GEOSPATIAL ANALYSIS TO SUPPORT POLICYMAKERS

Geospatial World Forum
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OECD
BETTER POLICIES FOR BETTER LIVES

Introduction to the OECD

BETTER POLICIES FOR BETTER LIVES

- Historically, OECD data & statistics are collected from countries, and this is still important today.

- Increasingly, this information is further complemented by drawing on global geospatial datasets, enriching OECD databases.

- The OECD and its member countries develop indicator methodologies to summarise complex datasets and thus support policymakers at all levels of government.
- The OECD participates and uses data from a variety of bodies:
  - OECD Space Forum
  - Space agencies of member countries
  - Group on Earth Observations
  - Other data providers
- The OECD also provides user feedback to data providers and communicates on evolving policy demands to steer future developments.

Protected areas

International agreements

14 LIFE BELOW WATER

By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information.

Sustainable Development Goal Target 14.5, 2015

Ensure and enable that by 2030 at least **30 per cent of terrestrial, inland water, and of coastal and marine areas**, especially areas of particular importance for biodiversity and ecosystem functions and services, **are effectively conserved and managed** […]

Kunming-Montreal Global Biodiversity Framework, 2022

15 LIFE ON LAND

Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

Sustainable Development Goal Target 15.5, 2015

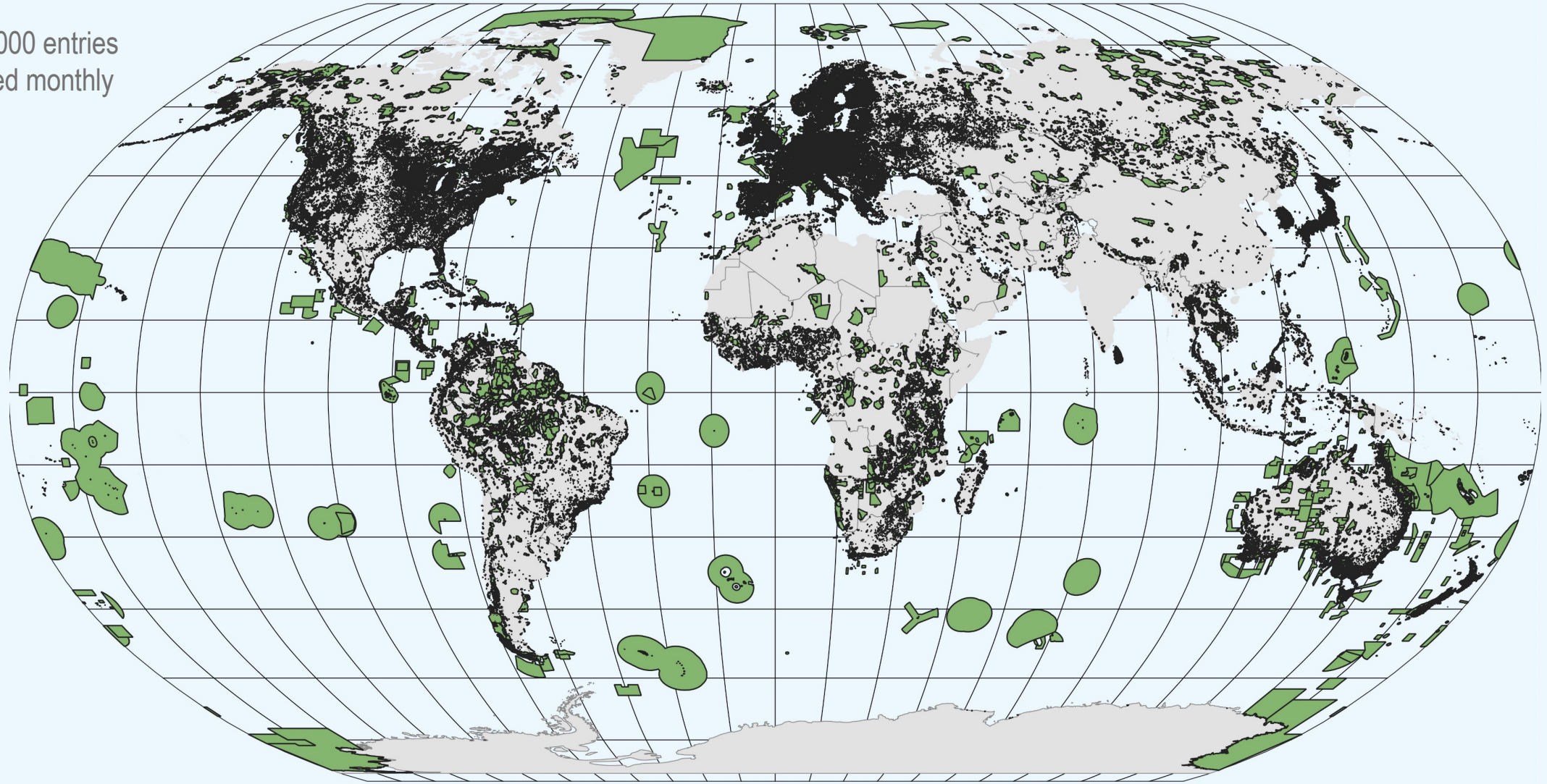
THE LAW OF THE SEA

The High Seas Treaty sets up a legal mechanism to designate marine protected areas on the high seas.

