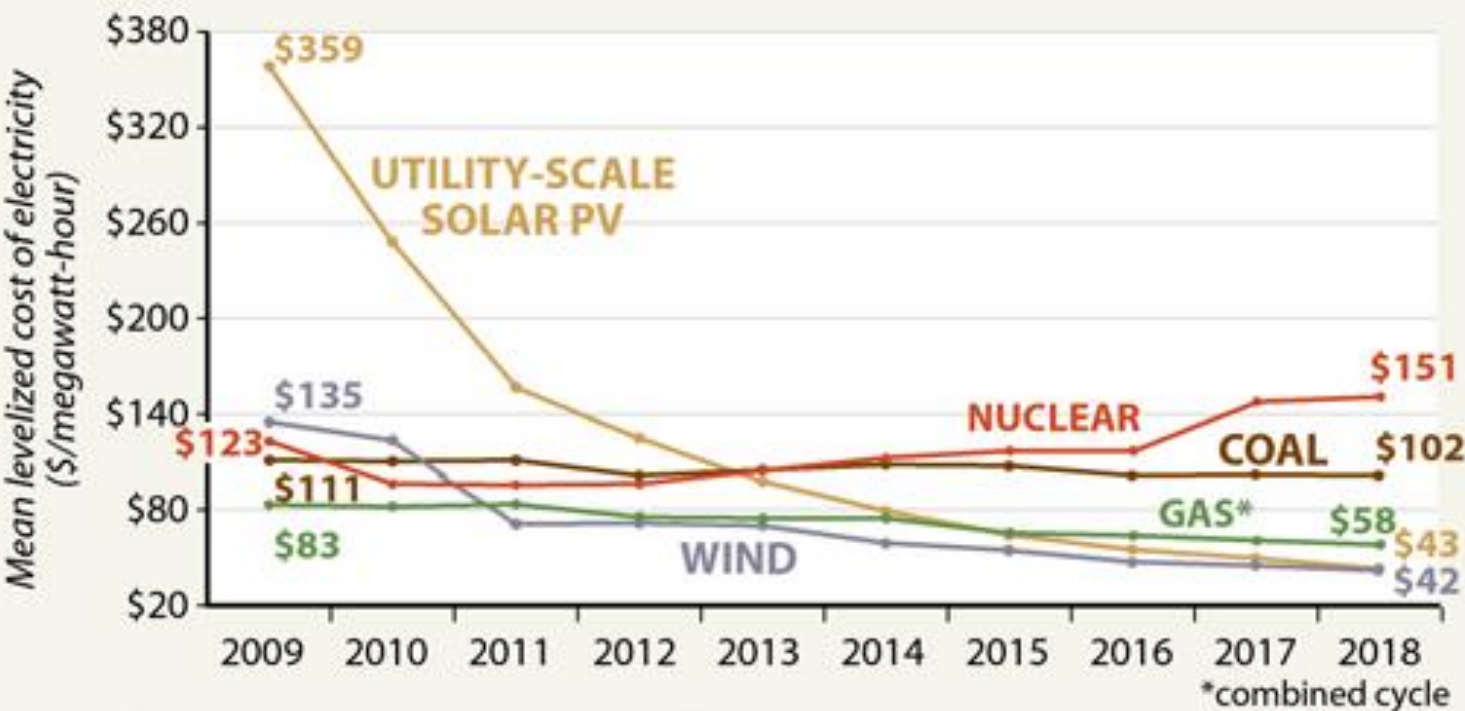
105

Renewable Energy Costs are Falling

Analysts at Lazard compared the changing costs over time for generating a megawatt-hour of electricity from different energy sources, including coal, solar, wind, nuclear and natural gas.

HISTORIC AVERAGE LEVELIZED COST OF ENERGY

Per megawatt-hour, unsubsidized values, 2009-2018



NOTE: Reflects average of unsubsidized high and low levelized cost of energy range.

SOURCE: Lazard

InsideClimate New

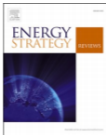


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Plummeting costs of renewables - Are energy scenarios lagging?

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Renewable energy

ABSTRACT

Wind and solar energy play a pivotal role in deep decarbonization pathways for the future. However, energy scenario studies differ substantially in the contribution of these technologies, as the technology selection in models strongly depends on the choice of techno-economic parameters. In this article, we systematically compare the cost assumptions for solar and wind technologies in global, regional and national energy scenario studies with costs observed in reality and with recent remuneration from market auctions. Specially, we compared the capital expenditure (CAPEX) and the levelized cost of electricity (LCOE) towards the year of 2050 when available with historical market prices and auction prices. Our results indicate that the trend of rapid cost declines has been structurally underestimated in virtually all future energy scenario analyses and suggest that even the most recent studies refer to obsolete or very conservative values. This leads to underestimating the future role and level of deployment of renewable technologies. We recommend an open database for costs of renewable technologies to enhance the accuracy and transparency of future energy scenarios.

Urban transport systems



How Amsterdam became the bicycle capital of the world



▲ Stop de Kindermoord campaigners visit Amsterdam's House of Representatives in 1972, a year after more than 400 children were killed in traffic accidents. Photograph: Fotocollectie Anefo/Society for the Nationaal Archief

