

FINANCE FOR A GREEN TRANSITION FEASIBILITY STUDY

ESA Business Applications and Space Solutions

15/02/2023

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Guest Speakers



Christophe Christiaen

UK Centre for Greening Finance and Investment

FINANCE FOR A GREEN TRANSITION

COMMERCIAL OPPORTUNITIES
FOR SPACE-BASED SOLUTIONS

Christophe Christiaen
15th February 2023

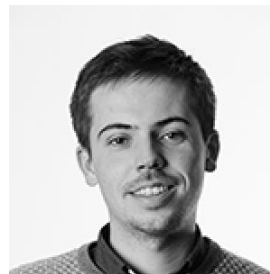
OXFORD SUSTAINABLE FINANCE GROUP

Research themes

- Climate and Environmental Analytics
- Machine Learning & Data Science
- Spatial Finance
- Stranded Assets and Transition Finance
- Future of Engagement

Specific initiatives

- Centre for Greening Finance and Investment
 - Spatial Finance Initiative
- Commonwealth Climate and Law Initiative
- Public and Third Sector Academy for Sustainable Finance
- Sectoral Data Quality and Integrity project



UK CENTRE FOR GREENING FINANCE & INVESTMENT

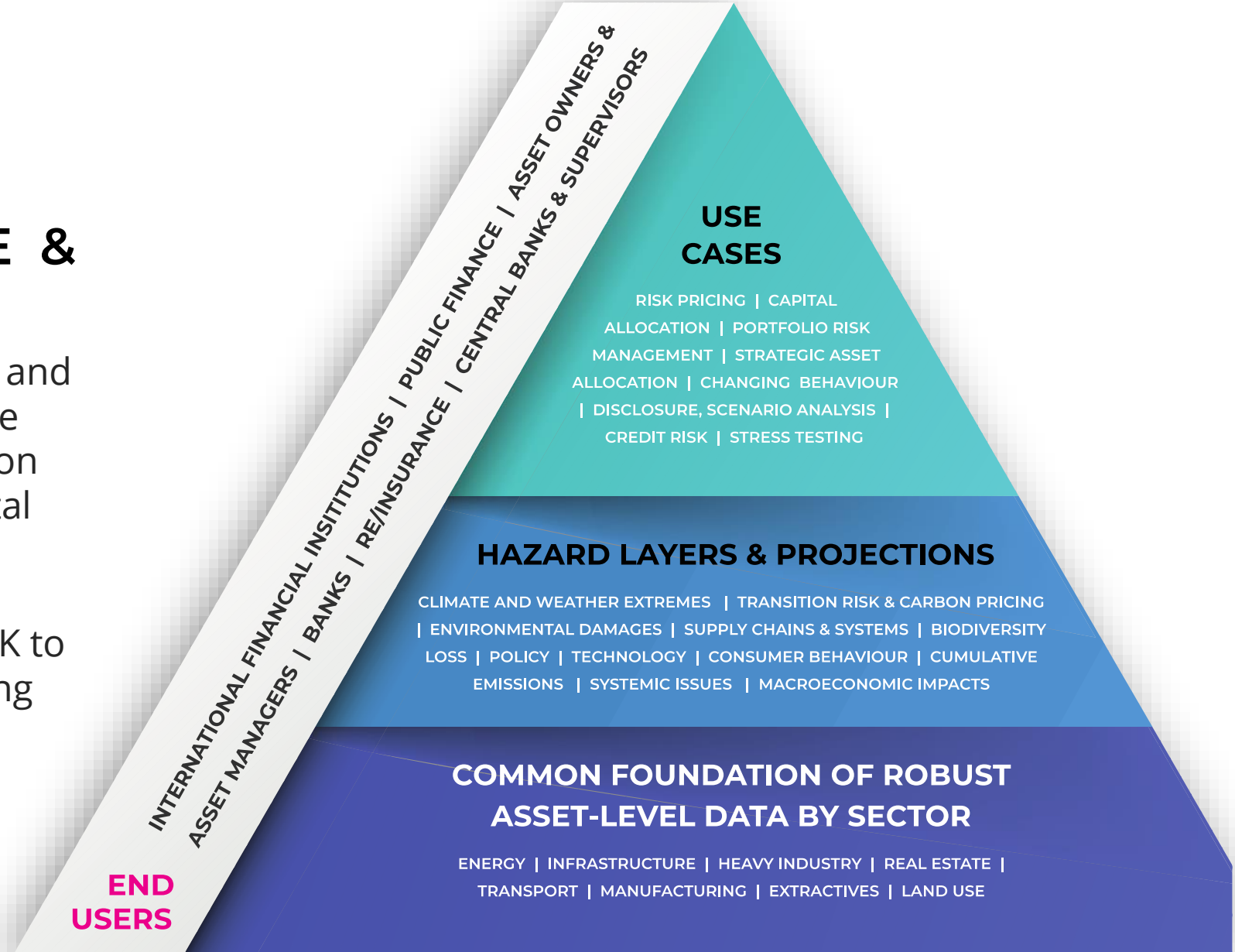
The UK Centre for Greening Finance and Investment (CGFI) is a national centre established to accelerate the adoption and use of climate and environmental data and analytics by financial institutions internationally.

It will unlock opportunities for the UK to lead in greening finance and financing green.



CGFI

UK Centre for Greening Finance & Investment



MARKET DEVELOPMENTS

Green/Sustainable Finance is about:

- Aligning the financial system with global sustainability = Greening Finance
- Financing the transition to global sustainability = Financing Green

Interest in green finance is growing rapidly, driven by:

- **Financial considerations**
- **Regulation and policy**
- **Customer and consumer preferences**

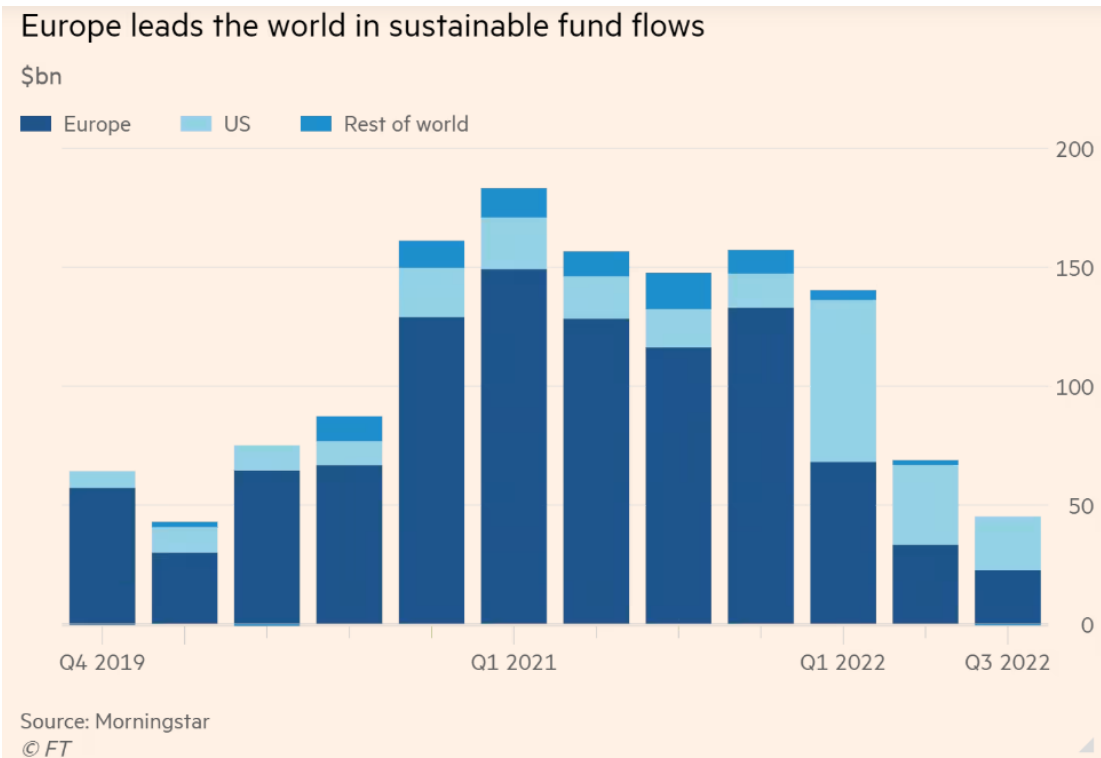
Trends driving demand for better data:

- **Greenwashing issues**
- **Net zero commitments and targets**



Credits: European Space Agency

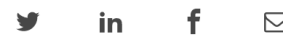
Sustainability – Why does finance care?



"Morningstar estimates sustainable funds attracted \$22.5bn of net new money globally in the third quarter of 2022. That was less than the \$33.9bn of inflows in the second quarter, but against a backdrop of significant market challenges, sustainable funds held up better than the broader market which experienced net outflows of \$198bn over Q3."

Source: Financial Times, Morningstar

ESG assets may hit \$53 trillion by 2025, a third of global AUM



Bloomberg Intelligence February 23, 2021



Source: Global Impact Investing Network

Sustainability – Why does finance care?



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SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors

FOR IMMEDIATE RELEASE
2022-46

FCA proposes new rules to tackle greenwashing

Press Releases | First published: 25/10/2022 | Last updated: 25/10/2022

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In a bid to clamp down on greenwashing, the Financial Conduct Authority (FCA) is proposing a package of new measures including investment product sustainability labels and restrictions on how terms like 'ESG', 'green' or 'sustainable' can be used.

Press release

UK to enshrine mandatory climate disclosures for largest companies in law

Firms will be required to disclose climate-related financial information, ensuring they consider the risks and opportunities they face as a result of climate change.

From: [Department for Business, Energy & Industrial Strategy](#), [HM Treasury](#), [John Glen MP](#), and [The Rt Hon Greg Hands MP](#)
Published 29 October 2021



EUROPEAN CENTRAL BANK | BANKING SUPERVISION

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PRESS RELEASE

ECB Banking Supervision launches 2022 climate risk stress test

27 January 2022

> Stress test to be learning exercise to assess banks' climate-risk preparedness

Sustainability – Why does finance care?

Key research findings

The research team conducted the study using a sample of 2,096 US participants, with age, gender and income composition matching the US census. Key results are as follows.

How much do savers value sustainability?

Results found that the median saver would prefer a sustainable fund even if they have to sacrifice up to 2.5 per cent returns. This preference was stronger than expected at the outset of the study and provides robust evidence that information on fund sustainability affects decision-making when presented in a typical fund fact sheet format. It also demonstrates that the general public, without deep expertise of investing, can understand and act on sustainability information when it is presented clearly.

Who values sustainability the most?

Younger people (<35 years old) and inexperienced savers had a particularly strong preference for sustainable investment (after controlling for all other factors). Income level, education and gender had no statistically significant effect on preference for sustainability, and no difference in preference was detected between environmental and social sustainability themes.

Source: University of Cambridge Institute for Sustainability Leadership (2019). Walking the talk: Understanding consumer demand for sustainable investing.



Climate change – Why does finance care?

Value at risk as a result of climate change to manageable assets by 2100²

up to \$43t



Climate-related risk is non-diversifiable and will impact on many companies:

- **Physical:** Financial losses associated with physical climate risks, including damage to capital, lost revenues, supply chain disruption, and related macroeconomic impacts etc.
- **Transition:** Risks associated with an abrupt adjustment to a low-carbon economy, e.g. rapid losses in asset values, rapid pricing adjustments etc.

