

# DATA-DRIVEN TRANSPORTATION SYSTEMS

**POLICY WORKBOOK**



**Smart City**  
MISSION TRANSFORM-NATION



**Ministry of Housing and Urban Affairs**  
Government of India





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Government of India

**ABOUT MINISTRY OF HOUSING AND URBAN AFFAIRS (MoHUA)**

The Ministry of Housing and Urban Affairs is the apex authority of Government of India to formulate policies, coordinate the activities of various central ministries, state governments and other nodal authorities and monitor programs related to issues of housing and urban affairs in the country. The Smart Cities Mission was launched by the Ministry in 2015 to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of ‘Smart’ Solutions.

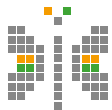


**ABOUT ROCKY MOUNTAIN INSTITUTE (RMI)**

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; Washington, D.C.; and Beijing. RMI has been supporting India’s mobility and energy transformation since 2016.

# DATA-DRIVEN TRANSPORTATION SYSTEMS

## EVALUATION METRICS



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# Document outline

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This document aims at helping the city manager assess and track progress in the use of data in the transportation sector. It builds on the recommendations outlined in the Policy Workbook to provide a checklist of key benchmarks that a city may aim to achieve in order to develop a robust data collection and sharing ecosystem and enable a strong data-driven transportation system. This checklist was first introduced in the Policy Framework. Achieving each of the checklist items at a basic level will ensure that the city develops a foundational data capability and capacity. However, many of these checklist items are ongoing. For example, a city may originally define and prioritize a set of data use cases but it should revisit these priorities and add additional use cases as the city's goals and data capacity evolve. These benchmarks are summarized in Table 1 and described in more details in Table 2 with suggestions on how to achieve them and monitor continued progress, with respect to each as the ecosystem continues to develop and strengthen.

## SUMMARY OF CHECKLIST ITEMS FOR MONITORING PROGRESS

### DOES THE CITY HAVE...

- 01** Institutional framework outlined in the DataSmart Cities strategy, including a City Data Policy
- 02** An appointed transport data champion
- 03** Clarity and communication around the purpose and value of data collection and sharing
- 04** Defined and prioritized transport data use cases
- 05** Sufficient data collection mechanisms
- 06** Appropriate safeguards for data privacy and security
- 07** A participatory framework for transport data stakeholders
- 08** A city-level data-sharing platform
- 09** Investment in mobility data initiatives



# Benchmarks for monitoring progress

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## Benchmark: Institutional framework outlined in the DataSmart Cities strategy, including a City Data Policy

### Achieving this benchmark

Refer to the DataSmart Cities strategy for complete implementation details. Steps include:

- » Appointing a City Data Officer
- » Appointing Data Champions and Data Coordinators within each relevant department/agency
- » Developing a City Data Alliance of key stakeholders
- » Formulating a City Data Policy

When formulating the City Data Policy, consider:

- » Outlining guidelines for collecting and sharing data across the mobility sector
- » Taking into account feed-back and recommendations from the City Data Alliance
- » Reviewing National Data Sharing and Accessibility Policy (NDSAP)
- » Including requirements for government agencies to share data
- » Taking into account both private and public data owners
- » Considering ways the policy can push more private data to become open, such as requiring private companies to share certain datasets in return for utilizing public infrastructure

### Monitoring continued progress

- » Ensure that the City Data Policy stays up-to-date and relevant
- » Continue to engage frequently with the City Data Alliance
- » Engage with the Mission Data Officer,

Mission Data Hub, and Smart Cities Data Network at the central government level to ensure that policies and developments are in line with national developments and to learn from other cities



## Benchmark: An appointed Transport Data Champion

### Achieving this benchmark

- » Outline the roles and responsibilities, based largely on the data goals of the city (see Policy Workbook for list of potential responsibilities)
- » Choose a candidate who has knowledge of the transportation space and is familiar with the relevant stakeholders. The candidate must understand how to manage data and have experience in interacting with data users
- » Allocate appropriate resources for the Transport Data Champion to develop initiatives (e.g., staff, funding, etc.); the size of the team required to support the Transport Data Cham-

Champion will vary depending on the city's size, availability of resources and complexity of its transport system. The team may be integrated with other data initiatives outside the transport sector as well

### Monitoring continued progress

- » The Transport Data Champion's success in developing initiatives and achieving buy-in from the relevant stakeholders in the ecosystem
- » Whether the Transport Data Champion has sufficient support from the city to successfully convene stakeholders and carry out initiatives



# 3

## Benchmark: Clarity and communication around the purpose and value of data collection and sharing

### Achieving this benchmark

» Internally align with the city's goals and most pressing challenges for the transportation system (see Policy Workbook section on evaluating current city status and priorities for guidance)

» Research, understand and communicate the value and purpose of data sharing in the transportation sector to each key stakeholder (the Policy Framework and Policy Workbook serve as a starting point)