In the 1960s, Dutch cities were increasingly in thrall to

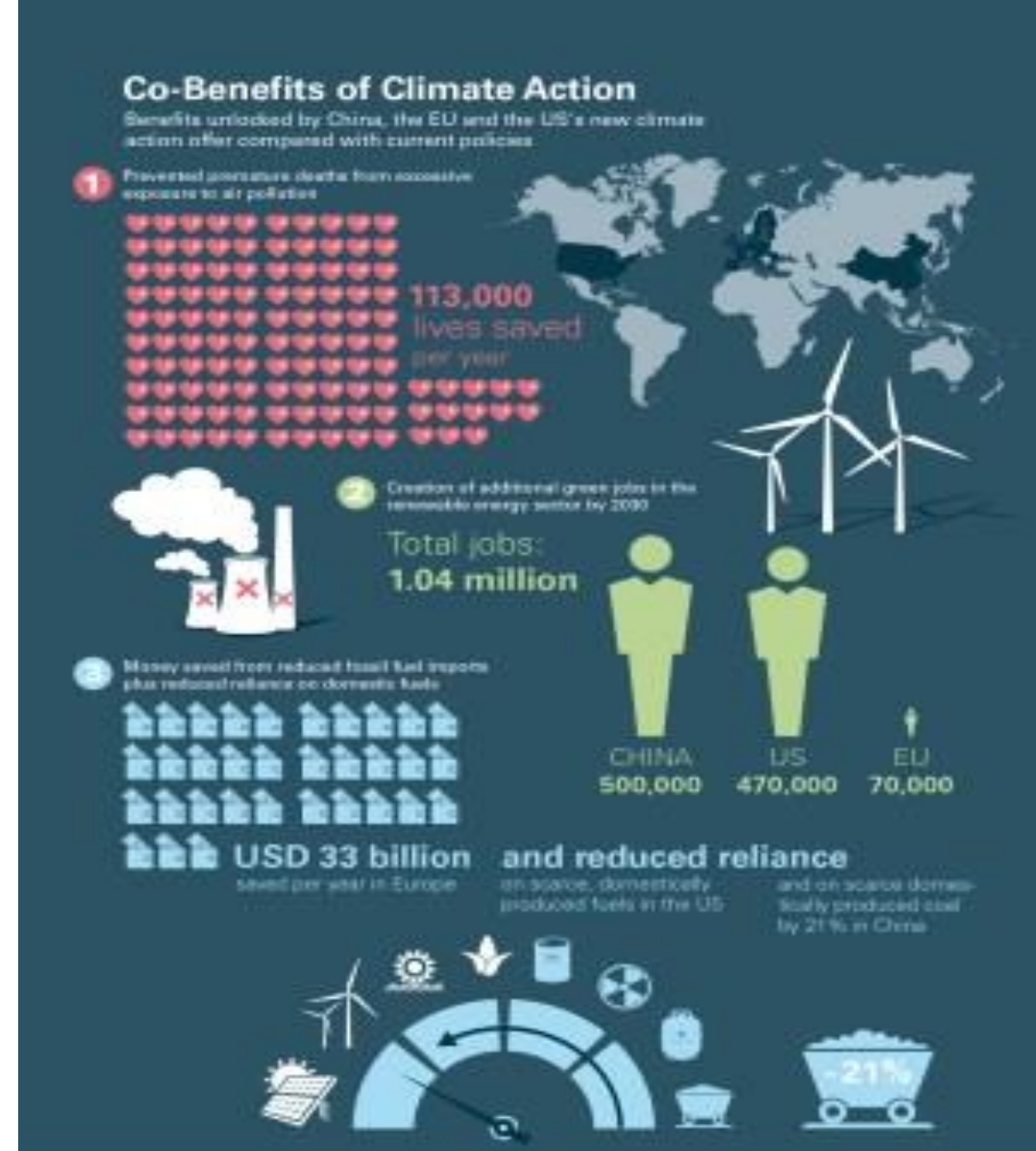
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Adopt Sustainable Transportation Policy and strategies