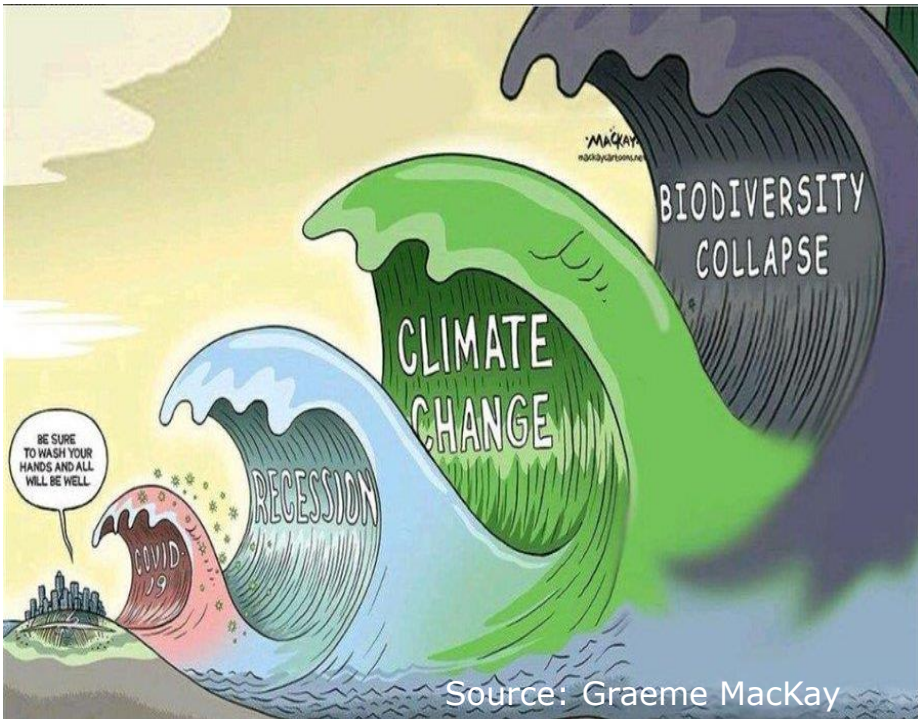


Credits: European Space Agency

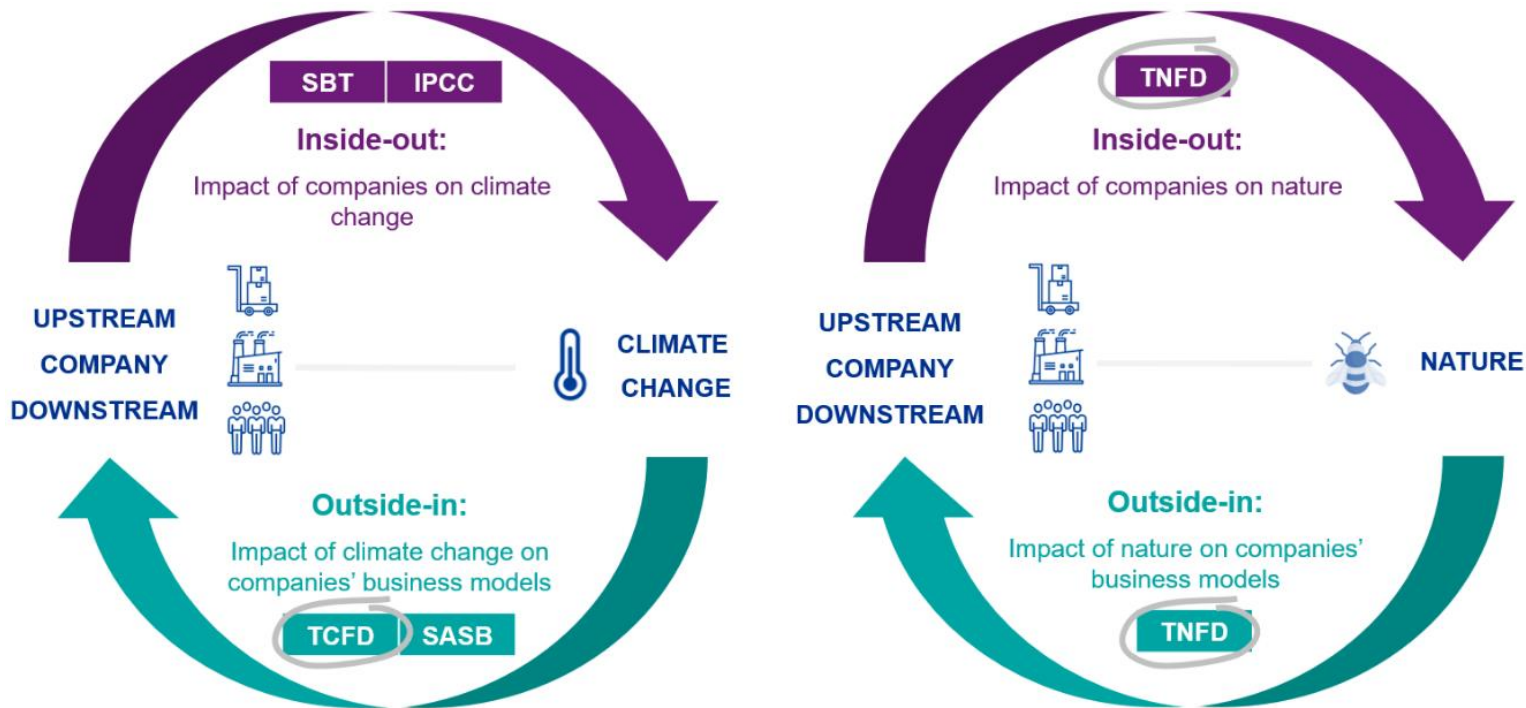
Source: The Economist Intelligence Unit, "The Cost of Inaction: Accounting for the Value at Risk from Climate Change," 2015.

Nature and biodiversity – Why does finance care?

- Nature and biodiversity loss poses risks and opportunities for business, now and in the future.
- More than half of the world's economic output (US\$44tn value) is dependent on nature.



Nature and biodiversity – Why does finance care?



KPMG: "It's time to act on nature-related risk"

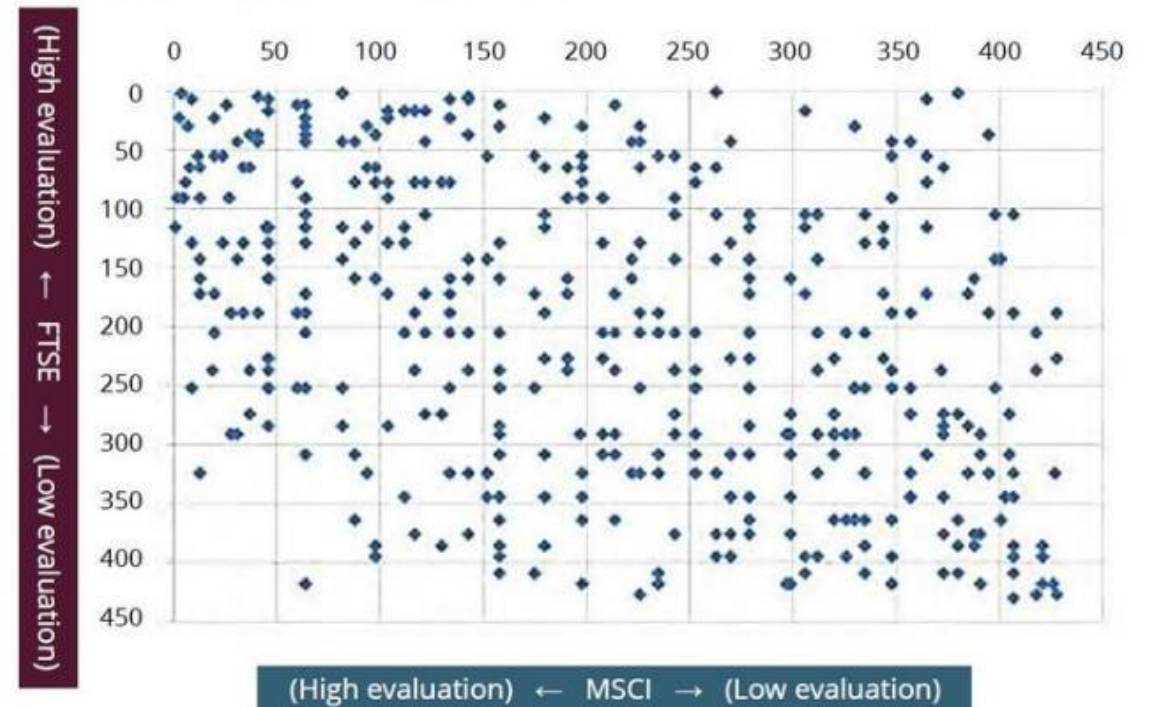
DATA CHALLENGES

Main source of data on a company's sustainability performance is its voluntarily reported information or 'disclosures'.

