Harnessing environmental data for sustainable development

UNCTAD Intergovernmental Group of Experts (IGE) on E-Commerce and the Digital Economy

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We are living at a pivot moment in time when two of the greatest transformations in human history are underway

Digital transformation:

1. Global reach
2. Disrupting all sectors
3. New geopolitics

Sustainability transformation:

1. Economic
2. Social
3. Environmental

Our greatest challenge is connecting these two transformation into a twin transition. Data underpins both effective monitoring of progress and effective action.

# Ultimately environmental data should inform all key economic actors to enable sustainable development

Environmental data needs to flow across this ecosystem of actors to:

- Inform decisions
- Incentivise behaviours
- Monitor impact
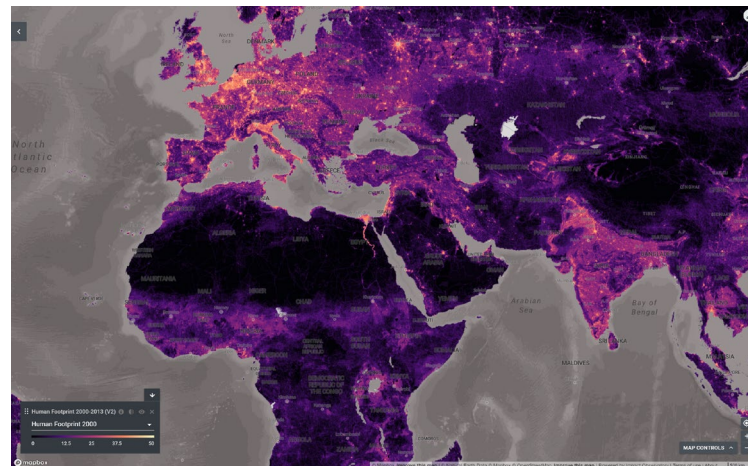- Provide feedback
- Enable a circular economy
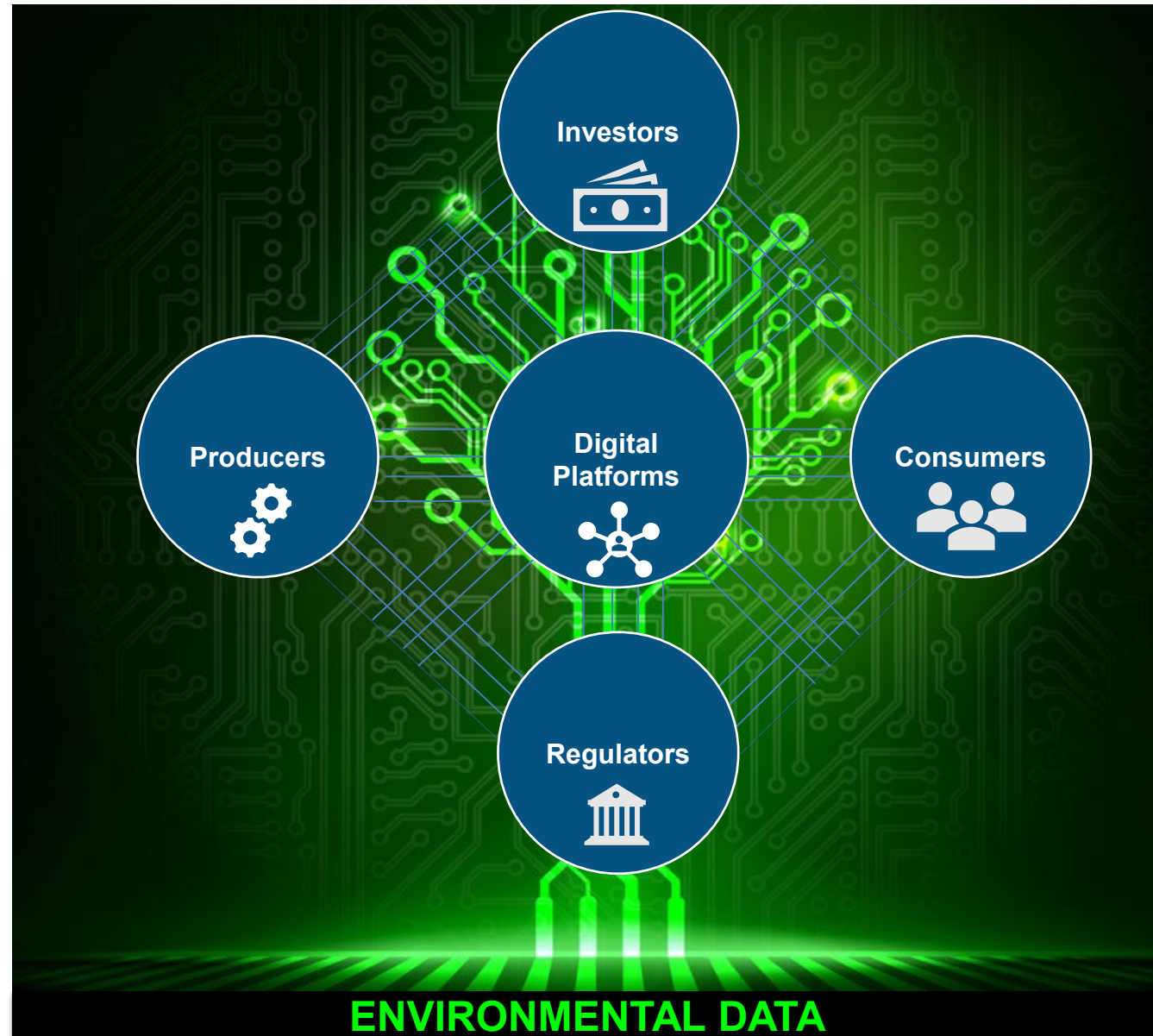
UNEP is working with a range of partners to build an ecosystem of environmental monitoring platforms using big data
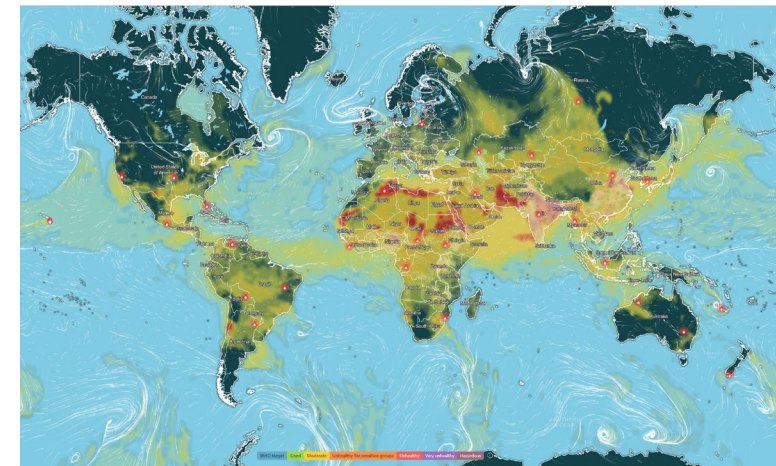
Climate Action
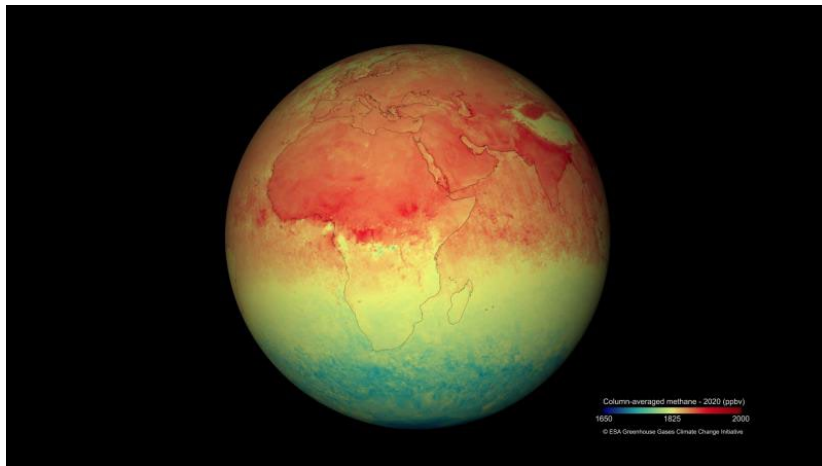
International Methane Emissions Observatory: daily measurement of methane emissions coupled with alerting system