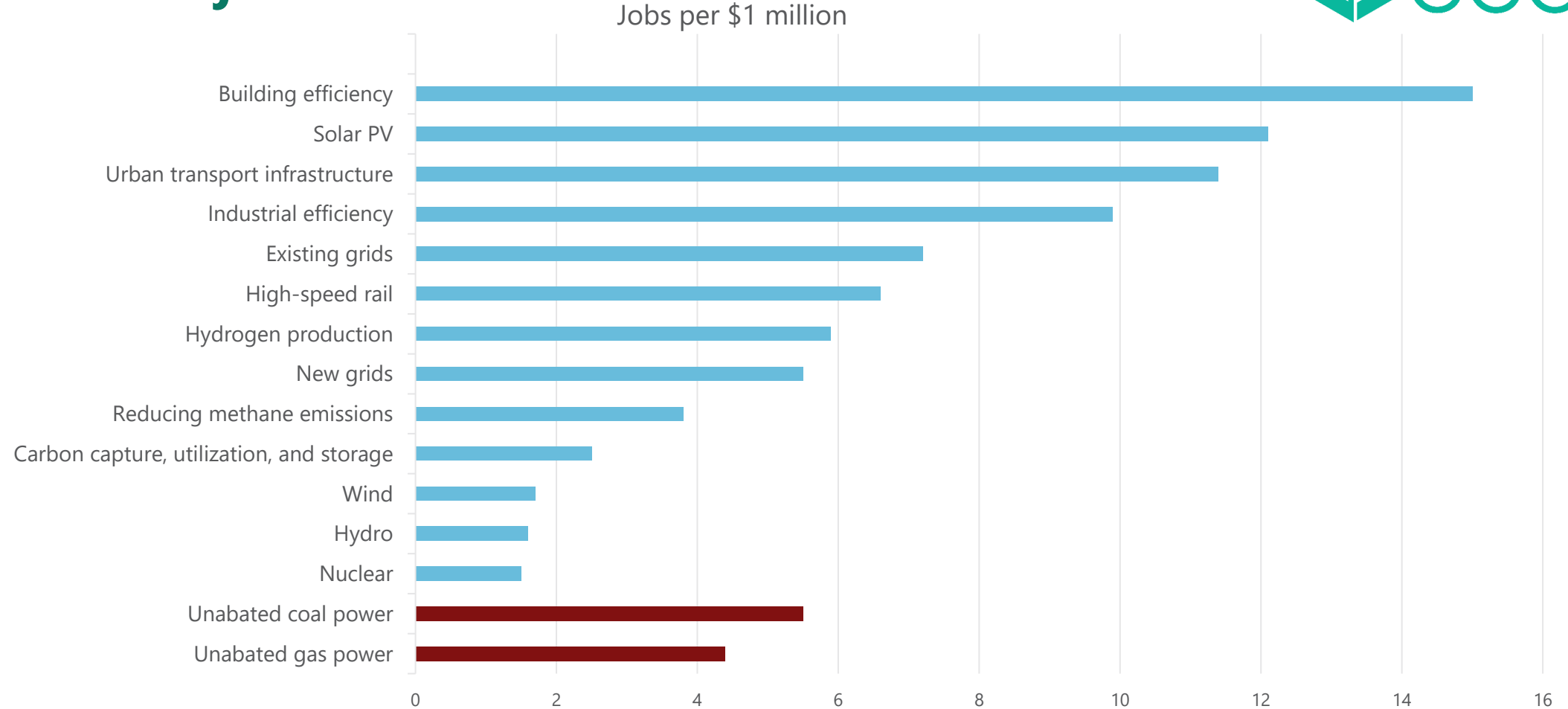


Source: Bicycle Innovation Lab

Significant co-benefits



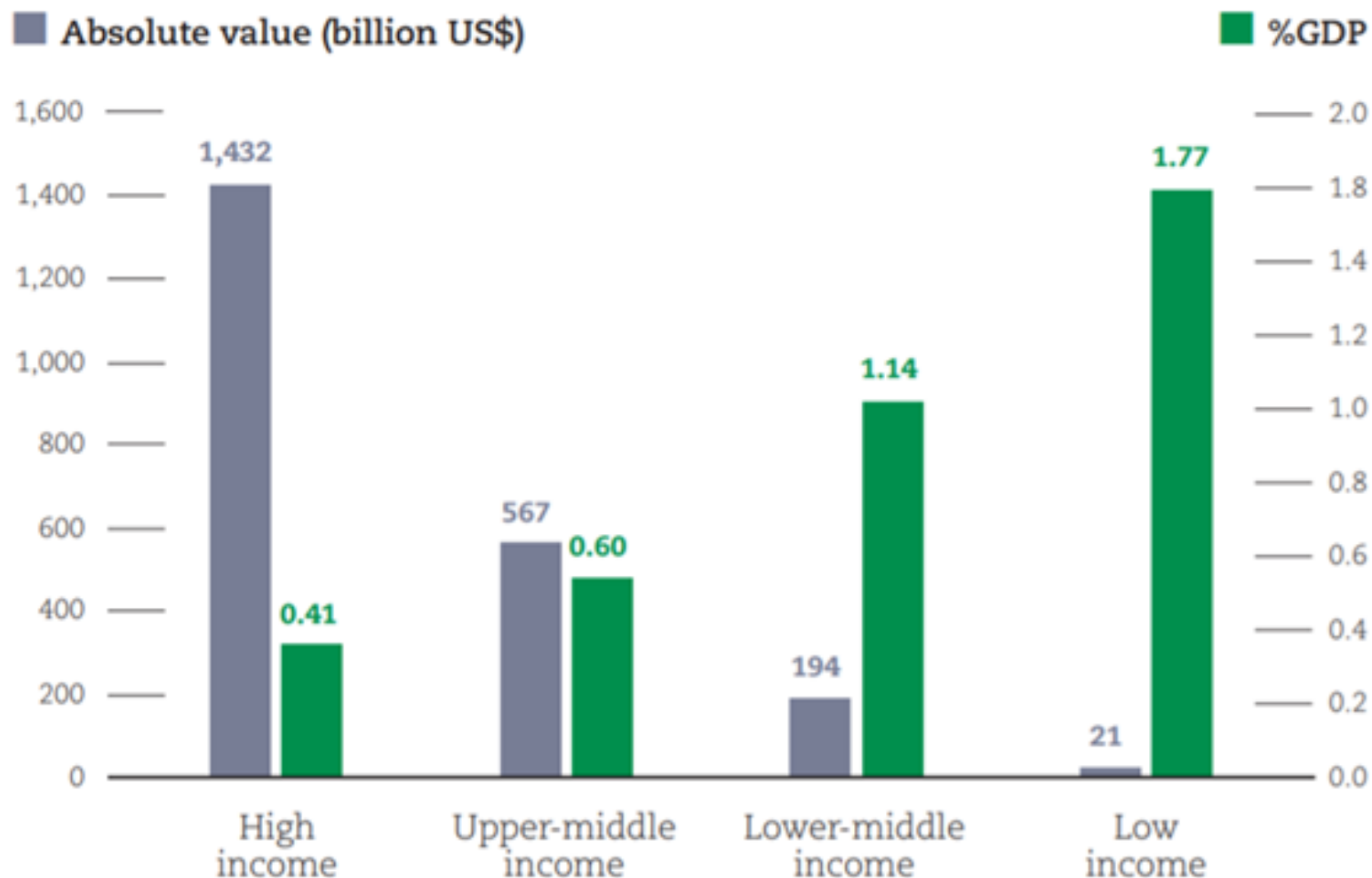
CLEAN ENERGY & TRANSPORT can create more jobs than fossil fuels



Gross direct and indirect jobs created in construction and manufacturing per \$1 million dollars of capital investment in the IEA's Sustainable Recovery Plan, global weighted average

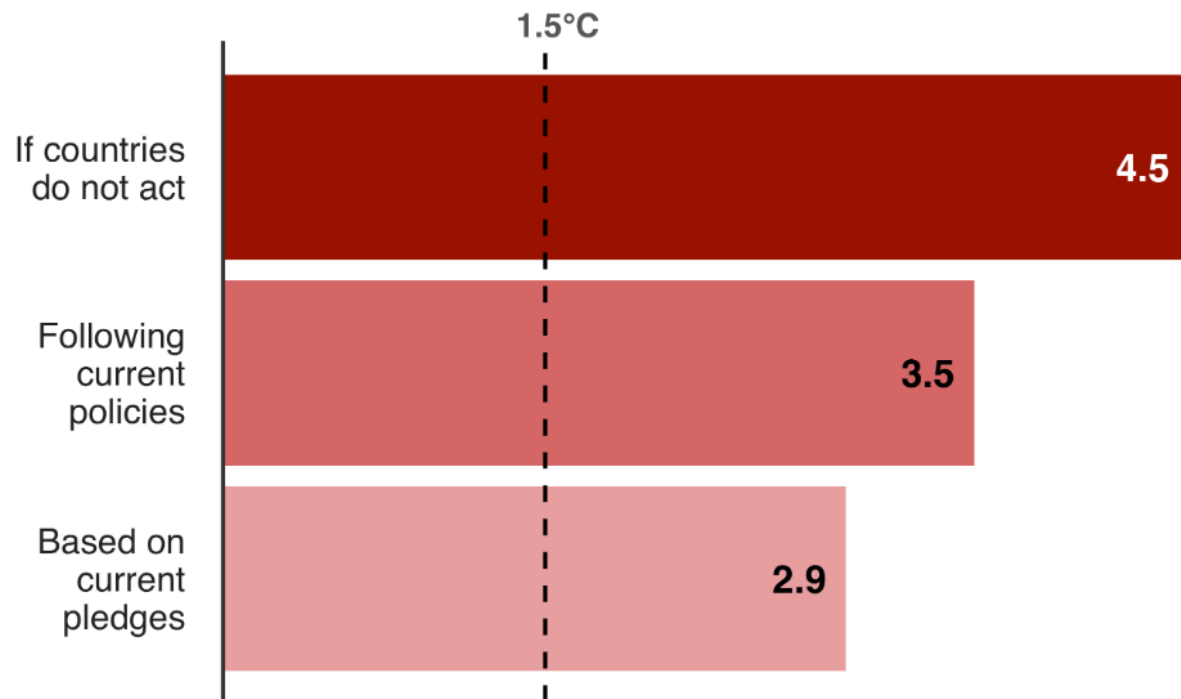
Avoided costs of Climate change

Recorded climate-related disaster losses and GDP losses by income group, 1998-2017



