



Strengthening Digital Data Governance for Achieving Climate Neutrality

An Effective Approach to Unlocking the Potential of Data and Digital Technology

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A decorative graphic on the left side of the slide consists of several thick, 3D-style arrows pointing to the right. The arrows are arranged in a fan-like pattern, with colors ranging from red at the top to purple at the bottom. The colors include red, orange, yellow, green, blue, and purple. Each arrow has a slight shadow and a gradient effect, giving it a three-dimensional appearance.

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I. Objective

Aims

Examine how data and digital technology can contribute to achieving climate neutrality within the digital data governance framework

Proposed Frameworks

- **Technical Level: European Union’s “twin” transition (country level); C40’s City Climate Data Management Framework (city level)**
- **Institutional Level: Readiness Assessment on Institutional Arrangements for Policy Coherence to Implement the 2030 Agenda for Sustainable Development**

Target

- **National and local authorities responsible for climate-related policymaking and implementation**
- **Actors responsible for digital government strategies, data management, and knowledge production**

II. Analytical Framework

European Union's "Twin" Transition



Proposed in line with its Fit-for-55 Package



Green Transition: aims to achieve sustainability and combat climate change and environmental degradation



Digital Transition: harness digital technologies for sustainability and prosperity and empower its citizens under digital transition



Expected to provide great opportunities for local governments to thrive and cities to prosper if managed well

Table 1. Key Requirements for the Twin Transition and Its Potential Benefits (*adopted from the original sources*)

Sector	Key Requirements
Social	Ensure Just Transitions Increase Societal Commitment to the Need to Change Ensure Privacy and Ethical Use of Digital Data Technology
Technological	Implement Innovation Infrastructure Build a Coherent and Reliable Technology Ecosystem Ensure Data Availability and Security
Environmental	Avoid Rebound Effects Reduce the Environmental Footprint of Green-digital Technologies
Economic	Create Enabling Markets Ensure Diversity of Market Players Equip Labor with Relevant Skills
Political	Implement Adequate Standards Ensure Policy Coherence Channel Investments into Green-digital Solutions

II. Analytical Framework

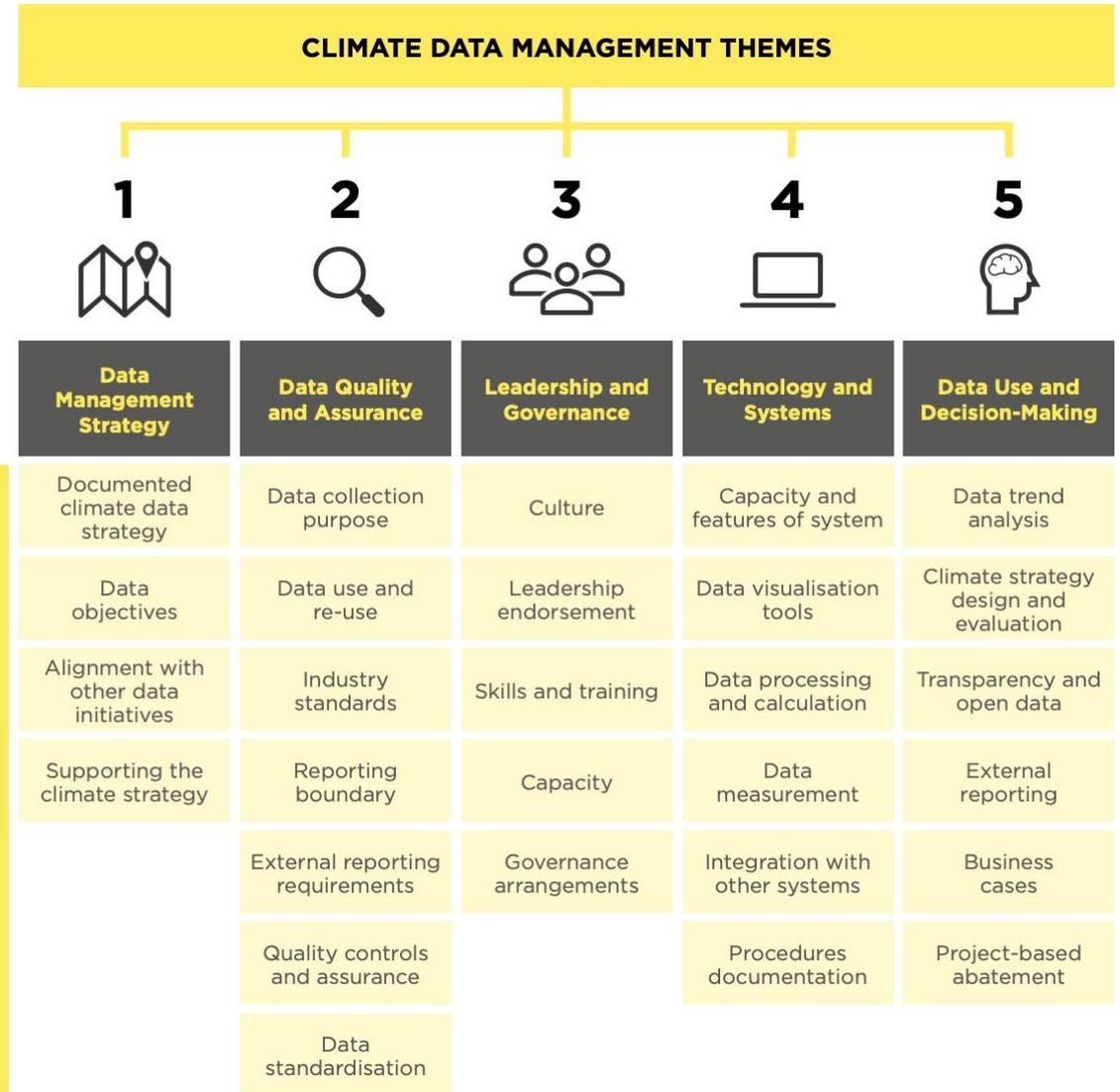
C40's City Climate Data Management Framework (2021)