Nature Protection

UN Biodiversity Lab:
400 best available data layers
61 countries accessing data,
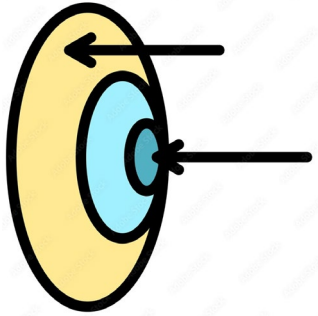analytics on essential life support areas

Pollution Prevention

IQ Air Platform:
Co-design of low cost air sensors
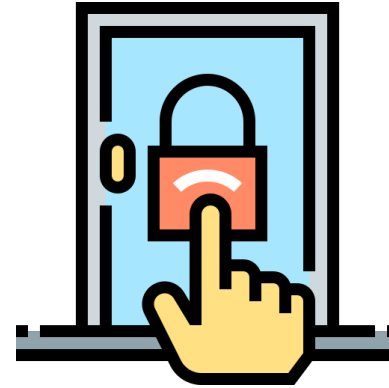25,000 network
50 million users

These will be federated into a World Environment Situation Room.

But there are challenges to overcome in the use of big data

Relevance:
Many sources of big data may not be relevant to measure SDG indicators at the right scale. They simply are not fit for purpose – and offer a proxy perspective.

Accessibility:
Many big data sources are proprietary and managed by commercial companies using pay walls. Costs to accessing can be prohibitive.

