



**STATISTICS**

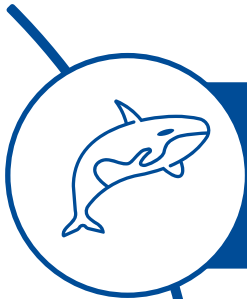
# NATURAL CAPITAL ACCOUNTING

**JANUARY 6, 2023**

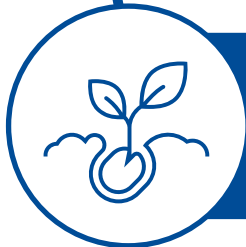
Bert Kroese

Chief Statistician & Data Officer,  
Director of the Statistics Department, IMF

# Agenda



Statistical foundation for natural capital accounting



Progress in implementing natural capital accounting standards



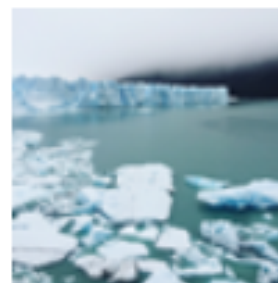
IMF activities & natural capital accounting

# Statistical Foundation for Natural Capital Accounting

# Recent IMF Blogs—Why We Need to Go Beyond GDP?



How to Scale Up Private Climate Finance in Emerging Economies | October 7, 2022



Further Delaying Climate Policies Will Hurt Economic Growth | October 5, 2022



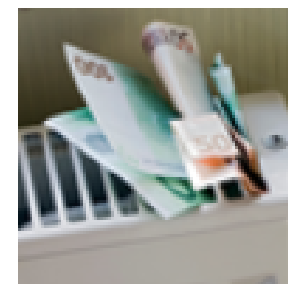
Achieving Net-Zero Emissions Requires Closing a Data Deficit | August 23, 2022



Public Sector Must Play Major Role in Catalyzing Private Climate Finance | August 18, 2022

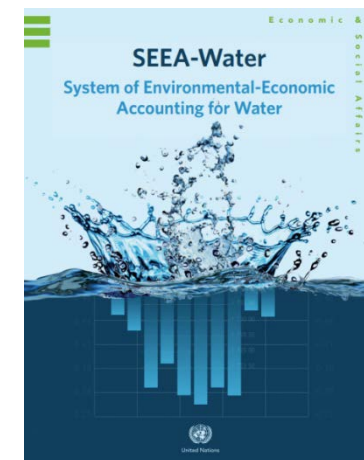
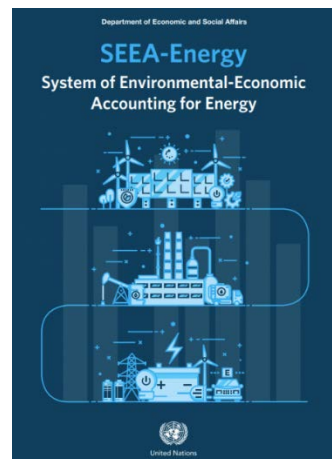


Climate Change Mitigation Will Cause Large Adjustments in Current Account Balances | August 16, 2022