This comes with various challenges:

- Information is **self-disclosed** and typically compiled top-down
- ESG reporting is not mandatory, which means **not all companies report**
- ESG reporting not standardised, which means **data is not comparable**
- Annual reporting means ESG **data is outdated** once released

Figure 1 – Comparison of ESG scores from FTSE

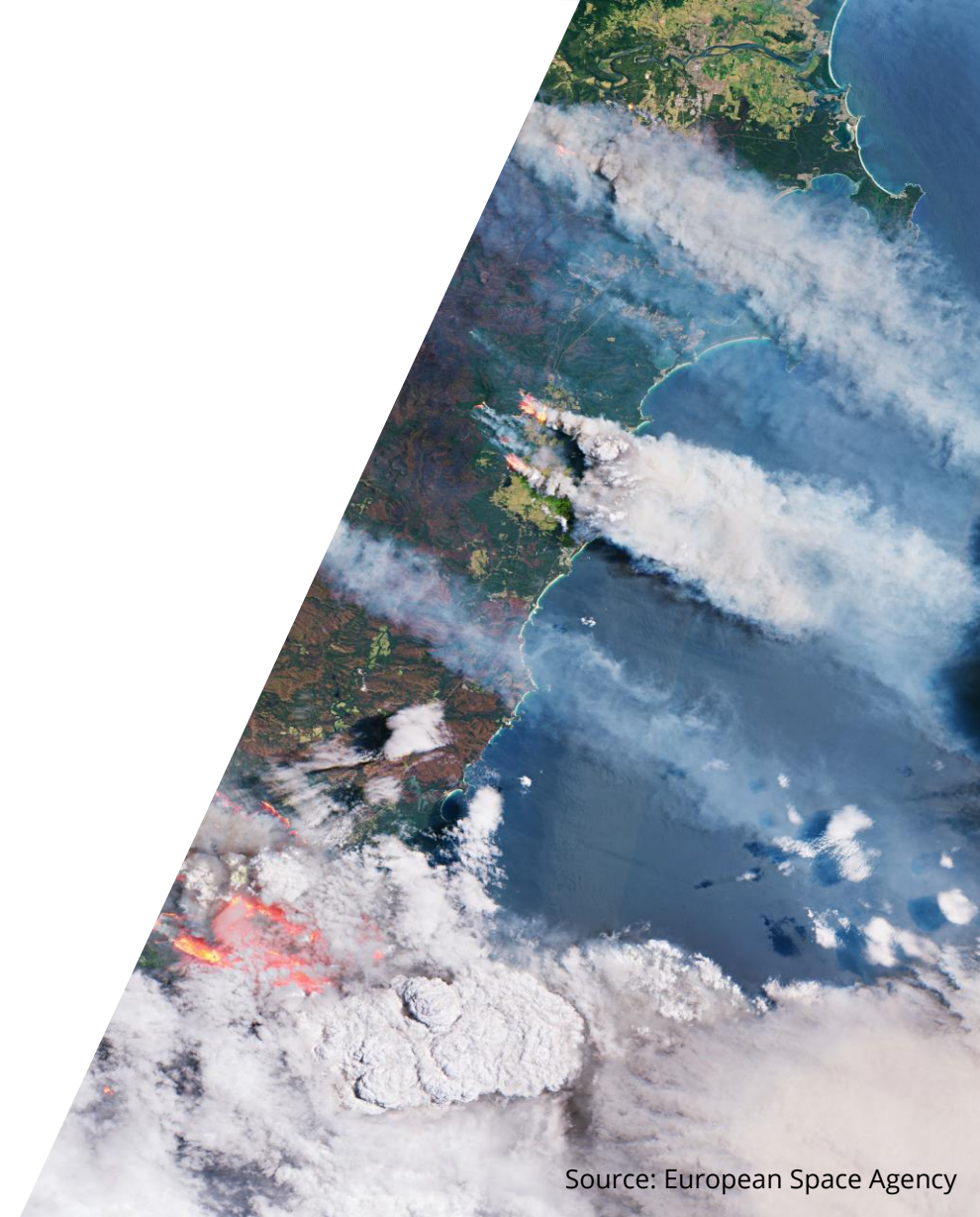


Source: CLSA, GPIF

RELEVANCE OF GEOSPATIAL SOLUTIONS

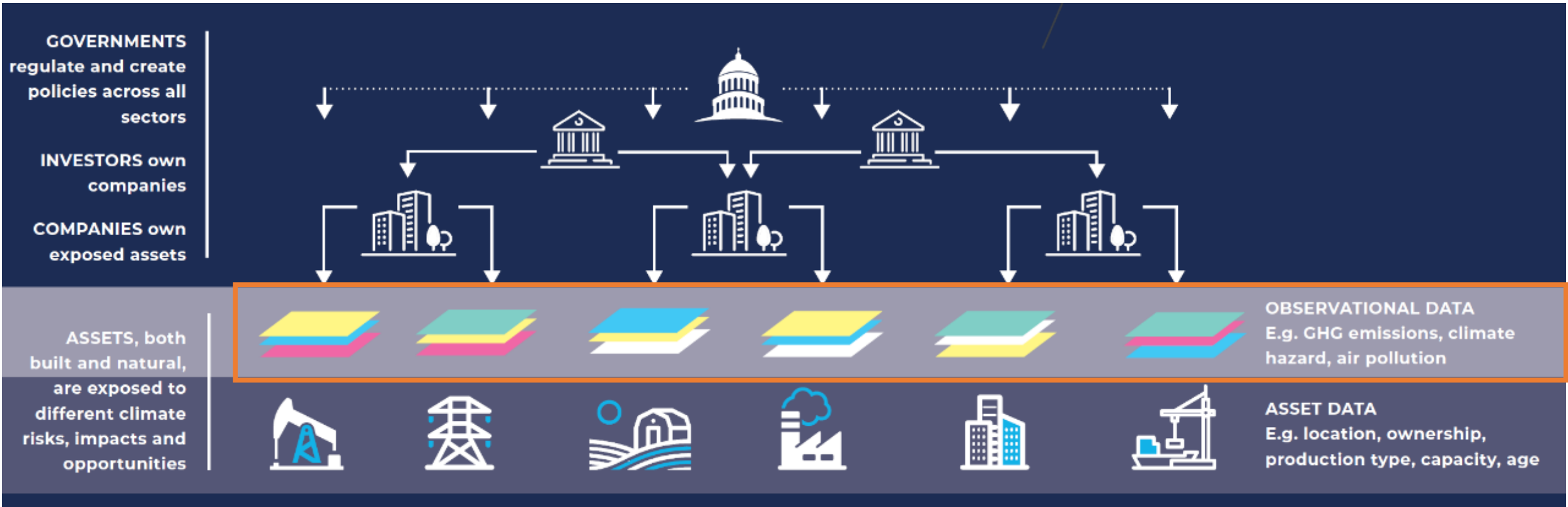
Spatial finance allows for a **bottom-up** understanding of **risks, opportunities and impacts**, driven by

- **Neutral** and objective source of information
- **Consistent** and **frequent** data collection
- **Global** datasets allow for **comparison** over time and place
- Connecting financial system with real economy