Continuity and consistency:
Big data streams from social media may be affected by changing algorithms or terms of use thereby affecting data continuity and consistency.
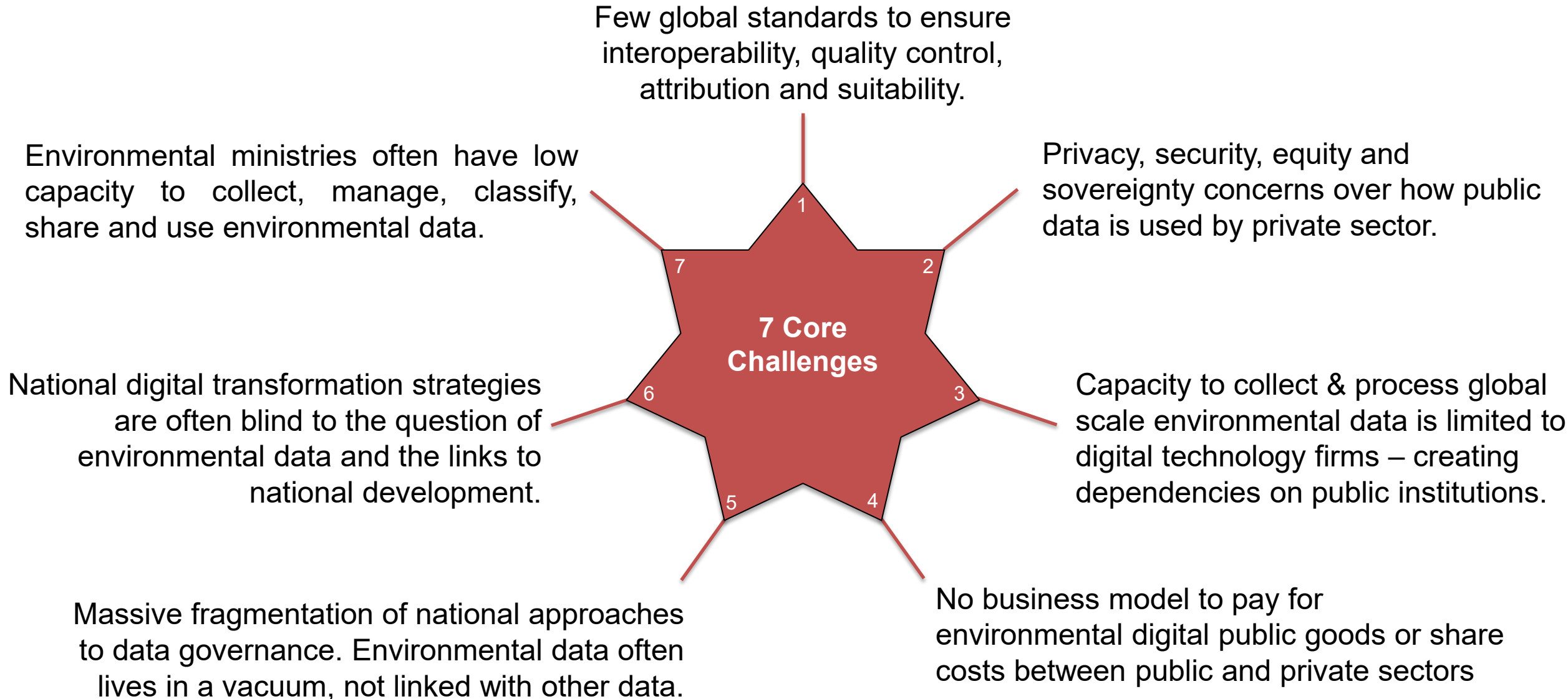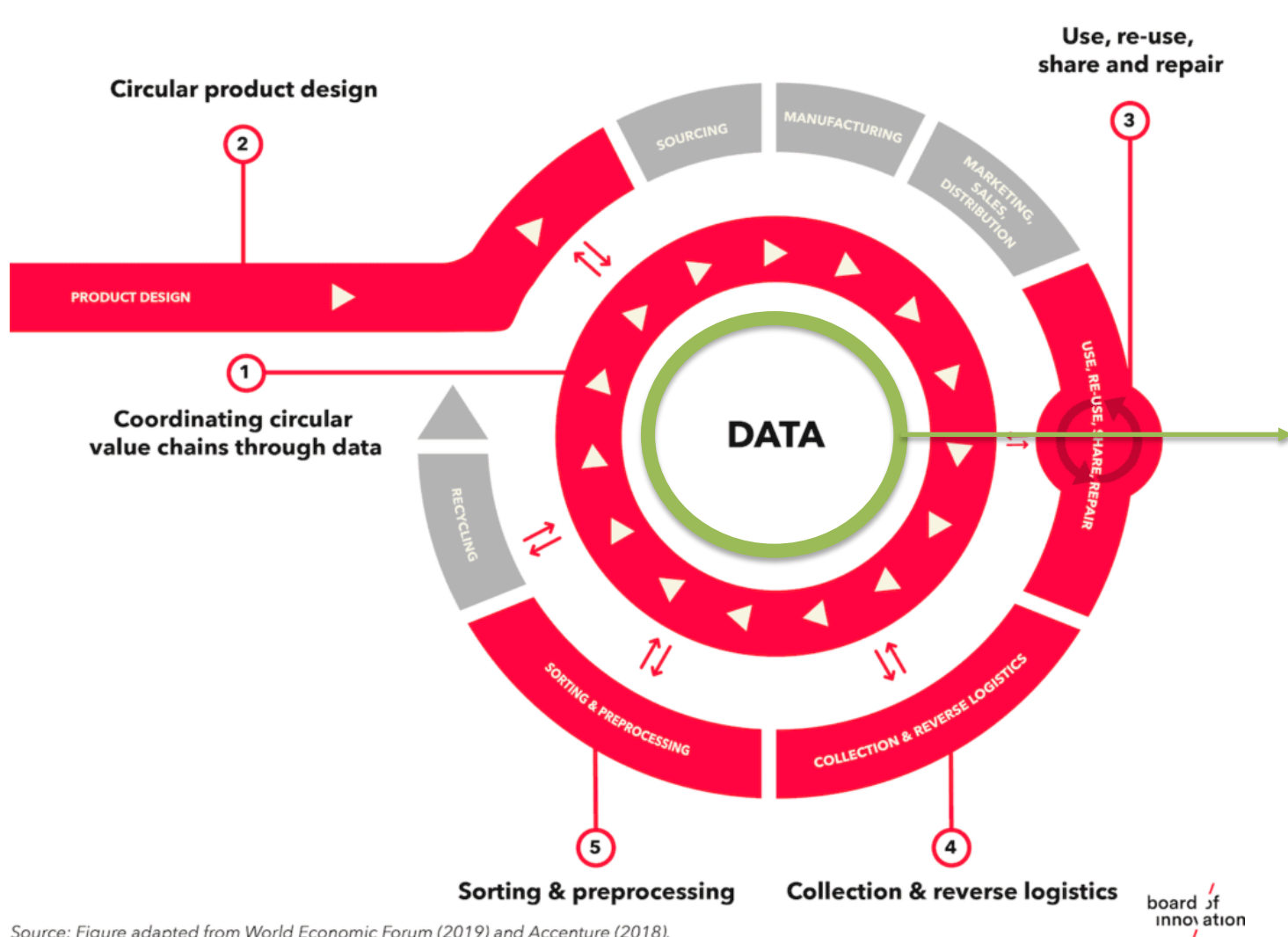
Validity and Veracity:
Refers to the quality and accuracy of data. Many big data sources were not designed for statistical analysis and may not be representative or of sufficient