How Europe Can Protect the Poor from Surging Energy Prices | August 3, 2022

# System of Environmental-Economic Accounting



Agriculture, Forestry and Fisheries



Air Emissions Accounts



Energy



Environmental Activity Accounts



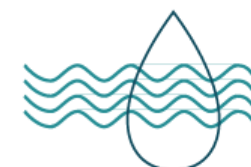
Ecosystem Accounts



Land Accounts



Material Flow Accounts



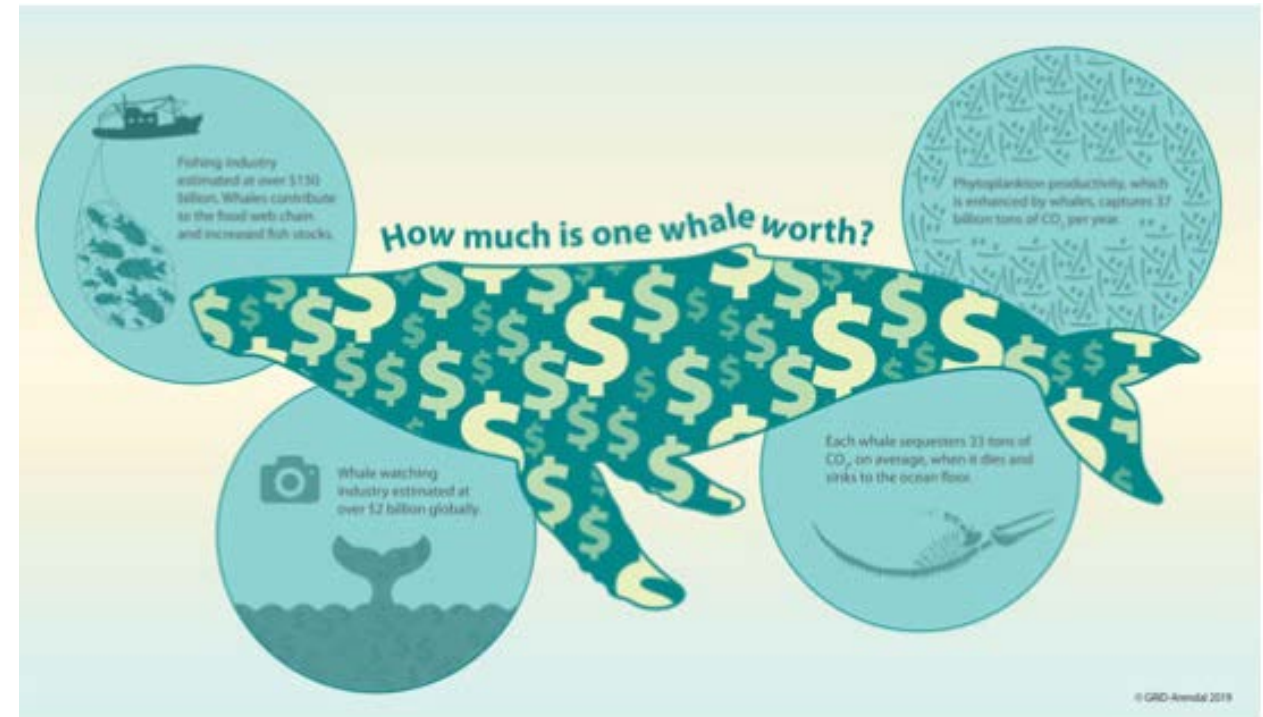
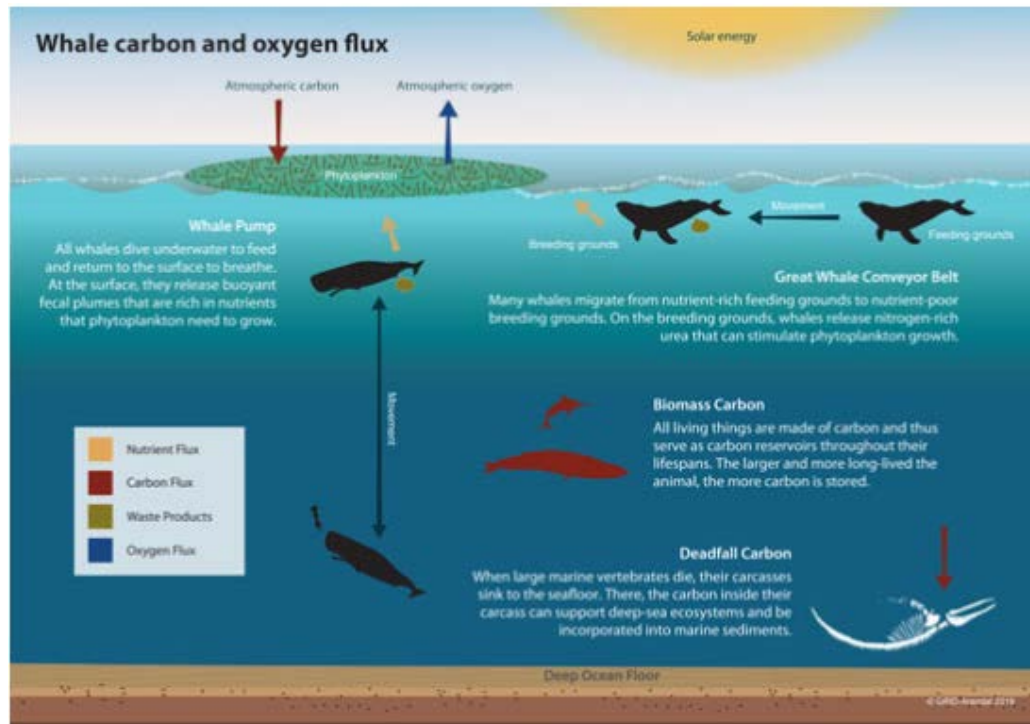
Water