High Seas Treaty, 2023

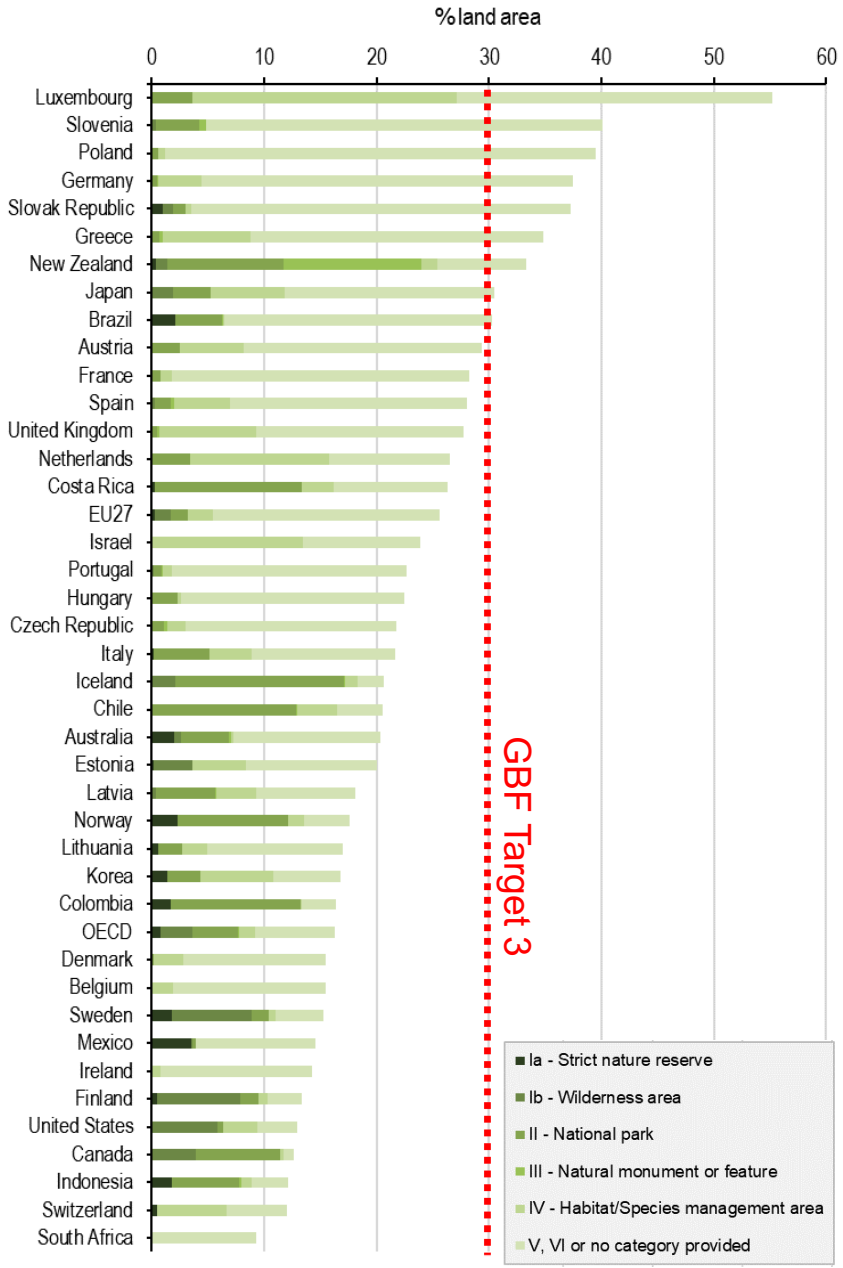
World Database on Protected Areas

- > 280,000 entries
- Updated monthly

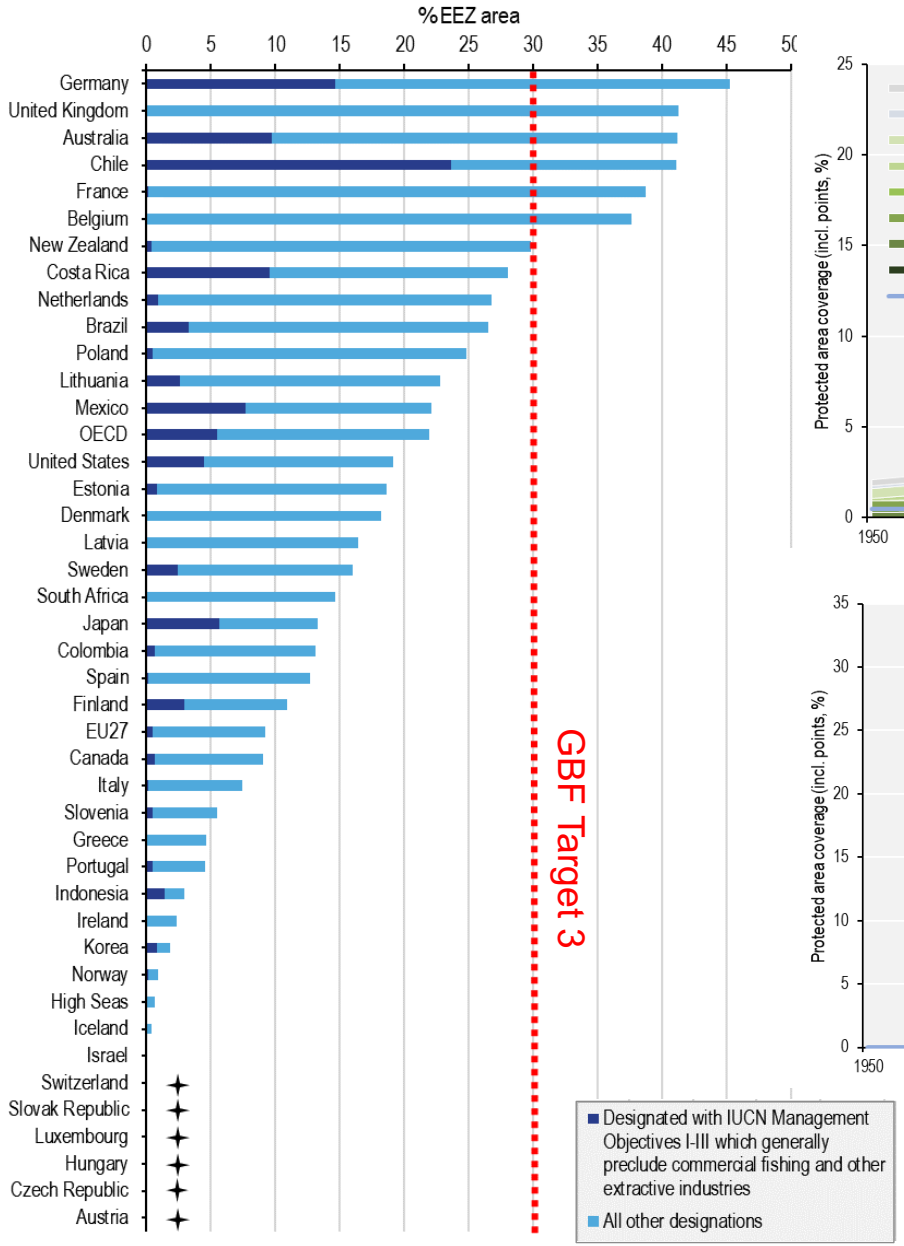


Source: UNEP-WCMC World Database on Protected Areas (WDPA), January 2023.