There is only a nascent global conversation on how to address these challenges.

7 major challenges in the governance of environmental data

Few global standards to ensure interoperability, quality control, attribution and suitability.

Environmental ministries often have low capacity to collect, manage, classify, share and use environmental data.

Privacy, security, equity and sovereignty concerns over how public data is used by private sector.

National digital transformation strategies are often blind to the question of environmental data and the links to national development.

Capacity to collect & process global scale environmental data is limited to digital technology firms – creating dependencies on public institutions.

7 Core Challenges

7

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Massive fragmentation of national approaches to data governance. Environmental data often lives in a vacuum, not linked with other data.

No business model to pay for environmental digital public goods or share costs between public and private sectors

A revolution on the horizon: As a circular economy advances, all products and services will have a digital product passport

Circular product design

2 PRODUCT DESIGN

1 Coordinating circular value chains through data

SOURCING · MANUFACTURING · MARKETING, SALES, DISTRIBUTION

Use, re-use, share and repair

3 USE, RE-USE, SHARE, REPAIR

DATA

RECYCLING

5 Sorting & preprocessing

SORTING & PREPROCESSING

4 Collection & reverse logistics

COLLECTION & REVERSE LOGISTICS

board of innovation

Source: Figure adapted from World Economic Forum (2019) and Accenture (2018).

Enables tracking and tracing of product information across supply chain & lifecycle:
- Origin
- Environmental certificates
- Composition including the presence of substances of concern, critical raw materials content, recycled material content
- Instructions for re-use, repair, recycling and collection
- End of life handling and safe disposal

Standards needed:
- Data ownership
- Data classification
- Data sharing and interoperability
- Data governance
- Footprint calculation
- Digital disclosure and compliance reporting

A global environmental data strategy is needed underpinned by international standards
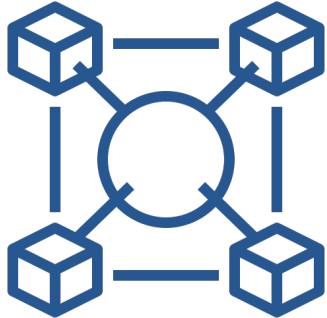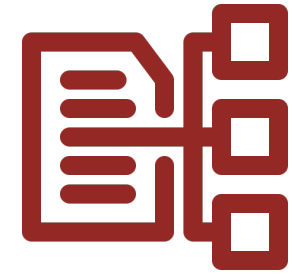
Interoperability:
Ensure shareability, interoperability and integration of environmental data