# Conserving Ecosystems to Fight Climate Change



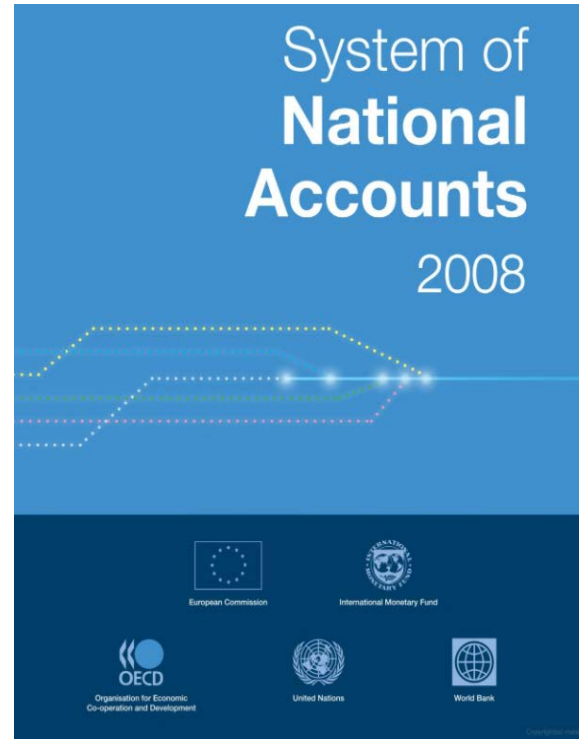
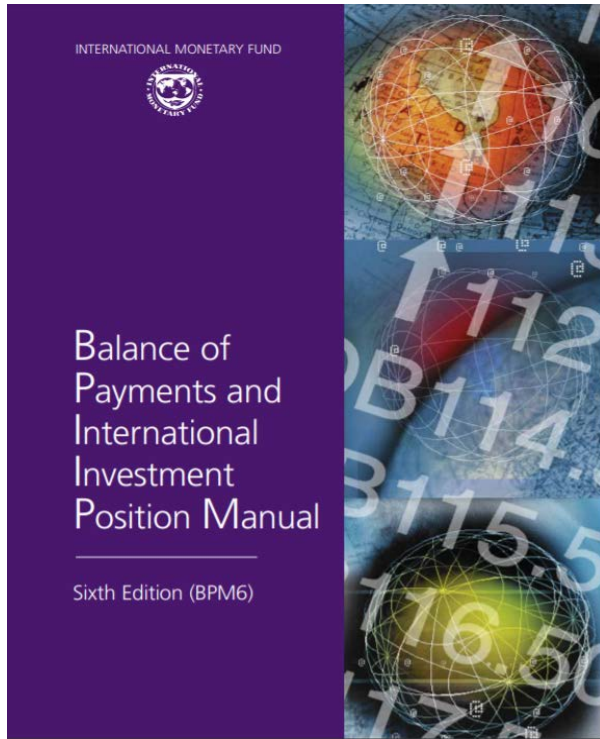
# Restoring Ecosystems to Fight Climate Change

*“Our conservative estimates put the value of the average great whale, based on its various activities, at more than \$2 million, and easily over \$1 trillion for the current stock of great whales.”*