Designed in 2021 to support cities to implement sound data management practices



Aims to strengthen cities' climate data-related understanding and achieve their climate mitigation and adaptation ambitions



II. Analytical Framework

UN DESA-DPIDG's Readiness Assessment on Institutional Arrangements for Policy Coherence



Committed to strengthening institutions for more integrated climate-related solutions



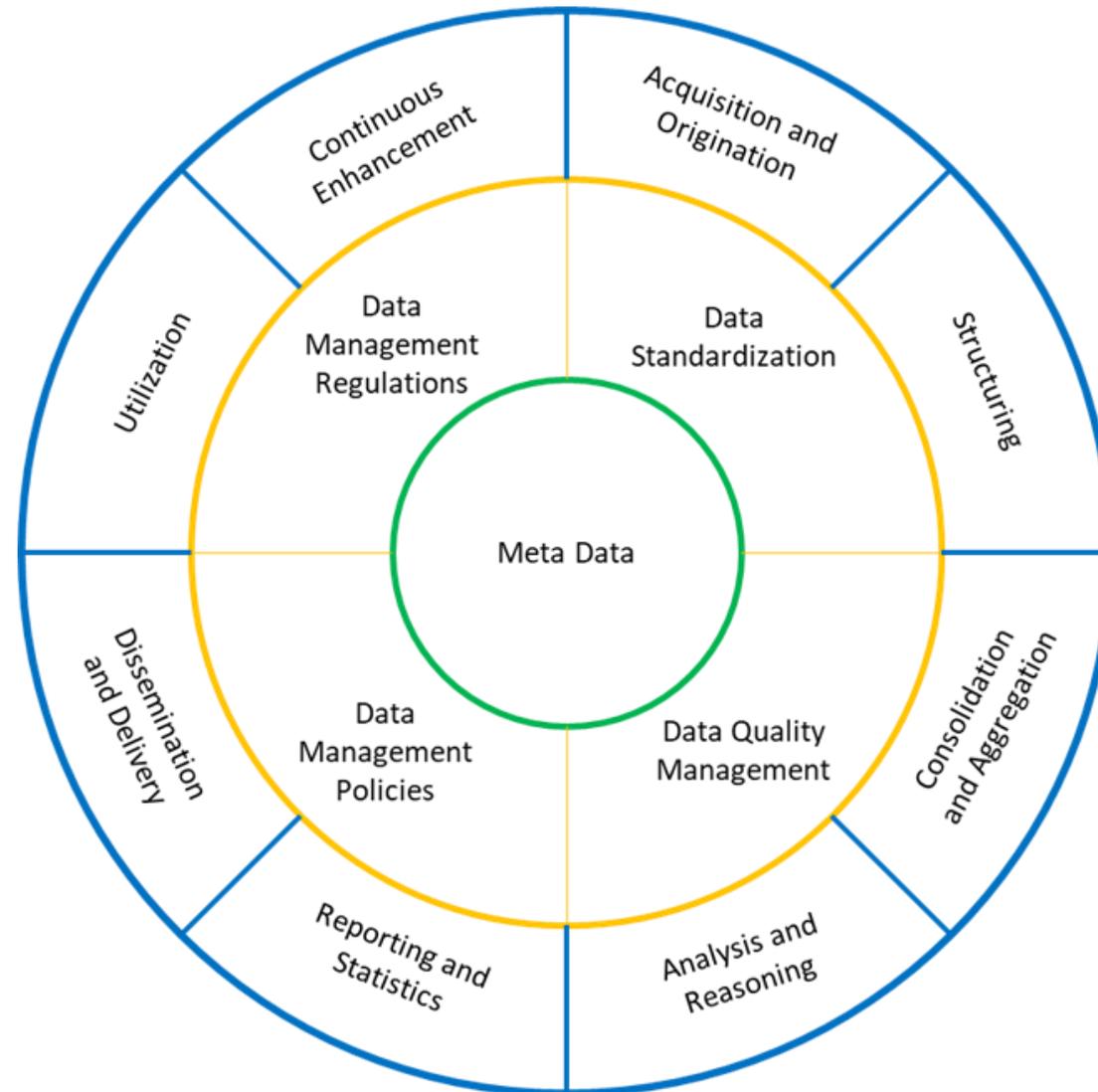
Will enable countries to enhance policy coherence for sustainable development and climate action