Quality:
Ensure quality control measures are in place

Provenance:
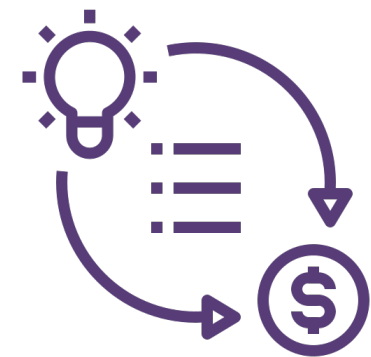Ensure the source and methodology of the data is properly documented

Relevance:
Help understand the relevance and suitability of the data for analysis

Attribution of IP:
Attribution of Intellectual Property for derivative products

Business Models and Safeguards:
Public-Private partnerships with safeguards & suitable business models

Why is environmental data a unique category of data requiring a dedicated governance framework

1. Environmental data are digital public goods and a necessary precondition to protect human rights and achieve the Sustainable Development Goals.

2. Environmental data are crucial for the management of environmental capital, which supports all other forms of capital, e.g. human and financial.

3. Environmental data informs policy-making decisions and corporate sustainability agendas, which can positively or negatively drive economic and development changes.

4. International laws imposes specific procedural obligations on States concerning access to environmental information.

5. Many environmental issues and risks are transboundary and cannot be confined to national boundaries. No single country has the ability to monitor the global environmental situation. Global environmental threats can only be addressed through collective action and global cooperation.

6. Environmental data increases in value the more it is integrated and transformed along the data value chain. Need to govern public-private partnerships that generate or commercialize environmental data.

National digital transformation strategies should begin to explicitly recognize
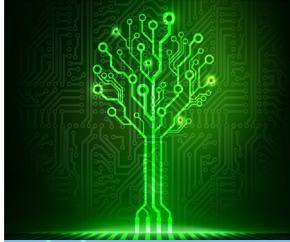
1. Environmental Goals:
Digital transformation must be done in a sustainable way that takes into account environmental risks and opportunities. How can countries respond to the increasing demand for data about the environment and climate performance of all products and services.

2. Data as an enabler of national SDG goals, green economy and commitments to MEAs:
Identify how environmental data can contribute to accelerating SDG goals, MEA commitments and a circular green economy. How can environmental analytics detect risks to economic development ?

3. Data needed to measure the impact of the digital sector:
Identify the types of data needed to monitor and mitigate the environmental footprint of digital transformation (e.g. energy, GHG emissions, water, e-waste).

4. Green Digital Infrastructure:
What digital infrastructure are needed to support the collection, sharing, storage and analysis of environmental data. How can this infrastructure be green and climate-resilient ?

5. Capacities and capabilities:
Identify the public and private sector capacities needed to collect environmental data for decision-making, product transparency, and environmental disclosures.

International engagement opportunities
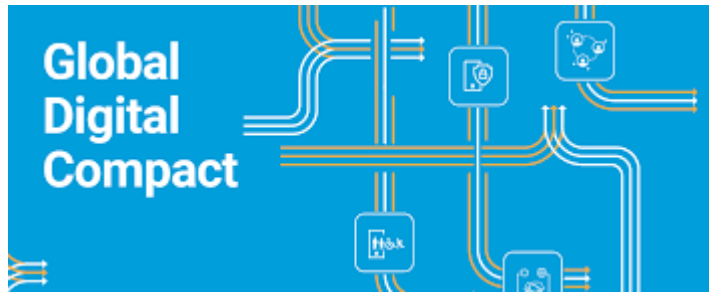
Global Digital Compact

- Integrate sustainability as a key principle – both sustainable digitalization and digitalization as an enabler of sustainability