[Nature's Solution to Climate Change - Ralph Chami, Thomas Cosimano, Connel Fullenkamp, and Sena Oztosun](#)

# Going Beyond GDP (SNA 2008) and BOP (BPM 6)



## AN.212 Mineral and energy reserves

AN.2121 Non-renewable mineral and energy resources

AN.21211 Oil resources

AN.21212 Natural Gas resources

AN.21213 Other mineral and energy resources

AN.2122 Renewable mineral and energy resources

AN.21221 Wind energy resources

AN.21222 Solar energy resources

AN.21223 Water energy resources

AN.21224 Geothermal energy resources

AN.21225 Other renewable energy resources

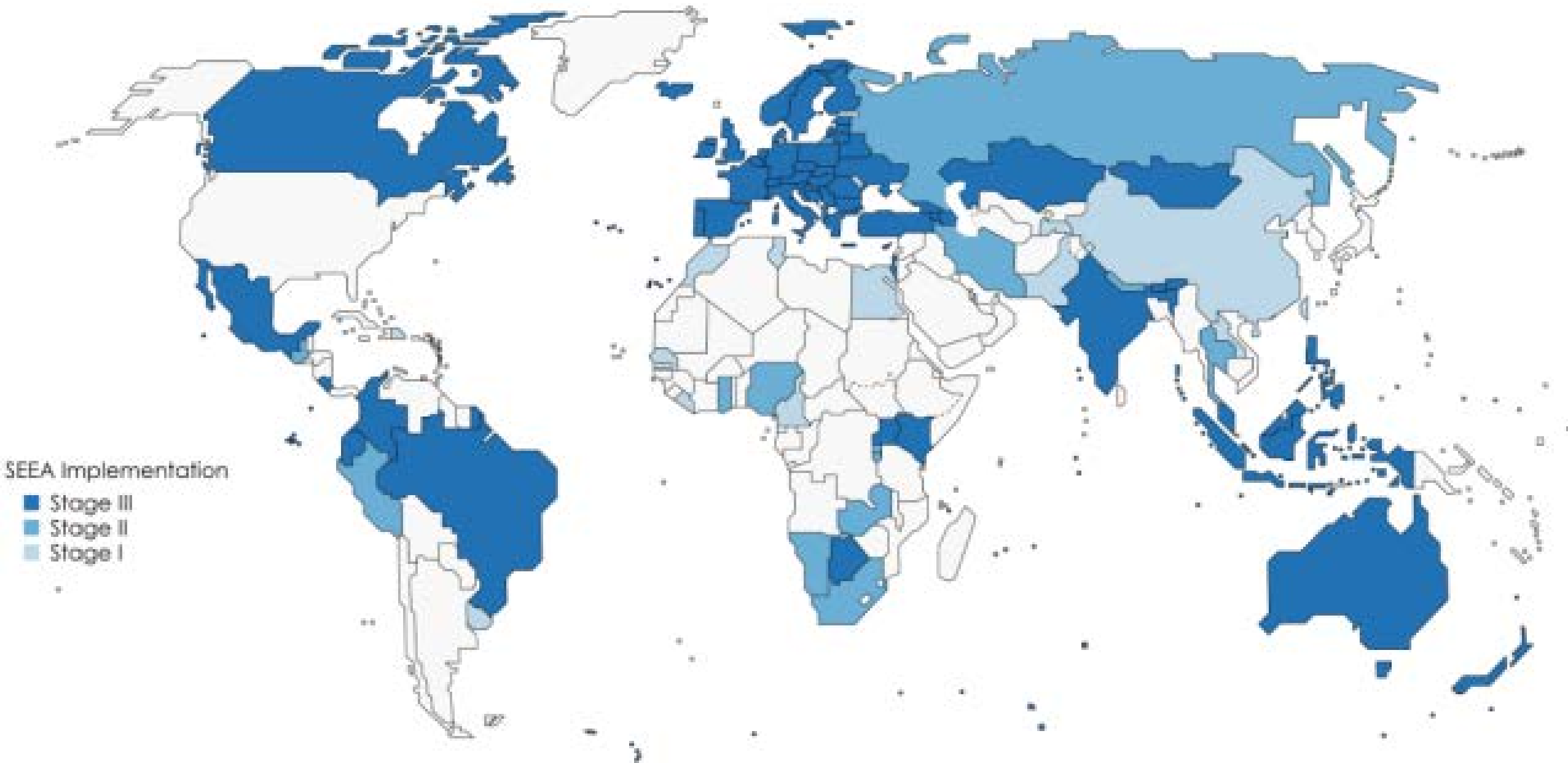
*“Valued using social rent, Dutch wind energy resources were estimated to be worth more than 5 billion euros in 2010 – a substantial sum, but still only 3% of the estimated value of the Netherlands’ natural gas resources in that year.”*