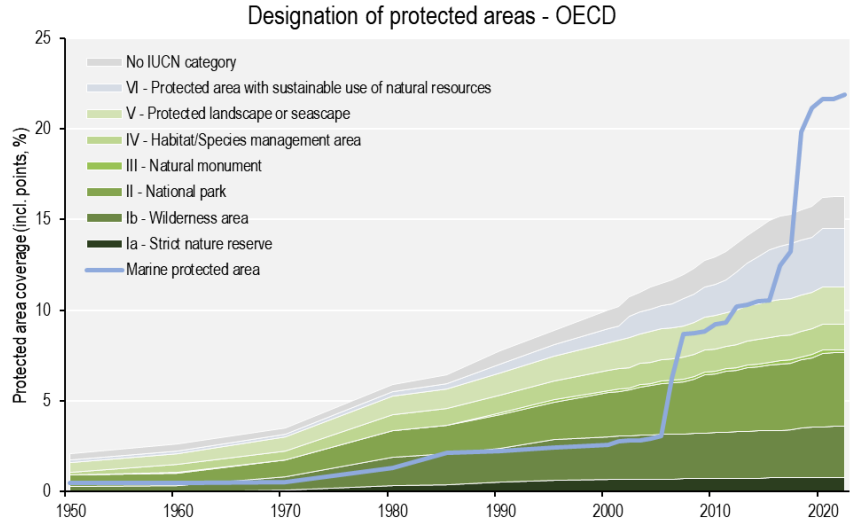
Terrestrial Protected Areas (2022)

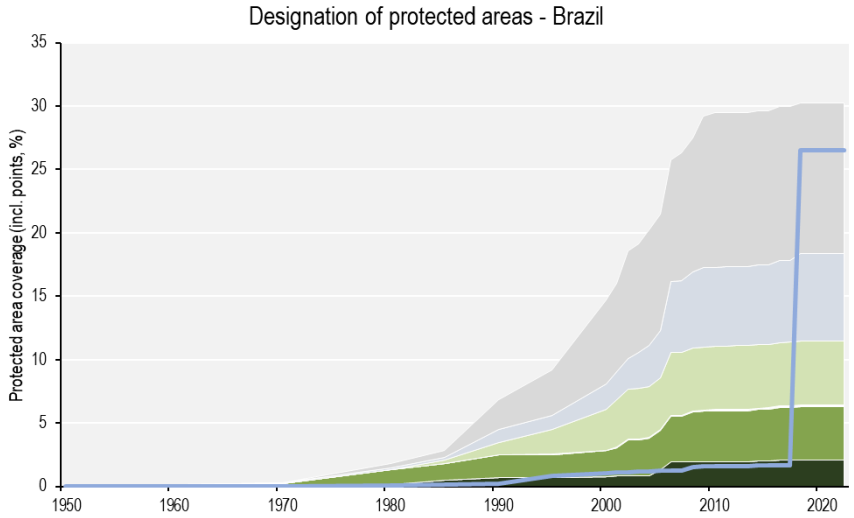


Marine Protected Areas (2022)



Historical patterns (1950 - 2022)





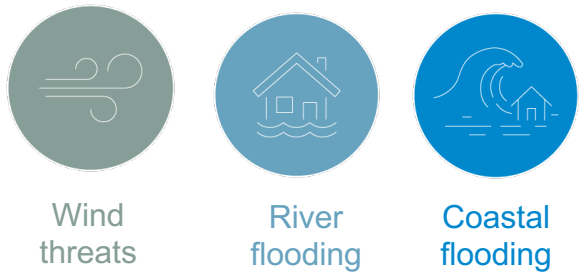
Source: OECD calculations using the UNEP-WCMC World Database on Protected Areas (WDPA) and methodology from Mackie, A., et al. (2017), "**Indicators on Terrestrial and Marine Protected Areas: Methodology and Results for OECD and G20 countries**", OECD Environment Working Papers, No. 126, OECD Publishing, Paris.