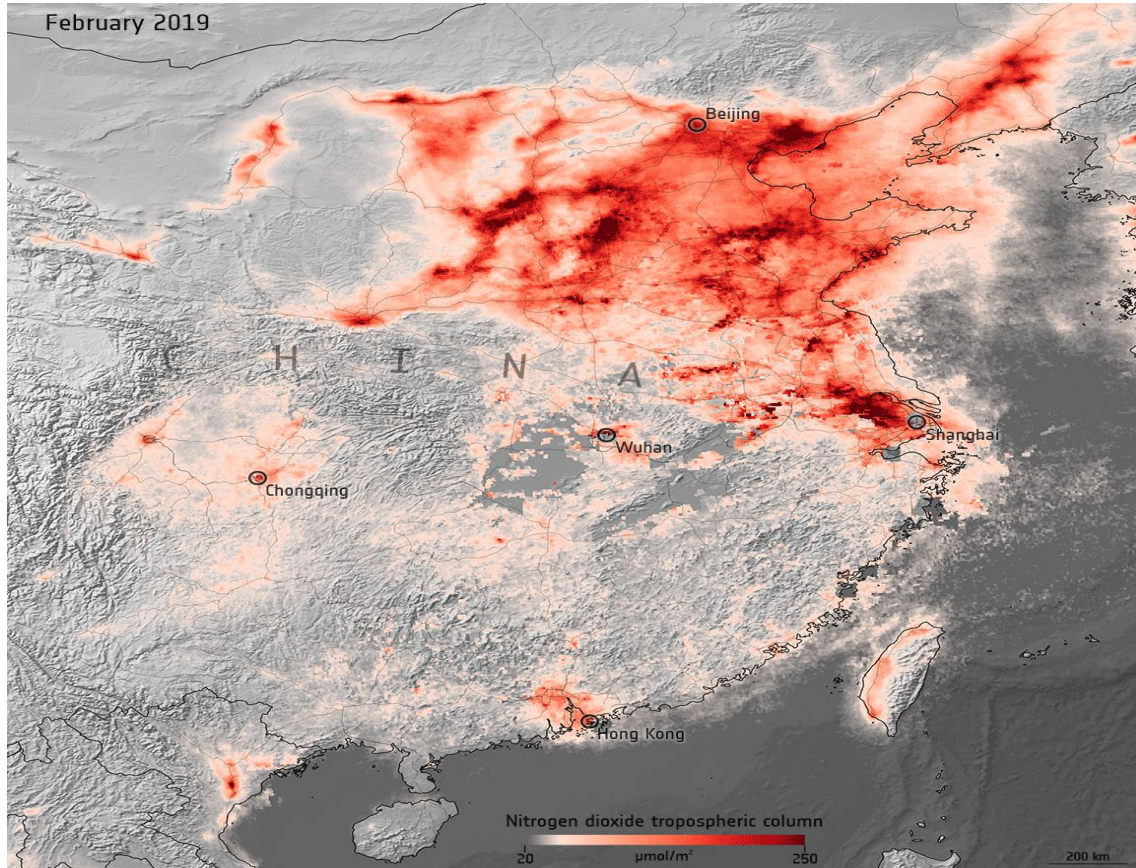


Source: European Space Agency

SPATIAL FINANCE AND ASSET-LEVEL DATA



OBSERVATIONAL DATA

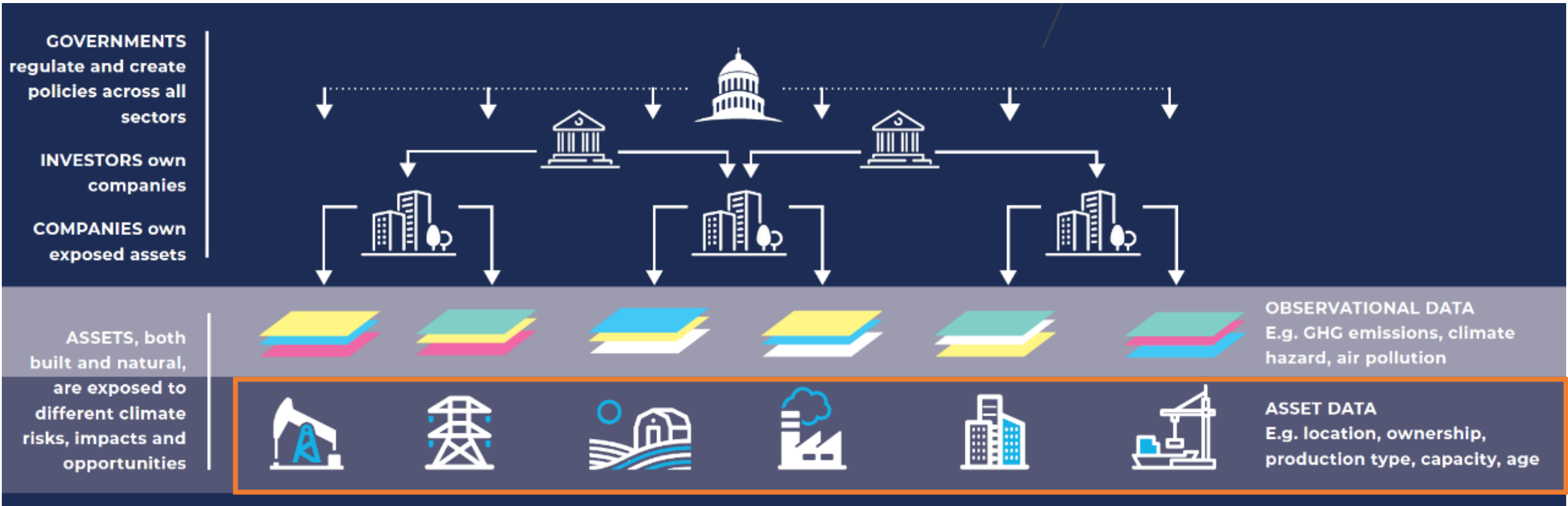


Nitrogen dioxide emissions over China
Credits: ESA

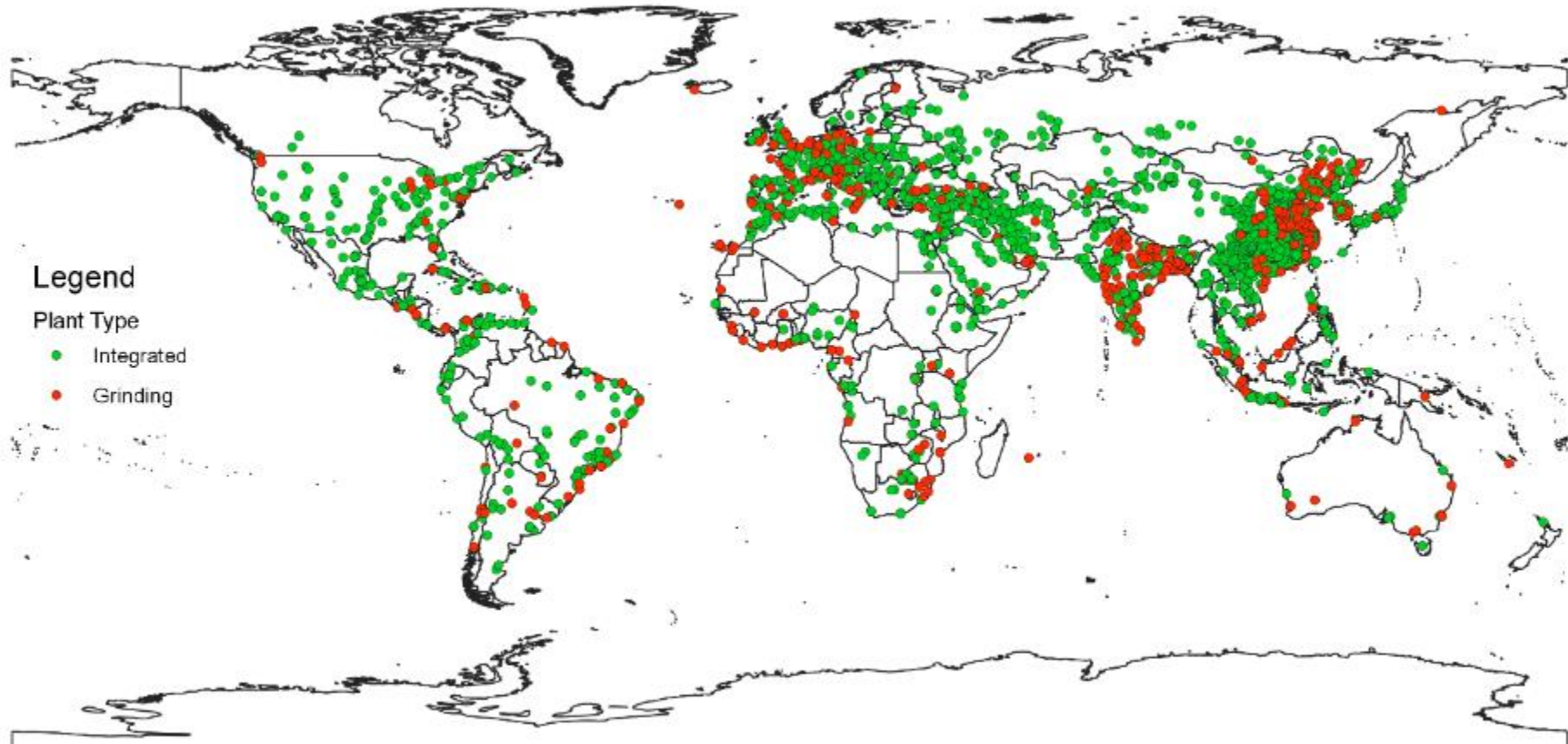


Deforestation in Colombian Amazon
Credits: Planet Labs Inc

SPATIAL FINANCE AND ASSET-LEVEL DATA



ASSET DATA



Cement production plants
Credits: Spatial Finance Initiative

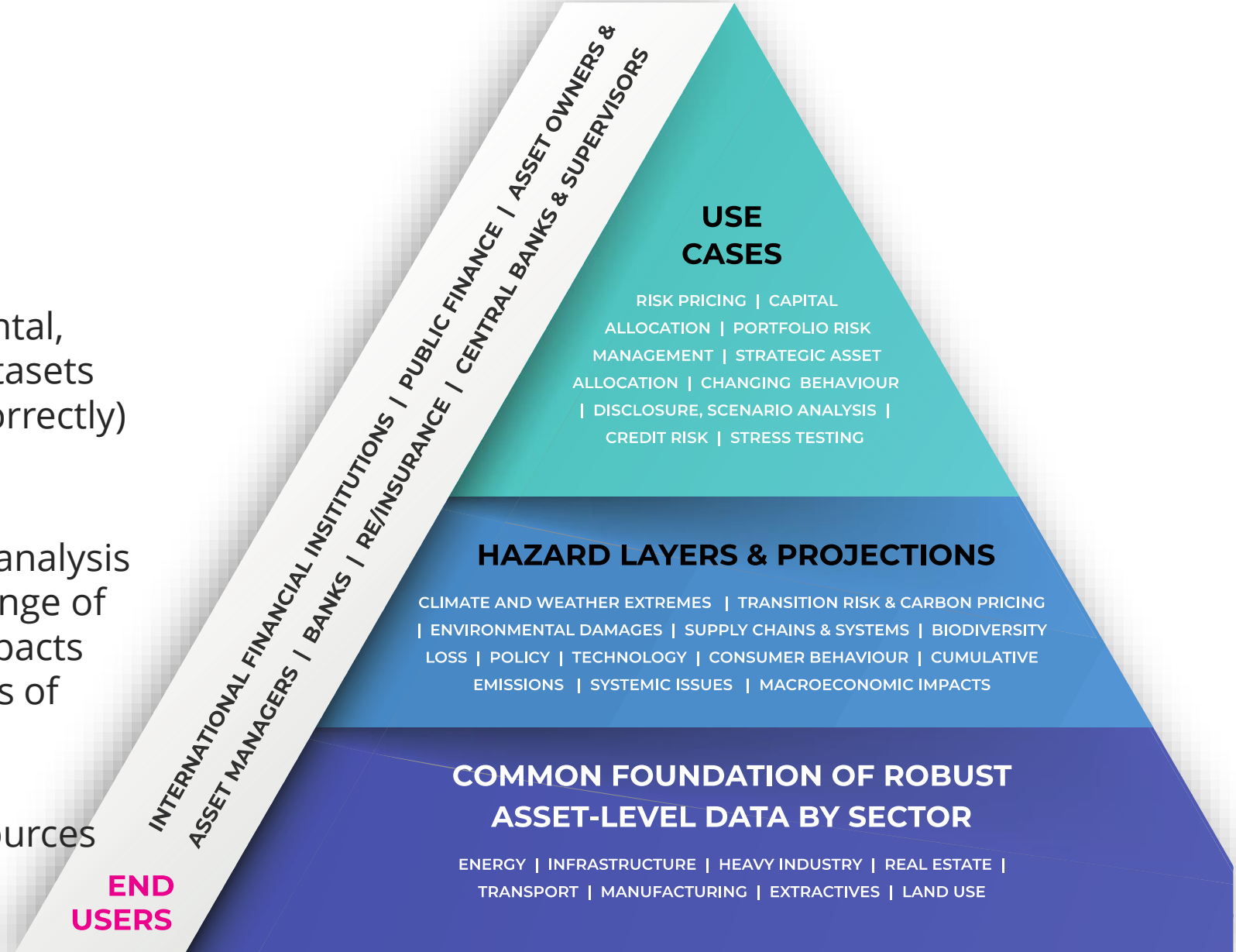
SUMMARY

There are many climate, environmental, geospatial and other 'alternative' datasets that are currently not (sufficiently/correctly) used by financial institutions.

These would enable the bottom-up analysis needed to properly assess a wide range of climate and environmental risks, impacts and opportunities, impacting trillions of assets.

Asset data is a key building block. Sources include:

- Company disclosures
- Regulatory databases
- Global Energy Monitor / Spatial Finance Initiative / World Resources Institute



THANK YOU

<https://www.cgfi.ac.uk/spatial-finance-initiative/>

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David Carlin
United Nations Environment Programme Finance Initiative





The TCFD and Climate Data Needs

David Carlin
15 Feb 2023

Today's agenda

1 Overview of the TCFD

2 Climate data needs and challenges

What is the TCFD?

The taskforce was created by the G20's Financial Stability Board



- The TCFD was created in 2015 to enable financial markets to better assess and price climate risk.