*(Statistics Netherlands, 2011 – Environmental Accounts of the Netherlands 2010. The Hague: Statistics Netherlands)*



# Progress in Implementing Natural Capital Accounting Standards

# Status of Implementation of SEEA



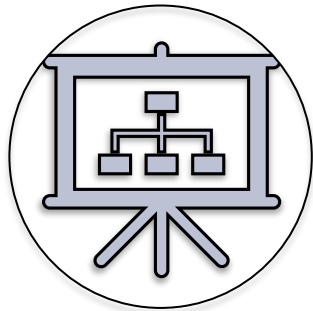
# Towards Natural Capital Accounts - Challenges



Conceptual



Methodological



Operational

# Towards Natural Capital Accounts - Coordination

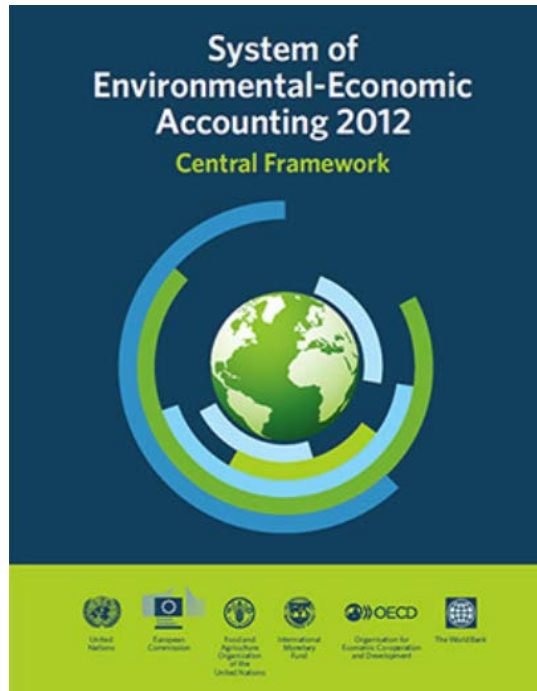


Image: ©Hollandse Hoogte

Ministry of Agriculture, Nature and Food Quality.



National Institute for Public Health and the Environment  
*Ministry of Health, Welfare and Sport*



**WAGENINGEN**  
UNIVERSITY & RESEARCH



PBL Netherlands Environmental Assessment Agency



Statistics Netherlands

Government agency



# Towards Natural Capital Accounts - Cooperation

## A possible way forward to support members....

ARIES, while young, stands out as the first real-world tool for social-environmental systems modeling, using knowledge and models built independently by many actors and endorsed by the scientific community to produce holistic outputs, making evidence-based environmental decision making easier and more effective.

...producing a complete, exportable assessment of flows and values.

**Step 1:**  
Set context  
(search or draw  
on map)

**Step 2:**  
Drag/drop the concept to observe

...system

- creates agents and processes
- builds best-case model out of component and data on the ARIES network
- computes it...