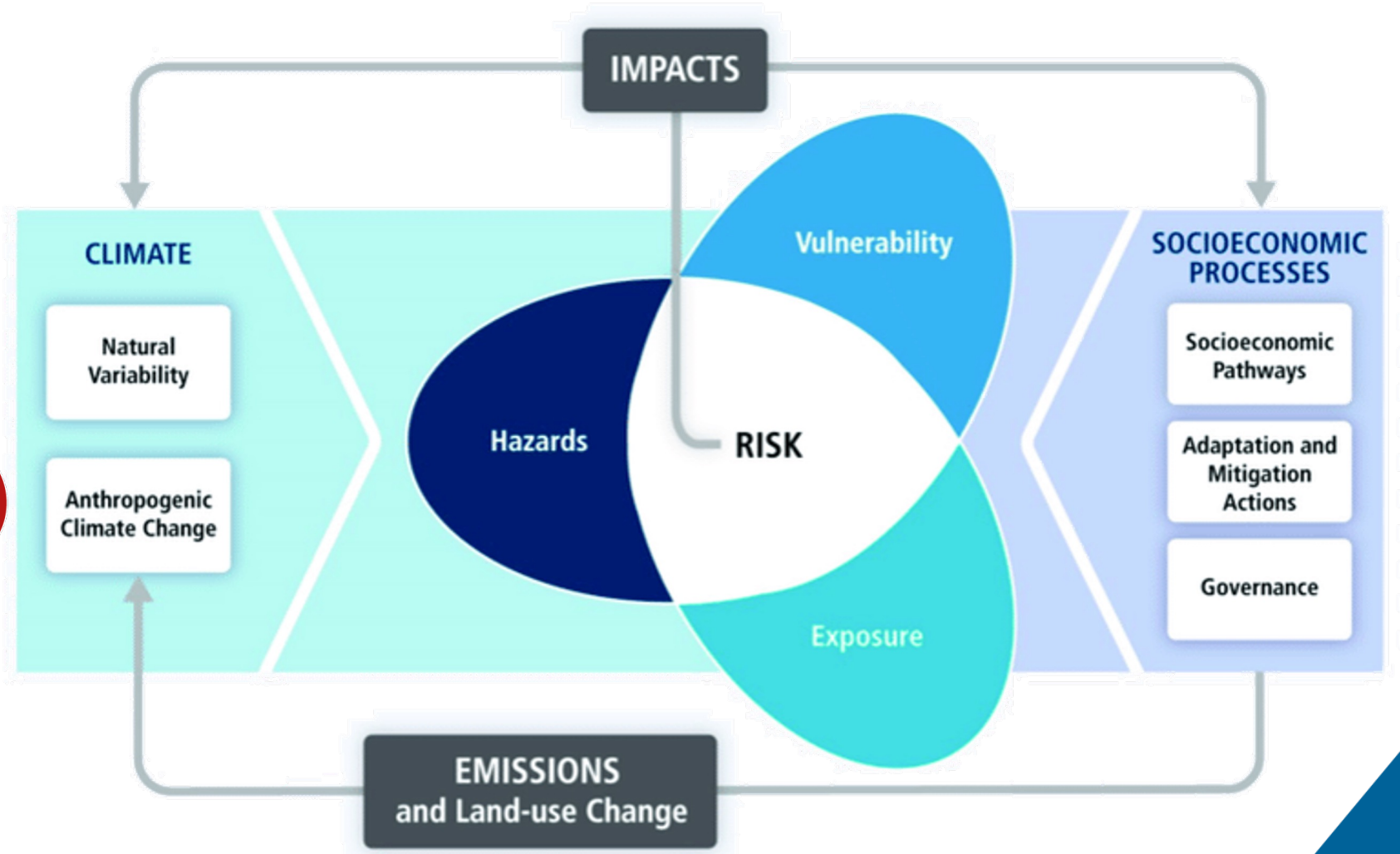
Climate-related hazards

A new loss and damage fund…

The new loss and damage fund will assist developing countries in responding to climate change damages.