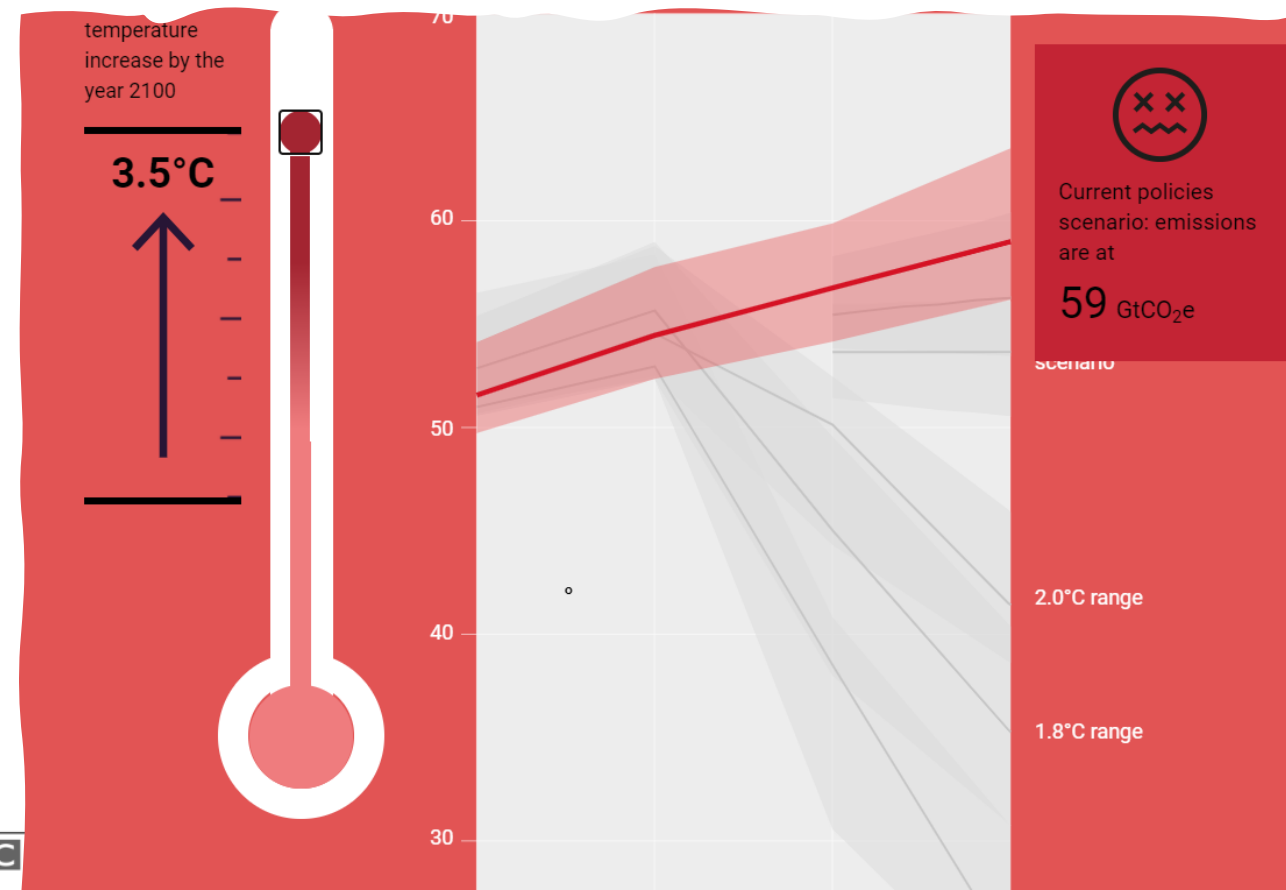
The Bad News

Average warming (°C) projected by 2100



Source: Climate Action Tracker, updated November 2017

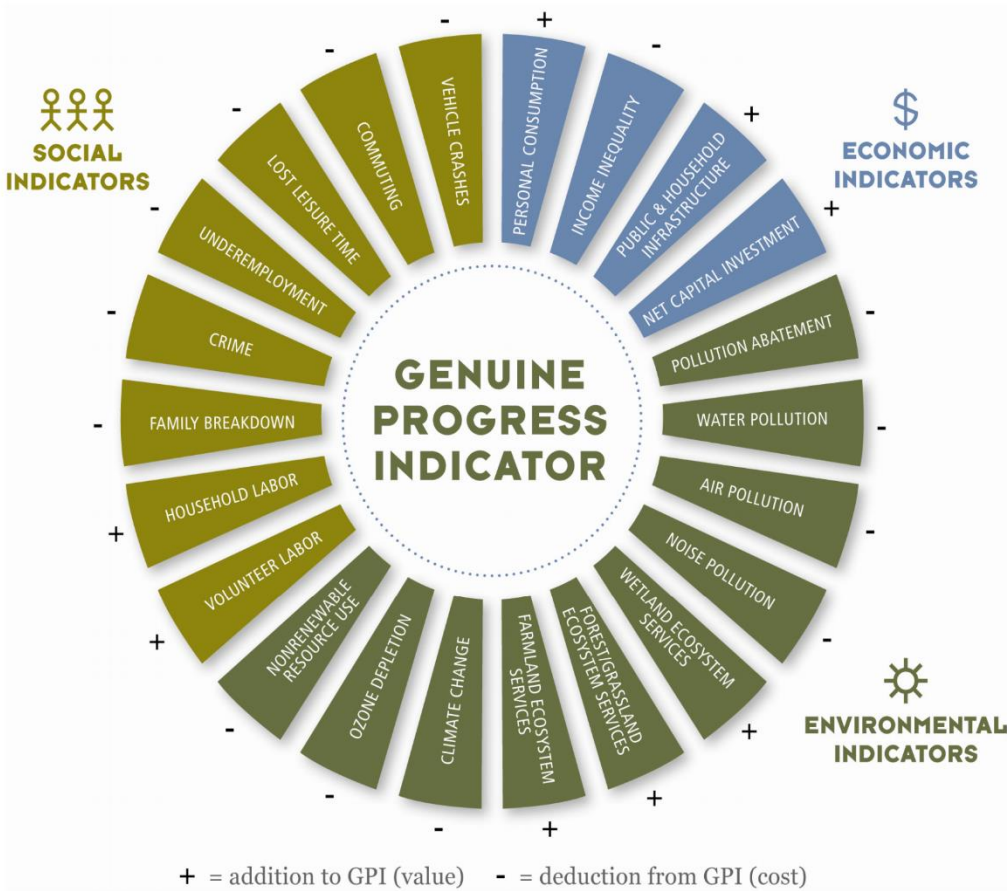
BBC



Why governments and the private sector still fail to take the necessary bold and ambitious action to tackle the climate crisis?

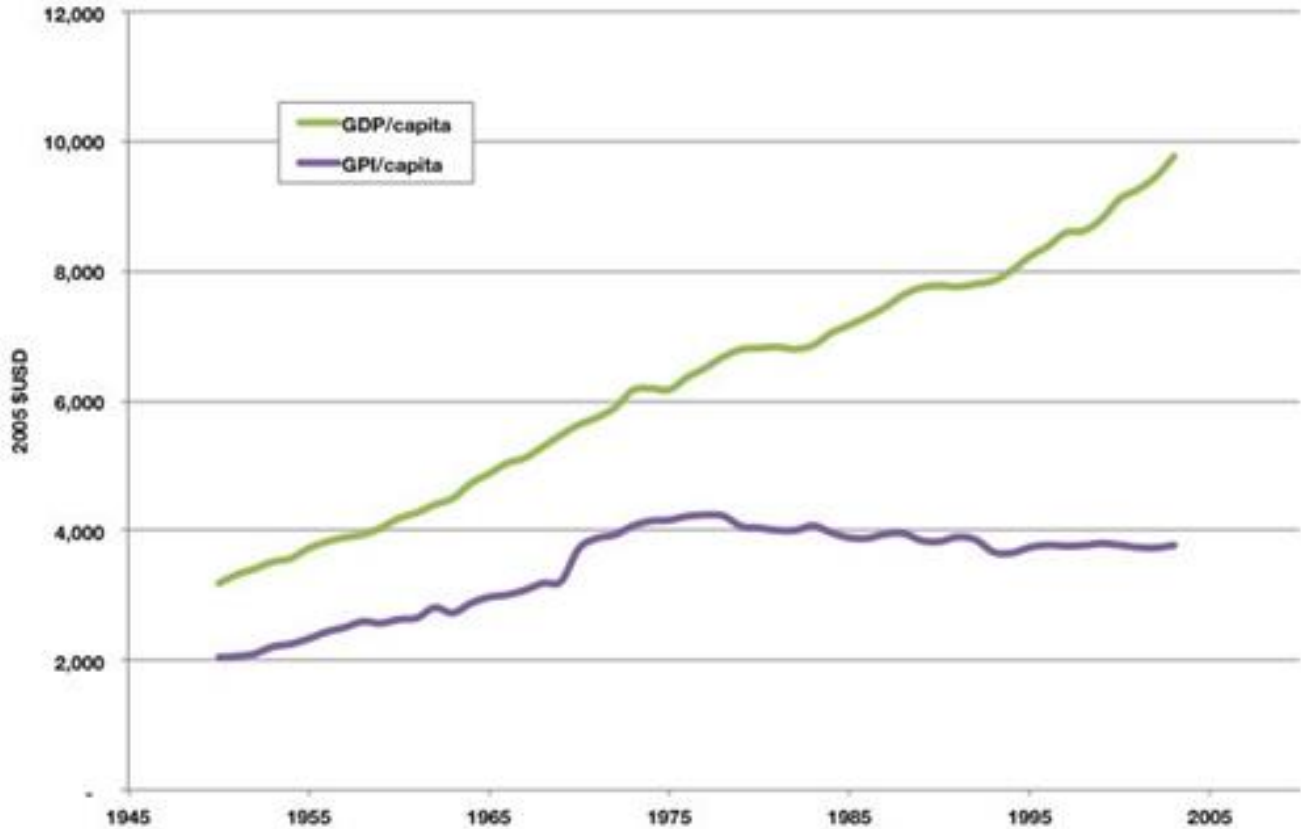
**We need Better
Metrics than GDP**

Alternatives to GDP: Genuine Progress Indicator



Source: Berik, G. and E. Gaddis. 2011.

GDP per capita vs. GPI per capita



Kubiszewski, I. et al. *Ecol. Econ.* 93, 57–68 (2013)

Green Growth Index Framework



Efficient and sustainable resource use

- Efficient and sustainable energy
- Efficient and sustainable water use
- Sustainable land use
- Material use efficiency