User is logged into ARIES through secure certificate

# IMF Activities & Natural Capital Accounting

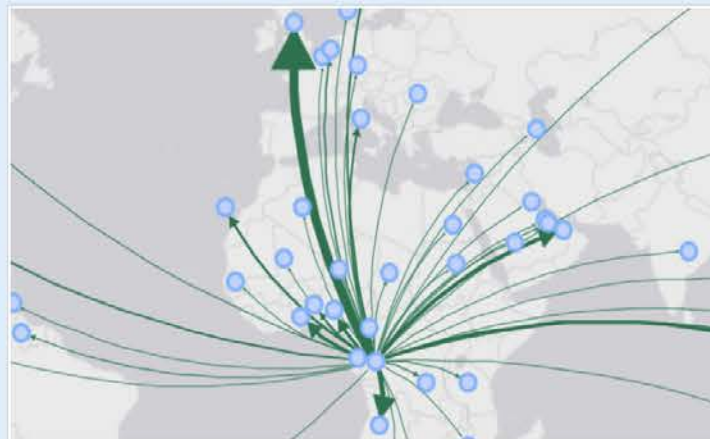
# Mainstreaming Natural Capital Statistics at the IMF

## Climate Change Indicators Dashboard

A statistical tool linking climate considerations and global economic indicators

 <p><b>Economic Activity Indicators</b> Greenhouse Gas Emissions National Invertoes and Targets CO<sub>2</sub> Emissions, Intensities and Multipliers Energy Transition</p>	 <p><b>Cross Border Indicators</b> Trade-related Direct Investment-related</p>	 <p><b>Financial and Risk Indicators</b> Financial Physical and Transition Risks</p>	 <p><b>Government Policy Indicators</b> Environmental Taxes Environmental Protection Expenditures Fossil Fuel Subsidies</p>	 <p><b>Climate Change Data</b> Surface Temperature Change Atmospheric CO<sub>2</sub> Concentrations Change in Mean Sea Levels Land Cover Accounts Climate-related Disasters</p>
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## Latest Updates



**NEW CHART**  
Explore the new chart of Bilateral Trade Flows of Environmental Goods and Low Carbon Technologies



**NEW DATASET: ENERGY TRANSITION**  
28% of the World's Electricity Supply came from Renewables in 2020, compared to 18% in 2000



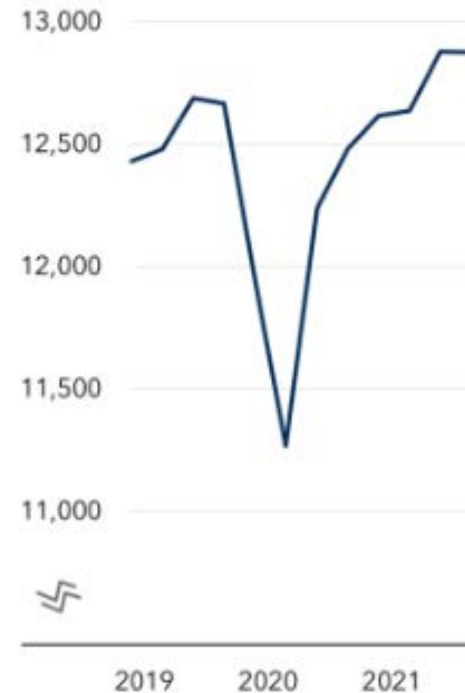
**DATA UPDATE: INFORM RISK INDICATORS**  
Physical Risks associated with Climate Change are the Highest in Africa

**The quarterly GHG emissions permits the IMF to better monitor progress towards targets in “real-time” and link economic activity with environmental impacts.**