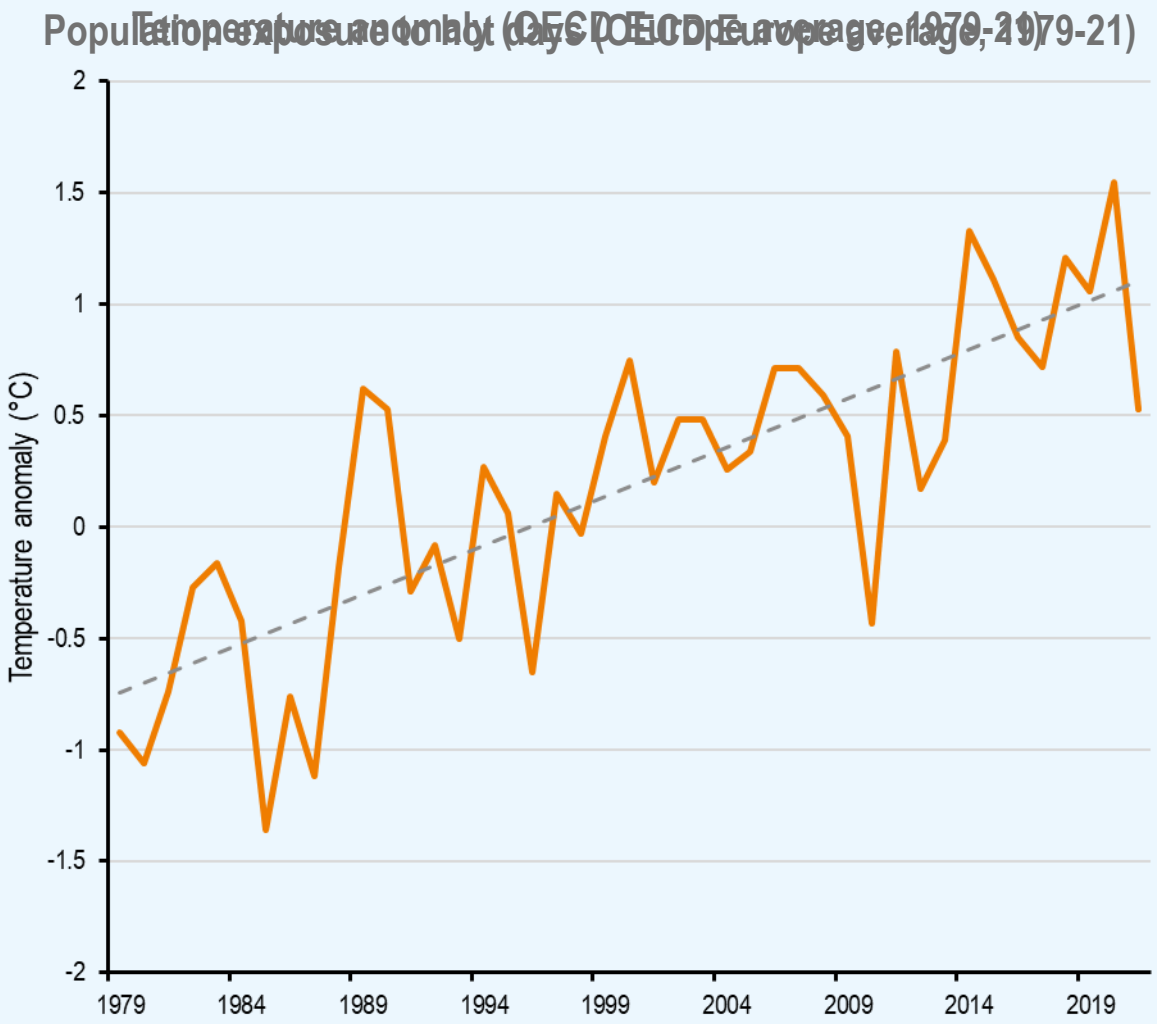
COP27 SHARM EL-SHEIKH EGYPT 2022

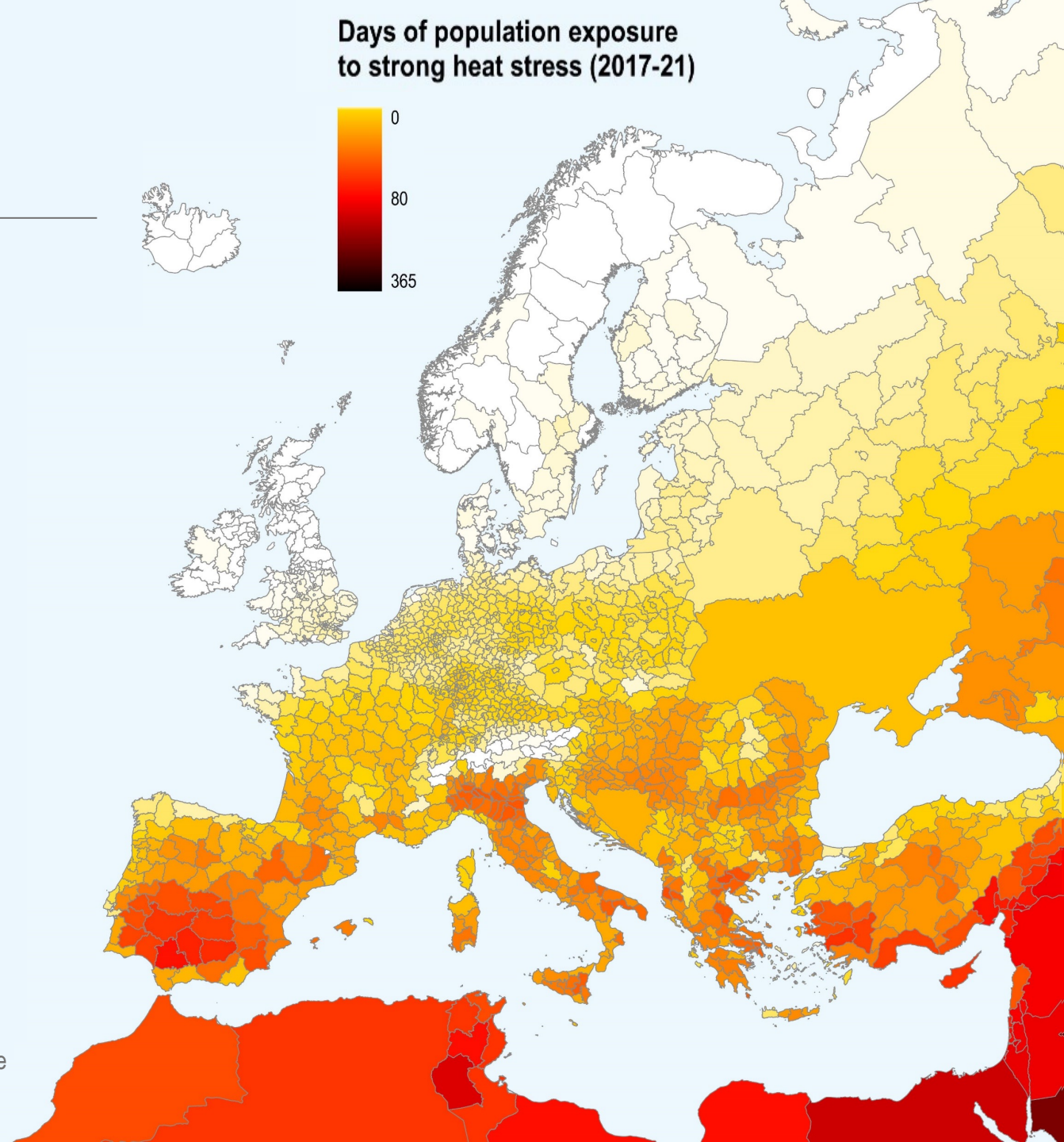




Source: IPCC 2014 & IPCC 2022

Extreme temperature

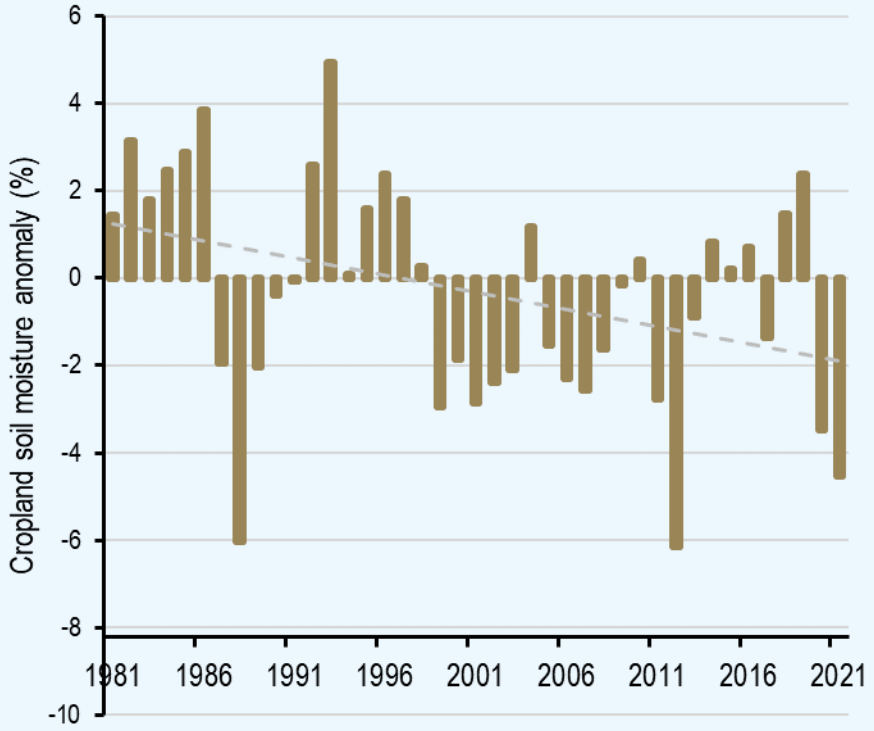


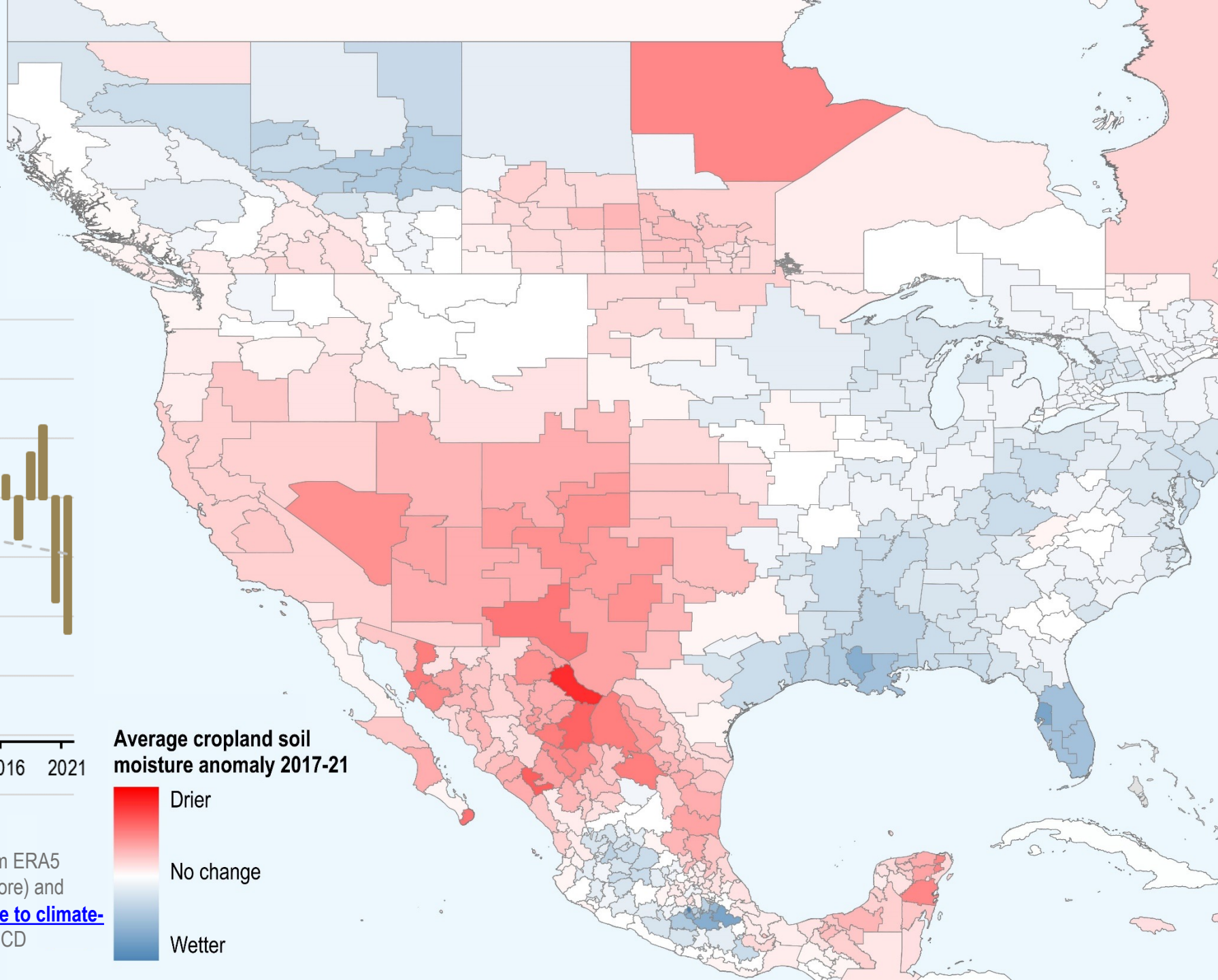


Source: OECD and IEA calculations using temperature data from ERA5 reanalysis (Copernicus Climate Data Store) and methodology from Maes, M., et al. (2022), "**Monitoring exposure to climate-related hazards: Indicator methodology and key results**", OECD Environment Working Papers, No. 201.