Low carbon economy

Green economic opportunities

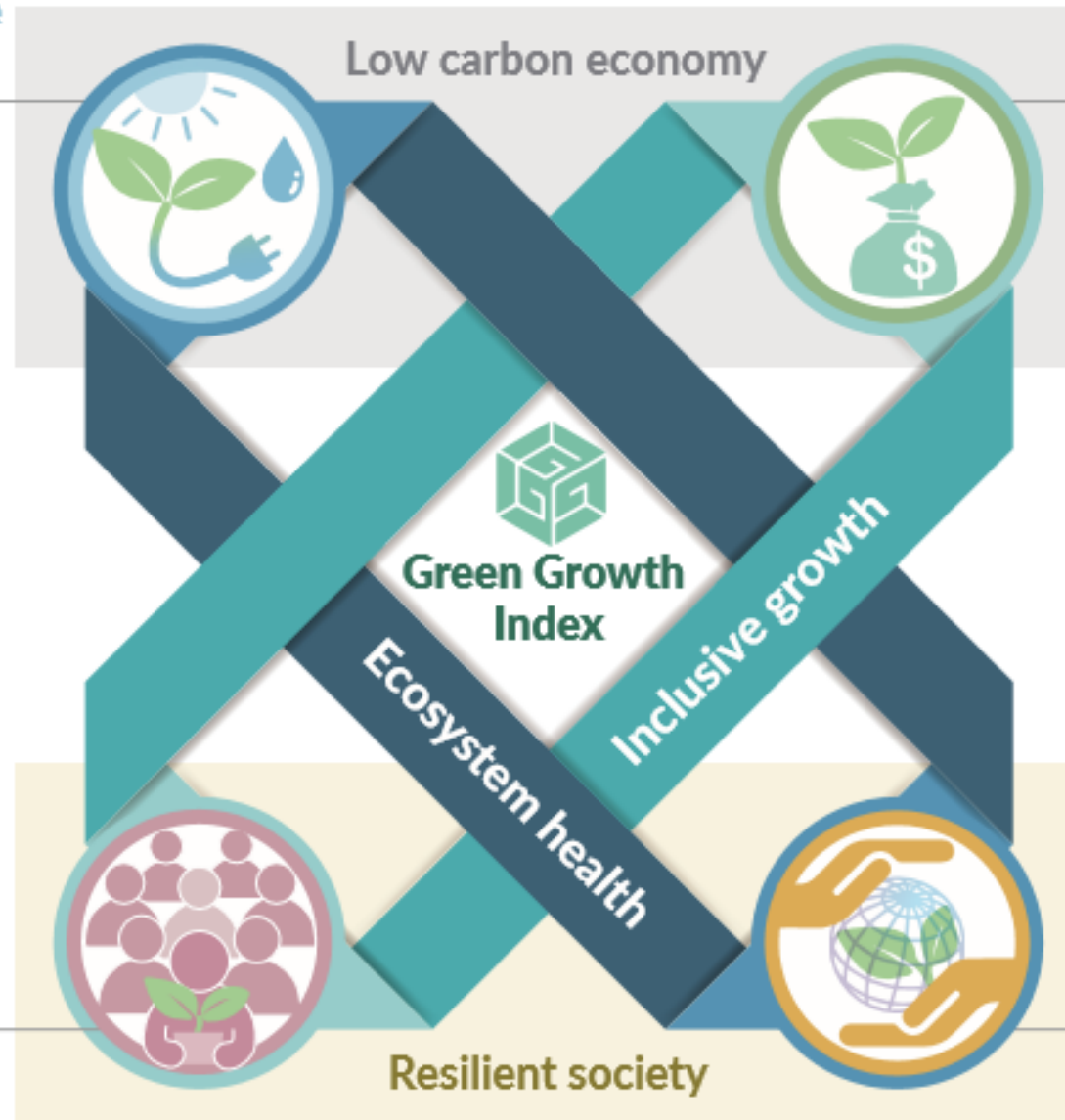
- Green investment
- Green trade
- Green employment
- Green innovation

Social inclusion

- Access to basic services and resources
- Gender balance
- Social equity
- Social protection

Resilient society

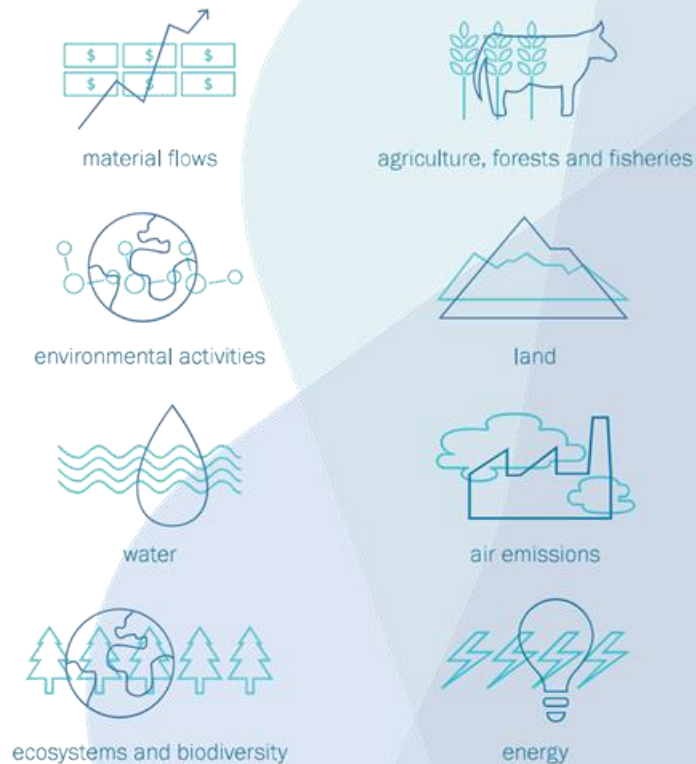
Natural capital protection



System of Integrated Environmental and Economic Accounting (SEEA)



The SEEA provides frameworks for producing accounts in **eight thematic areas**:

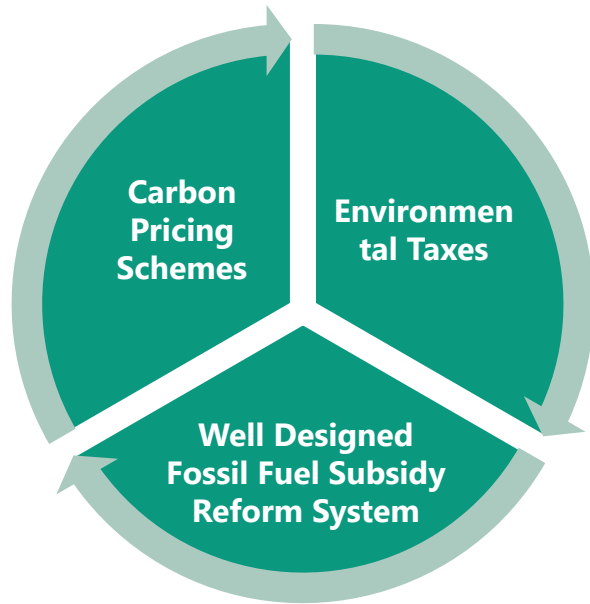


Countries that have compiled SEEA EEA accounts

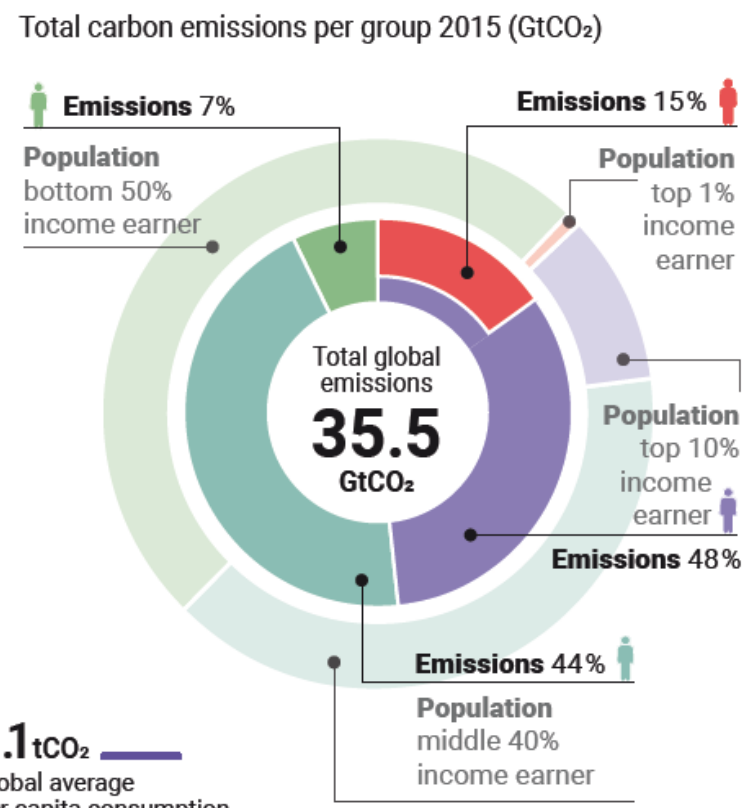
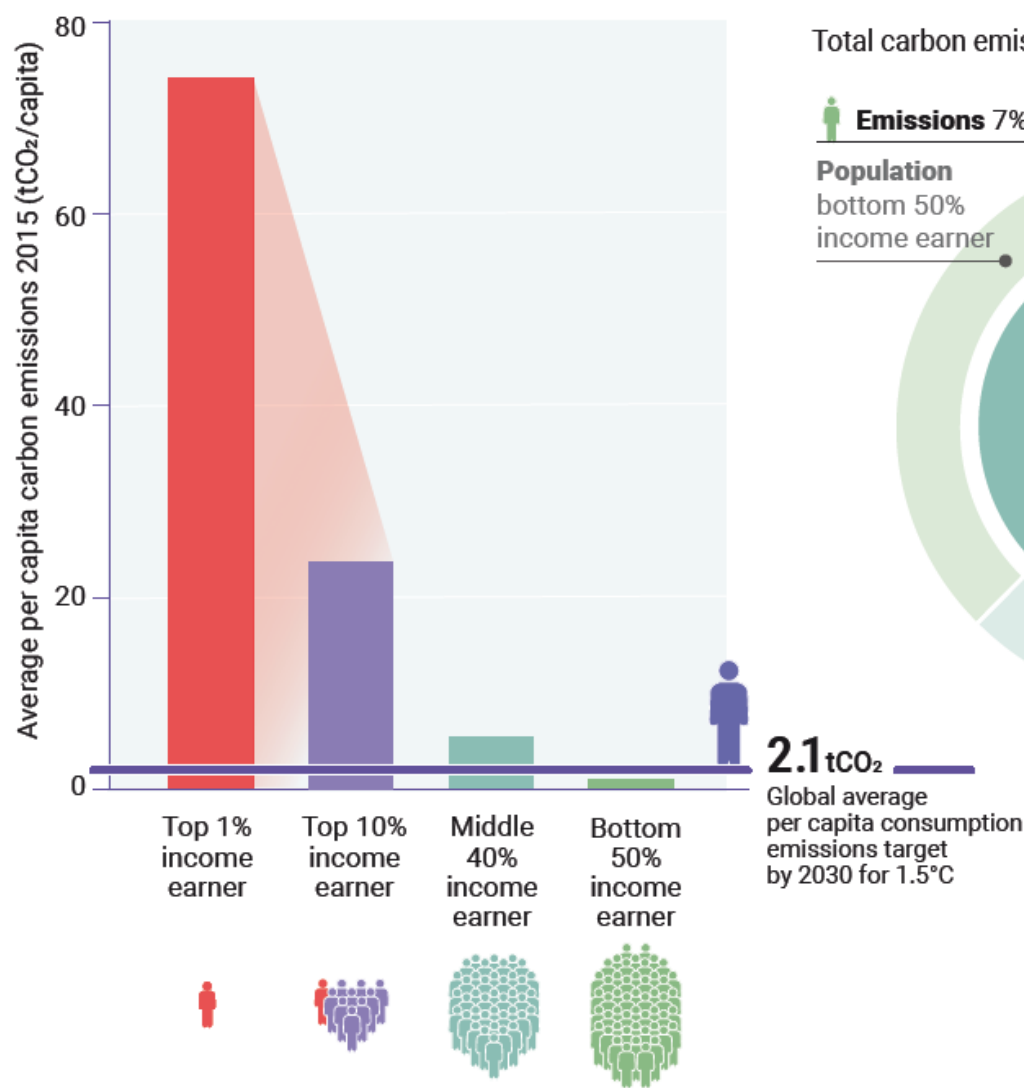
Some countries have published all accounts that they have compiled, and others have published only some. China, Japan, and the United States have compiled accounts but not published them (see supplementary materials, section 1). The scope and resolution of the accounts vary between countries. The figure presents a snapshot—countries continue to compile and publish accounts. SEEA, System of Environmental-Economic Accounting; EEA, Experimental Ecosystem Accounting.