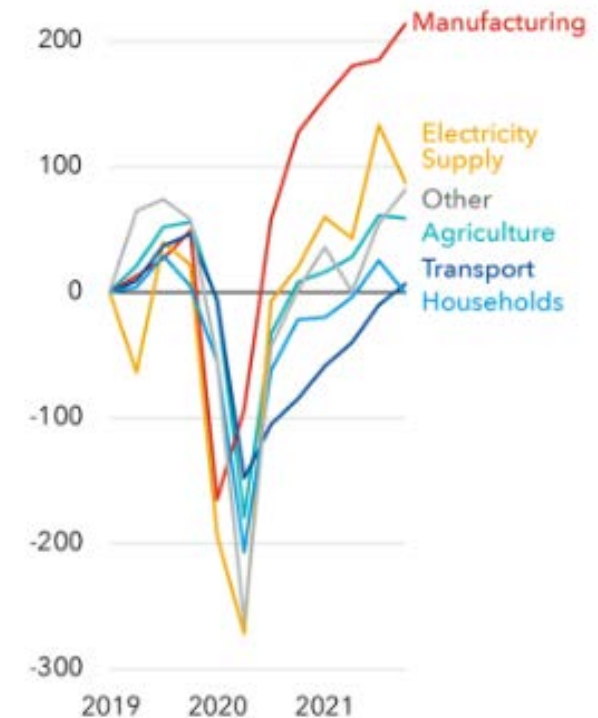
## All but a blip

Global greenhouse gas emissions are back above pre-pandemic levels, with emissions rising across all sectors again in 2021.

Global greenhouse gas emissions  
(million metric tons of CO<sub>2</sub> equivalent)



Change in emissions by sector since 2019  
(million metric tons of CO<sub>2</sub> equivalent)



Source: IMF Climate Change Indicators Dashboard.

Note: Emissions are seasonally adjusted. The right panel shows change in greenhouse gas emissions from Q1-2019 levels.



# G20 Data Gaps Initiative

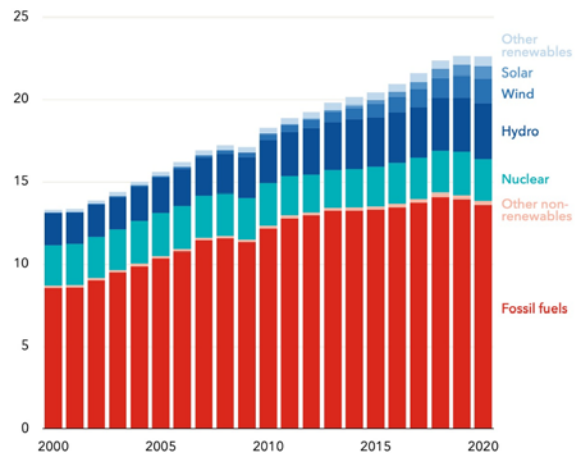


Credit: (Foto: IzzetNoyan/Adobe Stock)

ENGLISH ▾

## Slow transition

About 30% of G20 electricity is generated from renewables.  
(power generation by source, millions of gigawatt hours)



Source: IMF Climate Change Indicators Dashboard.

IMF

Climate change

## Bridging Data Gaps Can Help Tackle the Climate Crisis

A new data gaps initiative will play an important role in addressing climate-related data deficits

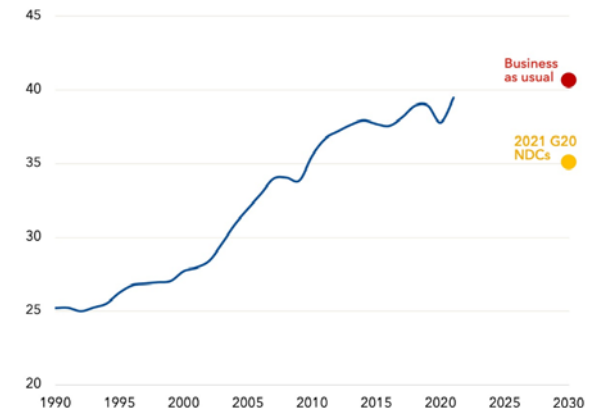
Bo Li, Bert Kroese

November 28, 2022

# IMF BLOG

## Falling short

Current G20 climate commitments will only reduce greenhouse gas emissions by 10% by 2030.  
(GHG emissions, GtCO<sub>2</sub>e per year)



Source: IMF staff estimates.  
Note: Excludes emissions from land use and changes to land use.  
NDCs = Nationally determined contributions.