Drought

Agricultural drought is increasing
(OECD America average, 1981 - 2021)





Source: OECD calculations using soil moisture satellite data from ERA5 reanalysis, land cover gridded data (Copernicus Climate Data Store) and methodology from Maes, M., et al. (2022), "**Monitoring exposure to climate-related hazards: Indicator methodology and key results**", OECD Environment Working Papers, No. 201, OECD Publishing, Paris.

Air pollution

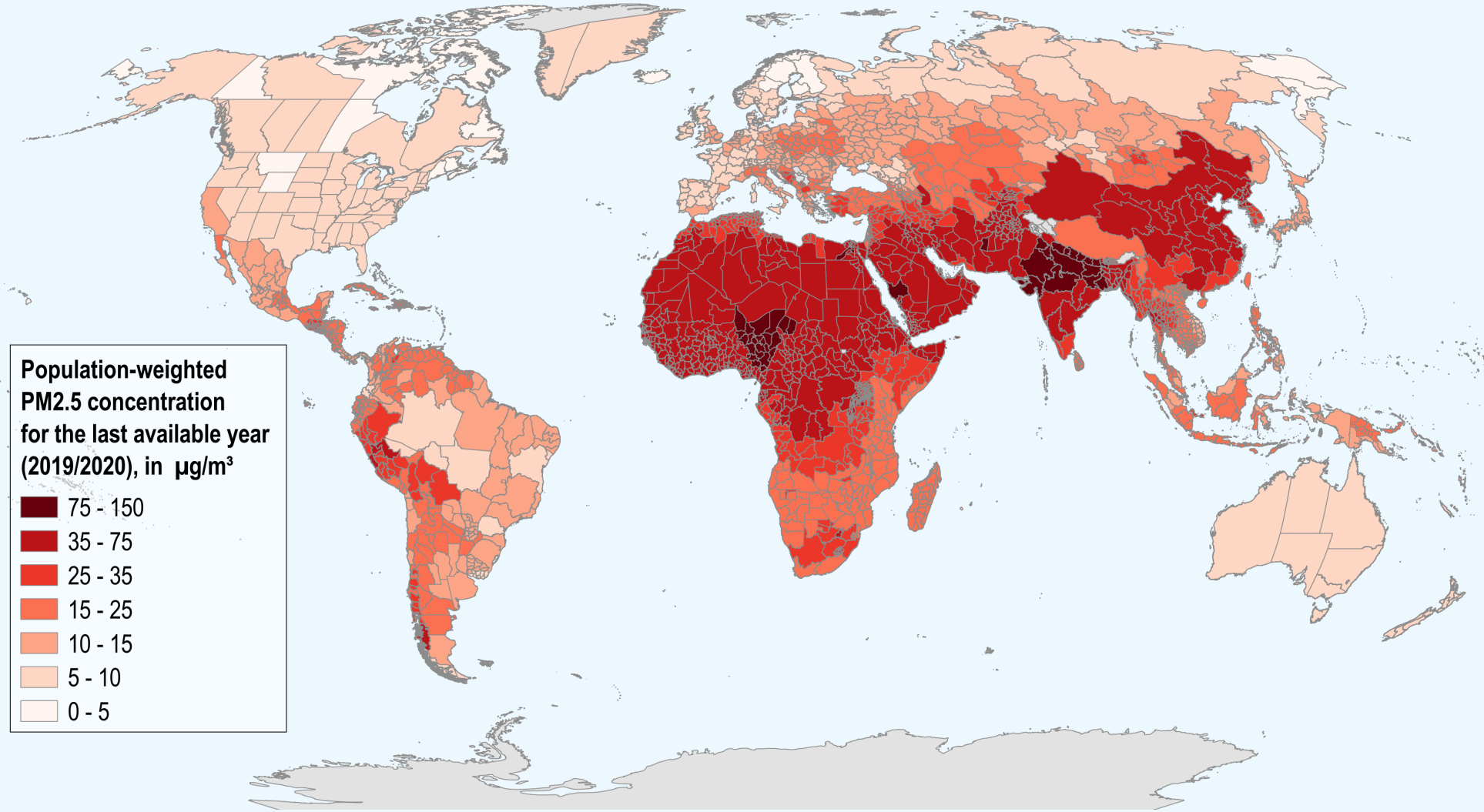
The Global Burden of Disease: $PM_{2.5}$ pollution