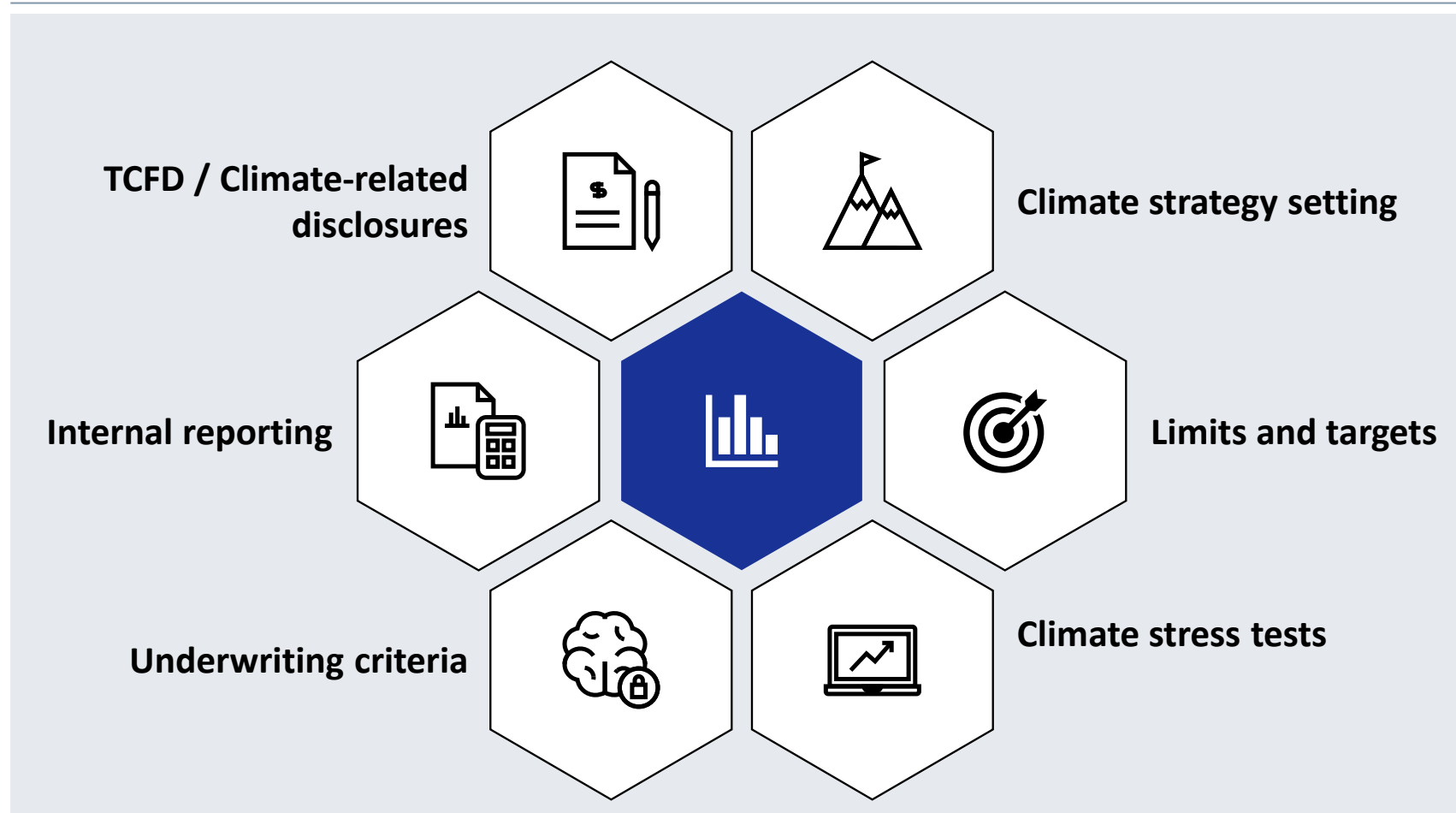
What disclosures does the TCFD recommend?

11 recommended disclosures across the 4 pillars



Applications of climate data in the financial sector

Climate data is becoming an indispensable part of a risk manager's arsenal



A brief look at different climate data needs

Not exhaustive

Type	Category	Examples	Potential sources
Counterparty data	Portfolio data	<ul style="list-style-type: none"> • Current credit metrics • Facility level counterparty information • Facility level collateral information 	<ul style="list-style-type: none"> • Internal
	Company financial & production data	<ul style="list-style-type: none"> • Income statement • Balance sheet • Output and revenue by product • Sector (e.g., NACE) 	<ul style="list-style-type: none"> • Internal • Capital IQ • Bloomberg • S&P Market Intelligence • Refinitiv
	Sector specific data	<ul style="list-style-type: none"> • Asset level data (e.g., thermal coal production) • Market level data (e.g., crude oil price) 	<ul style="list-style-type: none"> • Internal • Oil and gas (Wood Mackenzie, Platts, Rystad SNL Energy) • Power Generation (Enerdata, Market intelligence)
	Property attributes	<ul style="list-style-type: none"> • Geolocation • Physical attributes • EPC information 	<ul style="list-style-type: none"> • Internal • Specialized provider (XDI)
Climate scenarios	Climate scenarios variables	<ul style="list-style-type: none"> • Climate variables (e.g., carbon taxes) • Sectoral emission and production pathways • Macro variables 	<ul style="list-style-type: none"> • NGFS • IEA • Moody's
	Physical peril data	<ul style="list-style-type: none"> • Peril intensity and probability by scenario • Damage curves by peril 	<p>[Depends on perils/geographies]</p> <ul style="list-style-type: none"> • JBA, XDI, Jupiter...
Emissions	GHG emissions	<ul style="list-style-type: none"> • Company level emissions • Emission factors by product • Own asset emissions 	<ul style="list-style-type: none"> • Internal • CDP • Trucost • Refinitiv

Data challenges and strategies for improving climate data

From regulators and financial actors, adapted from the NGFS

Key points from the NGFS work on bridging data gaps

1	Climate change and data challenge <ul style="list-style-type: none">• Financial Institutions and policymakers need good quality climate-related data to manage risks and advance low carbon transition• Persistent gaps in climate data prevent achievement of these objectives
2	Repository of data needs <ul style="list-style-type: none">• NGFS developed a data repository with the aim to provide an overview of significant data gaps• Repository has a three-layered structure where detailed results for use cases, metrics and raw data items are recorded
3	Issues related to data availability, reliability, and comparability <ul style="list-style-type: none">• Climate-related data gaps exist across three main dimensions: availability, reliability and comparability• Addressing each dimensions is necessary for financial stakeholders to make informed decisions on climate-related topics
4	Building blocks to bridge data gaps <ul style="list-style-type: none">• Mix of policy interventions is needed to ensure reliable and comparable climate data is accessible• Policy interventions revolve around three key building blocks: (1) global disclosure standards, (2) efforts towards a global taxonomy, and (3) development and use of standardized labels, methods, and metrics



ESA Business Applications and Space Solutions

Business Applications: space-enabled services



BASS aims at reaching **commercial exploitation of space assets, data and capabilities** addressing **technical feasibility and business development**. This includes the development **of operational services for a wide range of users** through the combination of different systems, and **support in creating viable companies as well as to existing companies**