IMF

# G20 Data Gaps Initiative

## Data Gap

Rec. 1 Greenhouse Gas Emission Accounts and National Carbon Footprints

Rec. 2 Energy Accounts

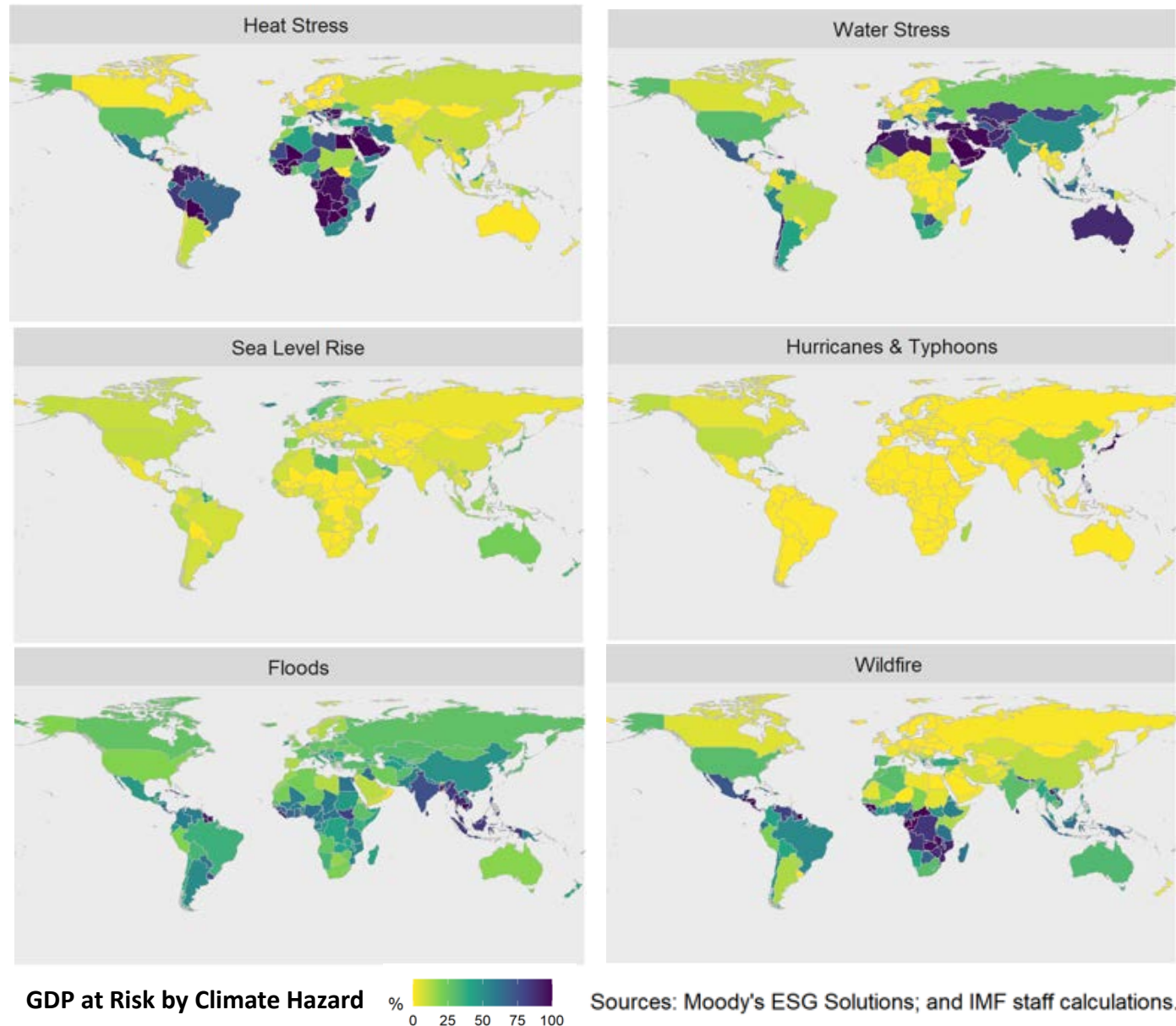
Rec. 3 Carbon Footprint of Foreign Direct Investment

Rec. 4 Sustainable Debt and Equity Financing

Rec. 5 Physical and Transition Risk Indicators

Rec. 6 Government Climate-Impacting Subsidies

Rec. 7 Mitigation and Adaptation Current and Capital Expenditures



Thank You