World Health Organization

WHO air quality guidelines recommend not exceeding annual mean concentrations of $PM_{2.5}$ 5 µg/m³. WHO AQG, 2021

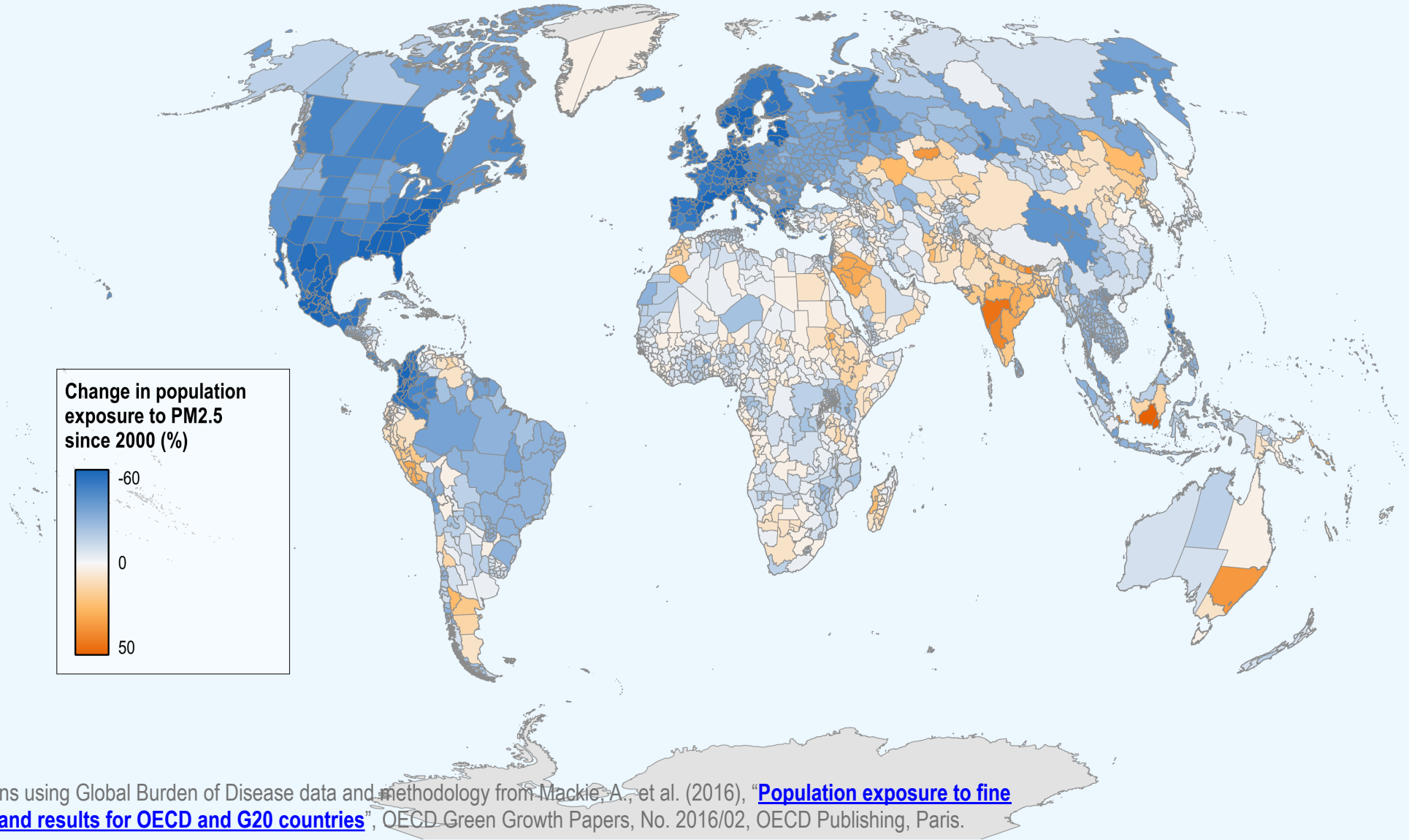
Estimates of ambient air pollution:

- Satellite observations of aerosols
- ground measurements
- chemical transport model simulations
- population estimates
- land-use data.



Source: OECD calculations using Global Burden of Disease data and methodology from Mackie, A., et al. (2016), "Population exposure to fine particles: Methodology and results for OECD and G20 countries", OECD Green Growth Papers, No. 2016/02, OECD Publishing, Paris.

Air pollution change (2000 - 2020)



Source: OECD calculations using Global Burden of Disease data and methodology from Mackie, A., et al. (2016), "**Population exposure to fine particles: Methodology and results for OECD and G20 countries**", OECD Green Growth Papers, No. 2016/02, OECD Publishing, Paris.