Table 4. Key Elements of the Building Blocks on Institutional Assessment for Policy Coherence²¹

Building Blocks	Key Elements
Political Commitment	<ul style="list-style-type: none">• Vision setting• Regulatory framework• Normative framework
Transformative Leadership, Human Resources, and Changing Mindsets	<ul style="list-style-type: none">• Transformational leaders as opposed to transactional leaders• Quantity and quality of human resources• Mindsets: individual, organizational, and system level
System Thinking and Policy Linkages	<ul style="list-style-type: none">• Harmonization of interconnected policies• Vertical integration• Horizontal integration
Organizational Structures and Processes	<ul style="list-style-type: none">• Institutional arrangements for policy coordination/integration• Standardization
Financing	<ul style="list-style-type: none">• Integrated budgetary allocation• Adequate funding
Digital Technology and Data	<ul style="list-style-type: none">• Digital government strategy• Digital security strategy• National data strategy
Coherence between National and Local/Regional Levels	<ul style="list-style-type: none">• Parity between national, regional, and local
Stakeholders' Engagement	<ul style="list-style-type: none">• Mechanism and tools to engage stakeholders
Monitoring, Reporting, and Evaluation Processes	<ul style="list-style-type: none">• Monitoring and reporting mechanism• Evaluation methods

II. Analytical Framework

A Digital Data Governance Framework for Carbon Neutrality



III. Empirical Analysis and Findings

Country-level Case: Republic of Korea (1)

Web-based National Greenhouse Gas (GHG) Management System (NGMS)

- **Developed by Korea's Energy and GHG Target Management System(TMS) in 2013**
- **Ministry of Environment: responsible for monitoring and reporting GHG emissions**

EU's "Twin" Transition - Green Transition

- a) **Contains strong platform to collect up-to-date and verified data on GHG emissions and energy consumption of selected industries**
- b) **NGMS's annual cycle of GHG emissions target setting, reporting, and review: allows the government and companies to keep regular track of the country's GHG emissions**
- c) **Data accuracy: NGMS penalizes non-reporting and encourages all related stakeholders to submit their GHG emissions-related reports on time**

EU's "Twin" Transition - Digital Transition

- a) **Strengthened the nation's and companies' capacities to identify and implement options for climate mitigation and adaptation by monitoring the data uploaded on NGMS's website**
- b) **Enables the government to ensure data quality control by checking for inconsistencies in the reports through the application of time-series analysis**

III. Empirical Analysis and Findings

Country-level Case: Republic of Korea (2)

UN DESA-DPIDG's Readiness Assessment on Institutional Arrangements for Policy Coherence

- **Political Commitment:** supported by political leadership (grounded in the Framework Act on Low Carbon and Green Growth of 2010)
- **Finance:** Ministry of Environment's annual budget
- **Organizational Structures and Processes:** national and non-national level institutions involved
 - **Ministry of Environment:** in charge of the overall oversight, sets standards and guidelines
 - **Greenhouse Gas Inventory and Research Center of Korea (GIR):** publishes guidelines, manages climate-related data and registry, conducts research and analysis to implement NGMS
- **Stakeholder Engagement and Changing Private Sector's Mindset:**
based on the repeated dialogue and cooperation of both public and private sectors

III. Empirical Analysis and Findings

City-level Case: Belo Horizonte, Brazil (1)

Key Data-Driven Tools for Integrated Climate Action - C40's Climate Data Management Framework

- **Data Management Strategies:** city's Municipal Secretariat for the Environment (SMMA) publishes GHG emissions inventories
 - Acts as a key policy instrument to enable the self-assessment of GHG emissions, impacts, and trends
- **Data-driven Policy Instrument:** GHG emissions inventory can aid cities and local governments to formulate and track integrated climate action goals, generate buy-in from relevant stakeholders, and identify climate-related economic opportunities
- **Ensure Data Quality:** Municipal Committee on Climate Change and Eco-efficiency (CMMCE) handles validating and analyzing the data collected by SMMA
 - Cooperation with WayCarbon (environmental management consultancy company)