UN Environment Assembly

- Agreement on global environmental data strategy
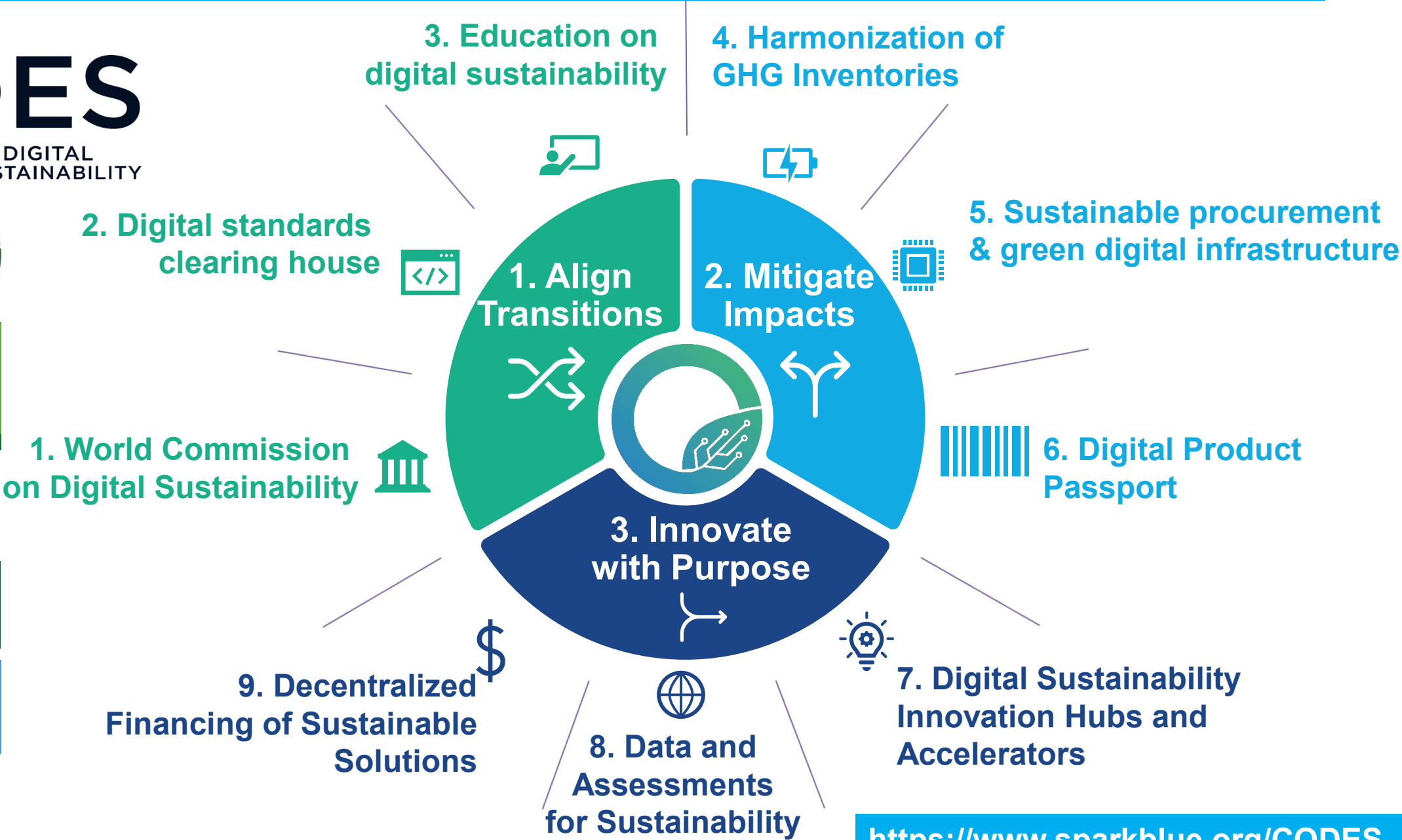- UNEP to develop a global environmental data platform

Coalition for Digital Environmental Sustainability (CODES)

- Open multi-stakeholder coalition advancing collective action in 9 Impact Initiatives