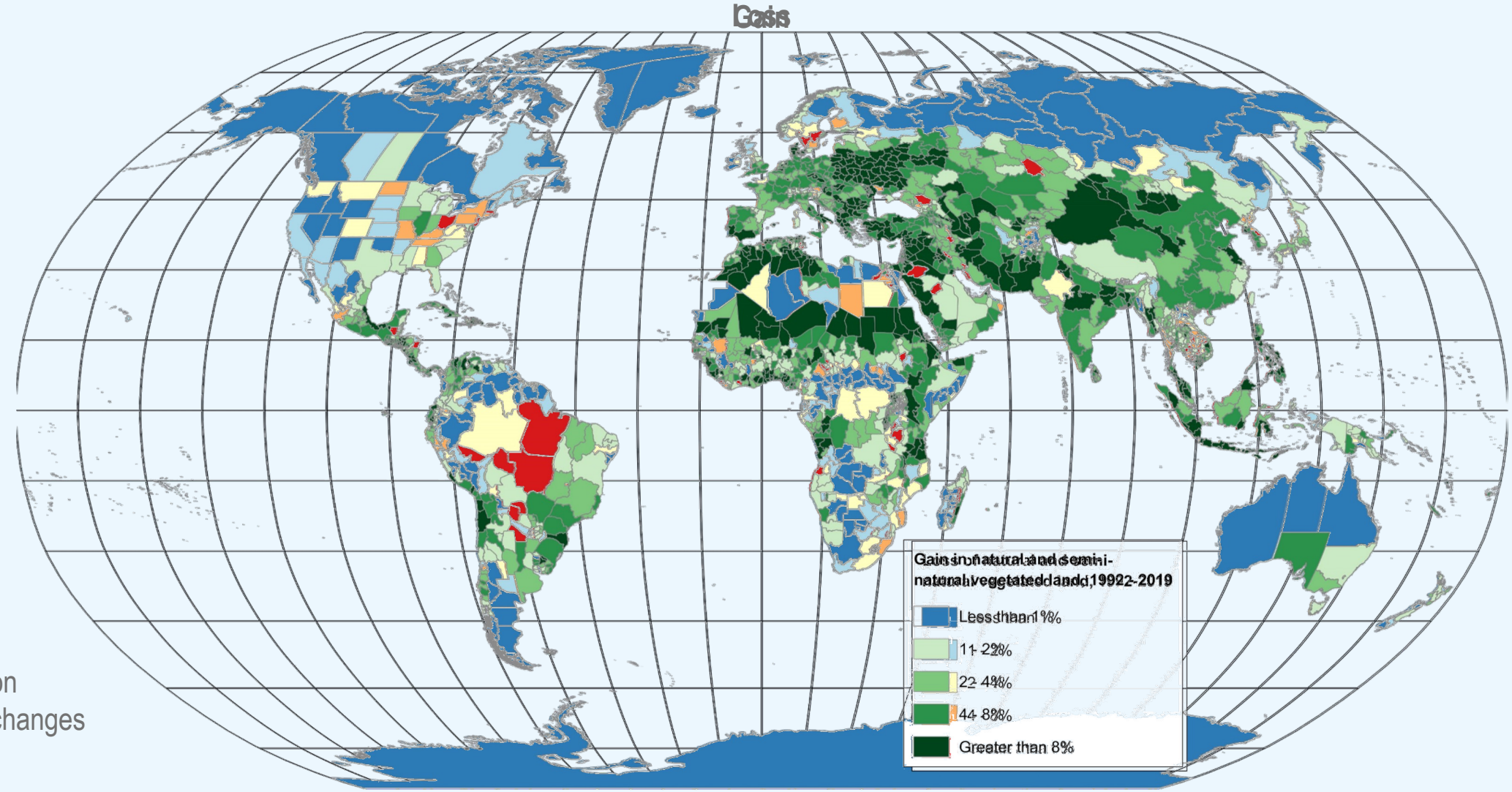
Land cover

Loss and gain of natural and semi-natural vegetated land

15 LIFE ON LAND

By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.

SDG Target 15.3, 2015



- CCI Land Cover
- 300 m spatial resolution
- Long term cover and changes
- Yearly updates

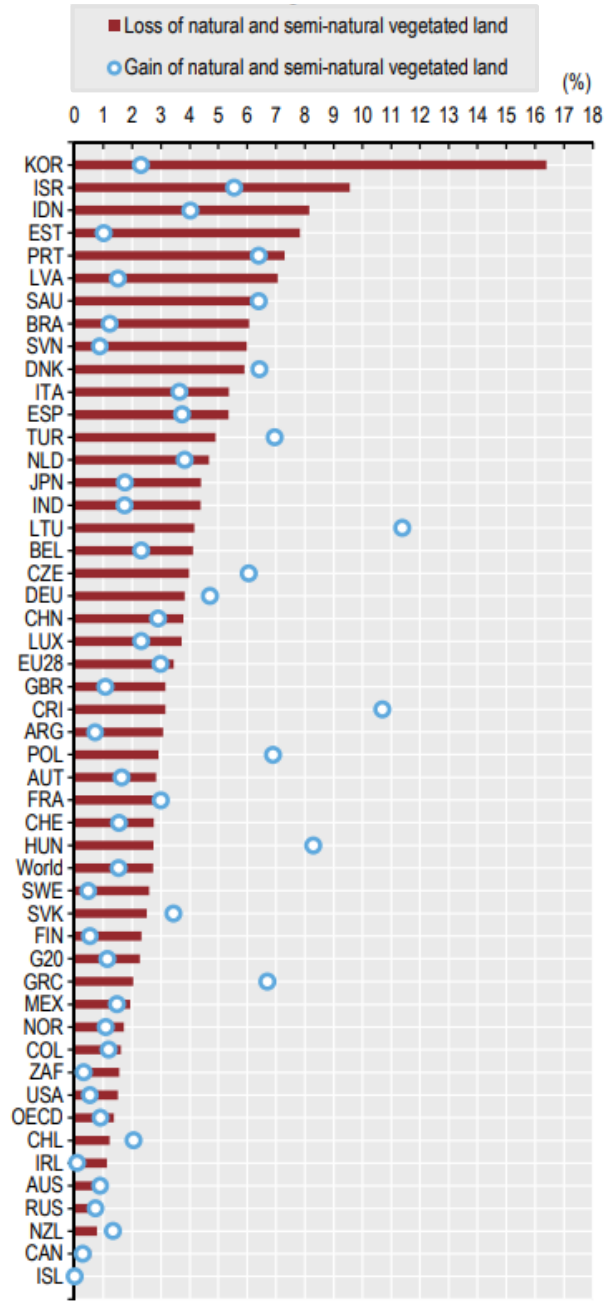
Source: OECD calculations are based on Climate Change Initiative Land Cover (CCI-LC) and methodology from Haščič & Mackie (2018), "**Land Cover Change and Conversions: Methodology and Results for OECD and G20 countries**", OECD Green Growth Papers, No. 2018/04, OECD Publishing, Paris.

Land cover change

Globally, an area the size of the United Kingdom (244 000 km2) has been converted to built-up areas between 1990 and 2014.
Built-up area in thousand km2 in 2014 and new constructions since 1990.

Source: OECD calculations are based on Climate Change Initiative Land Cover (CCI-LC) and Global Human Settlement Layer built-up area data. Methodology from Haščič & Mackie (2018), "**Land Cover Change and Conversions: Methodology and Results for OECD and G20 countries**", OECD Green Growth Papers, No. 2018/04.

Conversions from and to natural and semi-natural vegetated land, 1992 – 2015



Conclusion

- Earth observations and other geospatial data sources increasingly inform OECD indicators and policy analysis.
- Earth observations play a key role in the environmental policy domain, allowing to construct harmonised indicators across the world.
- Major data gaps and potential areas of improvement:
  - No compiled and harmonised ocean product exists comparable to what is available for global land cover products;
  - Little to no global geospatial data sources on freshwater resources comparable to what already exists for air quality;
  - Little global geospatial data sources on biodiversity and ecosystem health containing harmonised and comparable data points.
    - Most datasets are spatially biased towards the global north (i.e. PREDICTS database)
    - Datasets are not taxonomically representative

Thank you for your attention!

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OECD Environment

International Programme for Action on Climate

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