III. Empirical Analysis and Findings

City-level Case: Belo Horizonte, Brazil (2)

Key Data-Driven Tools for Integrated Climate Action - C40's Climate Data Management Framework

- **Technology and Systems:** meteorological data, weather forecast models, synoptic charts, atmospheric surveys, and weather satellites
- **Decision-making:** relies on available information on climate change risk exposures, the socio-environmental sensitivity to these changes, and the ability of cities to respond to and adapt to extreme conditions to formulate its own vulnerability index

III. Empirical Analysis and Findings

City-level Case: Belo Horizonte, Brazil (3)

UN DESA-DPIDG's Readiness Assessment on Institutional Arrangements for Policy Coherence

- **Systems Thinking and Policy Linkages: GHG Emissions Reduction Plan (Plano de Redução de Emissões de Gases de Efeito Estufa, PREEGE)**
 - Addresses 3 key sectors (energy, transport, and waste) and contains 3 main categories: mitigation actions, results, and monitoring indicators
 - Timeframe for implementation: defined as short (2015), medium (2020), or long term (2040)

- **Financing: focuses on 3 main aspects to finance-integrated climate action**
 - (1) Resources of the public budget
 - (2) Promotion of incentives for a sustainable and green economy
 - (3) Raising funds from international projects

III. Empirical Analysis and Findings

City-level Case: Boulder, Colorado, United States (1)

From Climate Data to Climate Action - C40's Climate Data Management Framework

- **Data Management:** climate-related efforts publicly available, monitored, and managed through the “BoulderMeasures” dashboard
 - Dashboard displays data from city programs and community indicators
 - Manages the city- and community-wide GHG emissions data per source and sector
- **Data Quality and Assurance:** Climate Initiatives Department manages the climate datasets to ensure that the data is useful to track the progress of the city’s climate commitments
 - Maintains an inventory of all the city’s climate datasets
 - Programs data collection and storage systems to identify errors
- **Decision-making Process:** Climate Commitment Tool allows for the data analysis of different scenarios and the calculation of community-based GHG emissions under varying scenarios

III. Empirical Analysis and Findings

City-level Case: Boulder, Colorado, United States (2)

UN DESA-DPIDG's Readiness Assessment on Institutional Arrangements for Policy Coherence

- **Systems Thinking and Policy Linkages:** harmonization and agreement of interconnected policies
 - **City collaborates with a group of local governments through the Urban Sustainability Directors Network (USDN) to develop a carbon management tool that will allow cities to manipulate scenarios of various planting and land use activities**

IV. Policy Implications

5 Key Elements of Data Governance Framework

Data Roles and Institutions	Many governments are now hiring data scientists, recognizing that their role in government is as essential as that of statisticians, information officers, economists, and other quantitative social scientists.
Data Literacy and Capacity Development	Some governments lack the requisite capacities to fully develop the potential of government data. Strengthening data literacy and capacities enables public administrators to navigate the new data realities.
Data Partnerships	Partnerships constitute an essential component of the data ecosystem. Governments cooperate with public and private actors to drive data innovation for the creation of modification of e-services with the aim of increasing economic or social benefits or to generate public value.

Table 5. Key Elements of Data Governance Framework

Key Elements	Description
Data Protection	Data protection is protecting data against unlawful or unauthorized processing, access, loss, destruction, or damage.
Privacy and Ethics	Privacy and ethics approaches include data triangulation, data minimization, data anonymization, differential privacy, and the use of synthetic data.
Classification and Standardization	Data standardization and classification are necessary to ensure the consistency and compatibility of data and data-related processes in the public sector, especially in integrated or whole-of-government contexts.
Data Sharing, Linked Data, and Interoperability	There are various options for sharing, linking, or exchanging data through platforms that offer advanced digital services, such as data APIs, data services, or data markets. For such platforms, integration is key and connectivity is critical. The ability to integrate across multiple systems including legacy systems is also required, as is the application of data- or user-centric policies such as the once-only principle for data provision.
National Digital Identity	Digital identity plays a central role in digital government development and data applicability, as it provides the basis on which data can be safely and securely shared within and between agencies to improve public services and their delivery.
Shared Infrastructure (e.g., data cloud, data service, data APIs, etc.)	A strong infrastructure is a critical factor for data governance. Without affordable and widely available high-speed broadband internet and safe and secure access to new technologies, the development of data governance will be limited.

IV. Policy Implications

World Resources Institute (WRI) Recommendations: Overcoming Barriers to Opening Up Climate-related Data

- ① **Lack of awareness or misunderstanding about open data practices**
- ② **Technical capacity gaps among data producers and/or users**
- ③ **Lack of regulatory frameworks to support information transparency**
- ④ **Lack of mandate or political leadership to coordinate data publication across agencies**



Q & A



thank
you