Phase out fossil fuel subsidies and price carbon in an Equitable Manner



Changing consumption behaviour



Redesign finance



22.6.2020

EN

Official Journal of the European Union

L 198/13

**REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 18 June 2020
on the establishment of a framework to facilitate sustainable investment, and amending Regulation
(EU) 2019/2088**

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 114 thereof,

Having regard to the proposal from the European Commission,

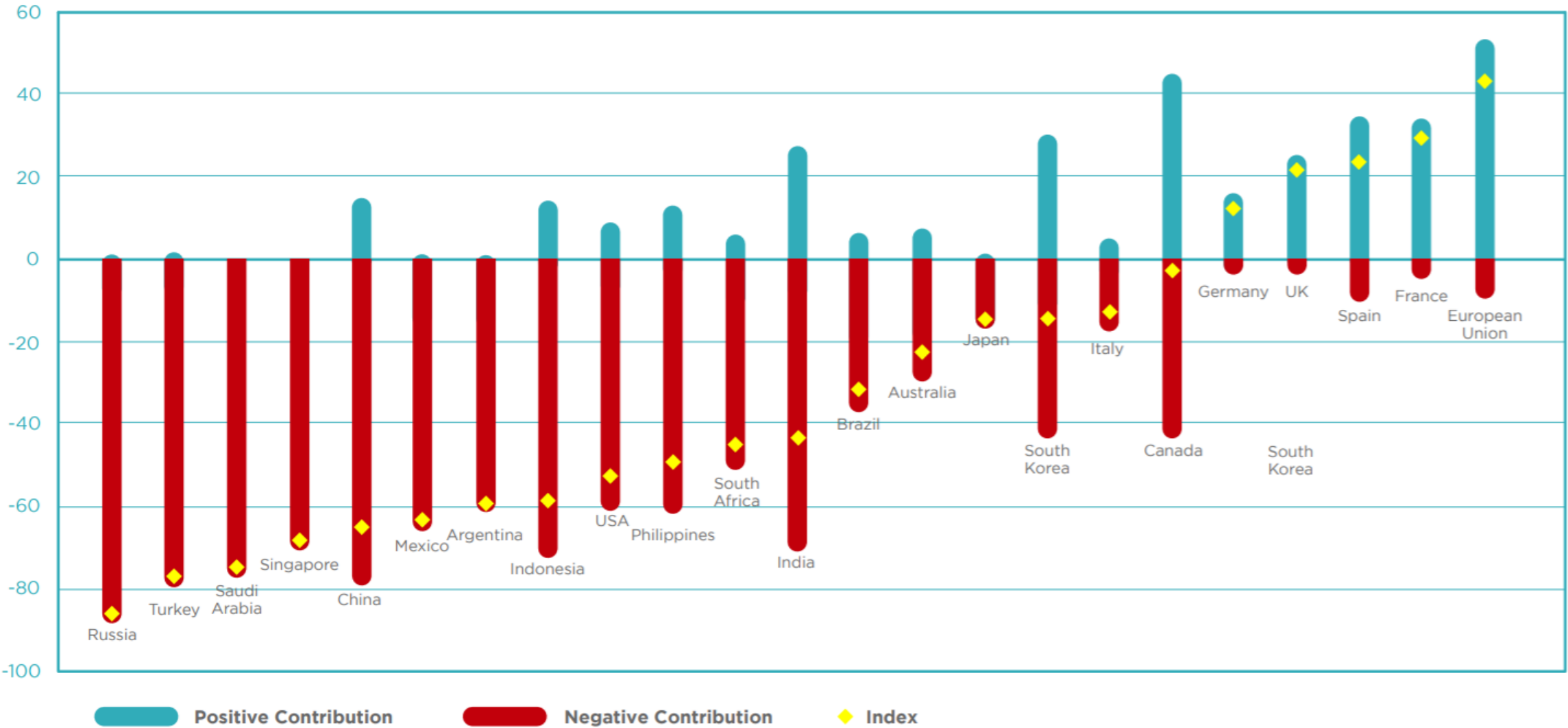
After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

Covid19 green recovery



Greenness of Stimulus Index





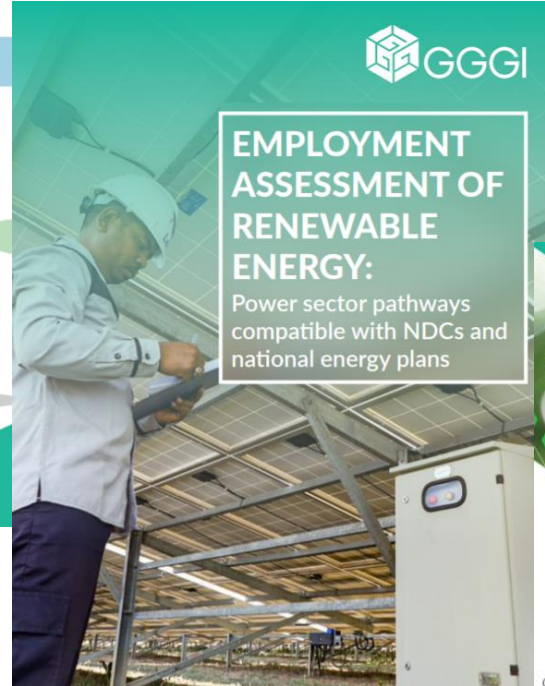
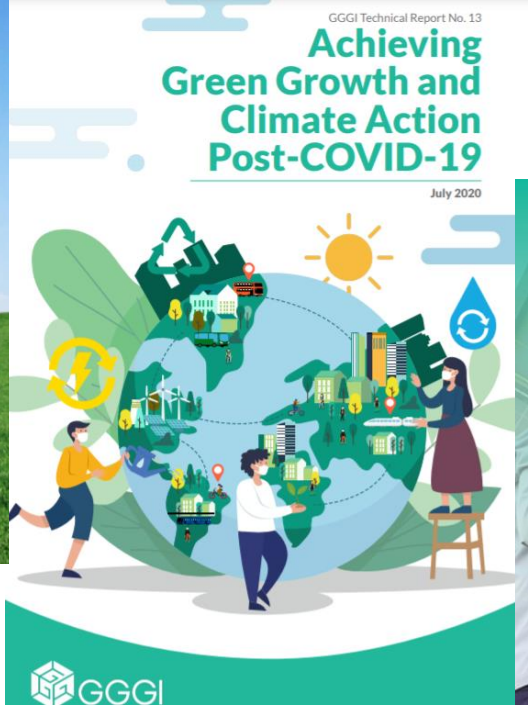
Ambitious Green New Deals & Net-zero Leadership



- **32 countries + EU have formally adopted net-zero goals**
- **As of now, over 1,200 major businesses have committed take action and half of them have set GHG reduction targets aligned with the science (SBTs)**
- **A group of investors responsible for over \$47 trillion in assets have called on the 161 biggest GHG emitting companies to enact strategies to reach net-zero by 2050.**

The Promise of Green Growth: A Pathway to Prosperity while Achieving National and Global Ambitions

November 2020



GGGI's services on supporting the development of LT-LEDs

October 2020

Thank You

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