- ❑ To advance the **growth and global competitiveness of the space downstream and new space industries** of the Participating States;
- ❑ To explore **a wider combination of space techniques, tools and technologies**, possibly together with terrestrial systems, multiplying the range of space-dependent services and products that can be delivered to customers;
- ❑ To attract **a wider range of actors into the end-to-end space value chain**, able to generate innovative services and products that will be sustained through private investment and user funding sources;
- ❑ To attract **a wider range of users** of services based on space technology, especially in sectors of major economic importance;
- ❑ To **attract actors starting new businesses** implementing space technologies in innovative ways; and
- ❑ To promote the emergence of space-based sustainable services addressing: **societal challenges, UN Sustainable Development Goals and the green transition**

SOCIO-ECONOMIC

Social, green value and economic sustainability



SPACE USE

Utilisation of space in new markets and user communities



INDUSTRY COMPETITIVENESS

European Industry competitiveness on global space and non-space markets



Finance for a Green Transition - feasibility study

Identify, characterise and assess the technical feasibility, commercial viability and desirability of new service concepts that

- would benefit from space data or technology and
- address relevant needs of potential customers.

These space-enabled commercial services should help companies acting on:

- Integrating climate and environmental factors into financial decision-making
- supporting new investment decisions and opportunities to meet environmental targets and comply with international policies as part of green transition initiatives.



Earth Observation

- Land, sea, air monitoring
- Environmental risk and change detection
- Weather and pollution forecasting



Satellite Communication

- Reliable and secure communication
- Remote connectivity (maritime, oil rigs, developing areas)
- Backup to terrestrial infrastructure



Satellite Navigation

- Geo-tagging, positioning, navigation
- Precision timing
- Activity tracking and tracing
- Route optimisation

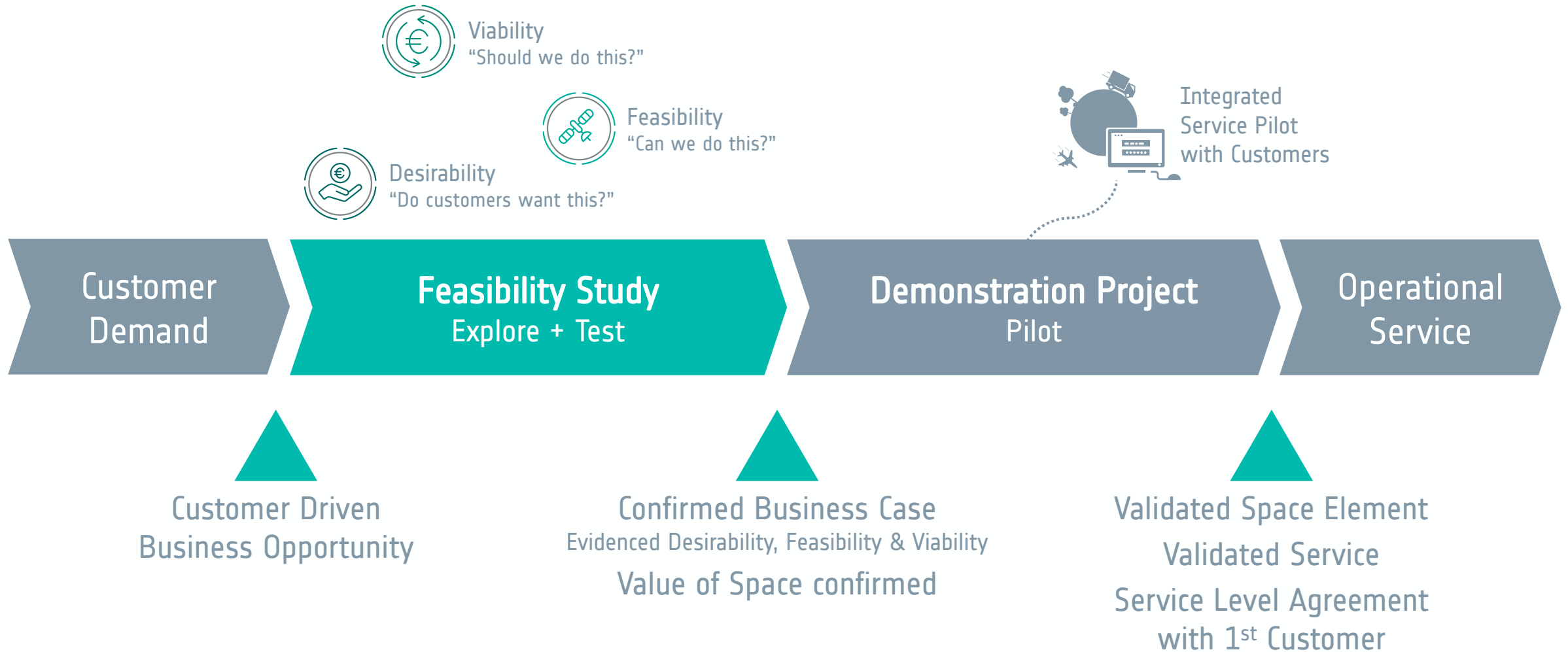


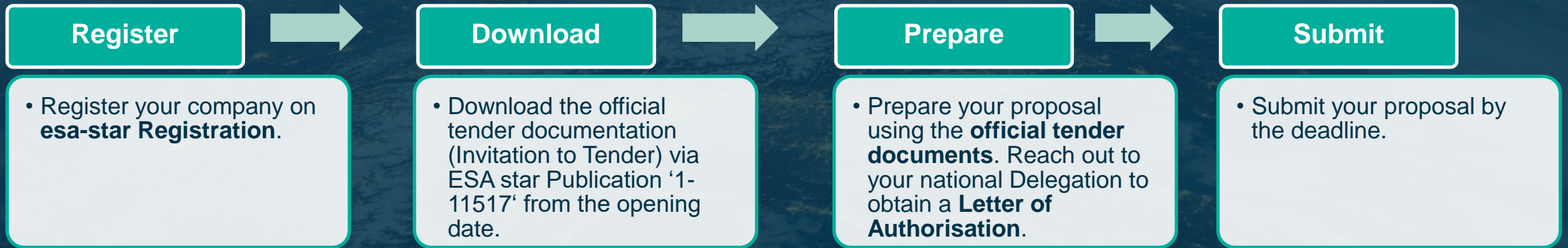
Spaceflight Technology

- Tele-operation systems
- Data processing and artificial intelligence methods
- Augmented reality

Estimated activity duration:	(up to) 12 months
Estimated ESA co-funding:	ESA will co-fund 80% of the acceptable cost, up to €200K, per awarded study
Eligibility for funding	Companies must be based in a Member State subscribing to ESA BASS *

* the official call documents should be consulted





Opening date: 24 February 2023 *

Closing date: 11 April 2023 *

* tentative dates, subject to change

For more information

<https://business.esa.int/funding/intended-tender/finance-for-green-transition>

<https://doing-business.sso.esa.int/>