Engage in the 9 Impact Initiatives of CODES:

https://www.sparkblue.org/CODES

Thank you

UN
environment

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Extra slides

Five key applications UNEP is exploring that harness environmental data

Monitoring and modelling environmental systems and emissions at global & national levels

Full supply chain transparency and circularity with digital disclosure of environmental performance

Enabling and empowering consumers to select sustainable products, services and lifestyles using knowledge, incentives and feedback

Automated sustainability decisions and optimization of energy / natural resources by core SMART technologies

Agile, participatory and decentralized environmental governance processes, services and enforcement

Data is also essential for monitoring the negative impacts of the digital economy:

Energy and GHG footprint:
3% of global energy consumption
2-4% of GHG emissions
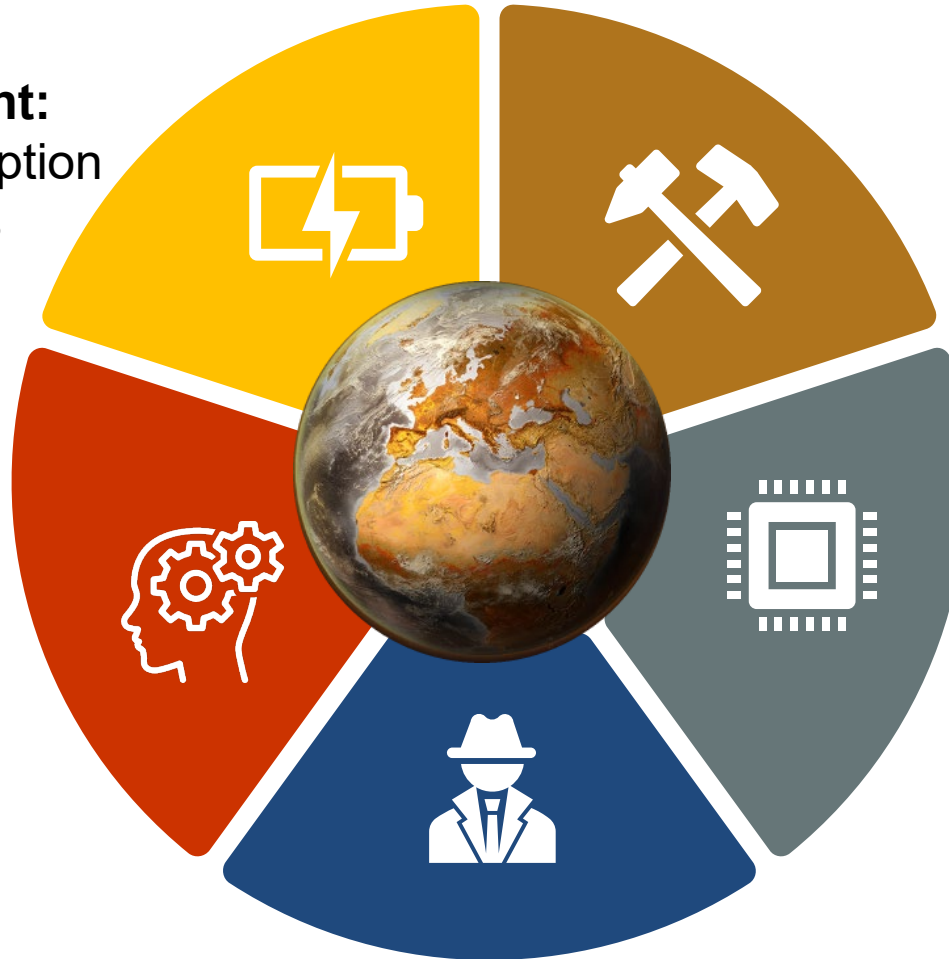
Metals and rare earth minerals:
500% increase in demand for lithium and cobalt by 2050

Rebound effects and hyper consumption:
62% of advertising sales are now digital and worth 710 billion

Pollution and e-waste:
53 million metric tons, only 17% recycled, 40% of countries have regulation

Misinformation:
misinformation spreads 6X faster than facts, 70% more likely to reshared