### Monitoring continued progress

» Maintain communication and alignment between city government departments and various data stakeholders

» Periodically reassess to ensure goals and values are up-to-date





# 4

## Benchmark: Defined and prioritized data use cases

### Achieving this benchmark

» Define and select key data use cases on which to focus, based on the city's goals and challenges

» For each use case, clearly define how the required data will be used

» Clearly communicate to all government agencies and external stakeholders the goals and intentions for the data use cases and clearly layout how the data will be used

### Monitoring continued progress

» Retain focus on several primary use cases

» Periodically reassess whether data use cases are still meeting the city's needs, and a) how they can be further developed or expanded

b) what new data use cases could be explored and implemented



## Benchmark: Sufficient data collection mechanisms

### Achieving this benchmark

- » Based on the desired use case, identify the necessary data
- » Evaluate what data are available: data that are already owned by the city (e.g., produced by monitoring infrastructure), publicly available, or available through an existing partnership
- » Identify where gaps still exist and what sort of data could be acquired to fill them
- » Collect the remaining data either by acquiring it from another data owner (if it already exists and they are willing to share), or by collecting it from scratch

### For acquiring data from another data owner:

- » Make a specific request to the data owner for only the data that are needed to support the use case
- » Be clear and transparent with exactly how the data will be used
- » Make a value proposition to the data owner of how they will benefit from sharing the data
- » Use the consortium or other multi-stakeholder mechanisms (outlined below) as a platform for building these value-driven partnerships

### Monitoring continued progress

- » Quality of data collected: e.g., accuracy, frequency and completeness
- » Age, reliability, and maintenance intervals of monitoring infrastructure
- » Investment in monitoring infrastructure by the city government and transit agencies
- » Success rate of data sharing requests and the types of requests that are successful (e.g., what types of data the companies are more willing to share, what sort of value proposition they are receptive to)
- » Maintain relationships with data-owning organizations rather than just making one-off requests

# 6

## Benchmark: Appropriate safeguards for data privacy and security

### Achieving this benchmark

- » Understand and evaluate what policies and guidelines are currently in place at the central-, state- and city-levels
- » Supplement with additional policy as needed to be embedded in the City Data Policy

### Monitoring continued progress

- » Monitor compliance with data protection policies and moderate the data-sharing platform to ensure that data shared is scrubbed off personally identifiable information (PII)
- » Track any leaks of PII or data security breaches and update policies and protections as needed





## Benchmark: A participatory framework for transport data stakeholders

### Achieving this benchmark

- » Map the transport stakeholder ecosystem to identify all relevant parties who need to be involved
- » Gauge the stakeholders' level of interest in engaging in a participatory framework (e.g., through initial conversations or surveys)
- » Develop a participatory framework of some kind through which data stakeholders can surface shared challenges and help develop solutions to them. This framework could take many forms, ranging from less involved (e.g., an online format) to more involved. The format may depend on the city's capacity to facilitate as well as the level of interest of stakeholders in the city:

a) One possible (more involved) way to do this is to create a multi-stakeholder consortium that brings together critical mass among consumers and producers of data; this can be organized by the city government but should be an independent body

b) If the city has a strong and developed City Data Alliance, then the transport data stakeholder network could be developed as a subgroup of the existing Alliance

- » Extend invitations to stakeholders to participate on the platform/consortium/framework, making clear the value of data sharing and collaboration
- » Use the framework to get input from stakeholders and work collaboratively to align with the value of data-sharing and develop best practices for collecting and sharing data

### Monitoring continued progress

- » Promote the findings of the stakeholder engagement through relevant networks and events (e.g., host a workshop on data best practices)
- » Convene/solicit input from stakeholders at regular intervals or as needed to maintain progress and momentum in developing and updating best practices and initiatives
- » Communicate with similar organizations in other cities to maximize knowledge-sharing
- » The number of stakeholders involved relative to the total number of players in the space, as well as their buy-in and commitment to data initiatives



## Benchmark: Appropriate safeguards for data privacy and security

### Achieving this benchmark

#### Either:

» Create a city-specific portal on the central government platform (open data platform, data exchange platform, and data marketplace)

» Develop an independent city platform to facilitate data sharing/exchange between data producers and consumers, beginning with an open data portal and eventually expanding to include a layer to broker transactions of private data between data consumers and producers:

a) Review the NDSAP implementation guidelines for national guidelines on implementing open data

b) Solicit input from data stakeholder platform on policy and portal/exchange design

c) Include guidelines for publishing data on the portal

#### In either case:

a) Require government agencies to participate

b) Engage non-government data owners and encourage them to participate in sharing data on the portal

c) Promote the portal as a tool for companies and individuals to use to support current work and new innovation

#### Monitoring continued progress

» Ensure the portal is actively monitored and curated to ensure the quality of the content

#### Some factors to monitor:

a) The amount of data openly available (e.g., number of datasets, variety of datasets, number of data points)

b) The quality of data that are available (e.g., accuracy, frequency and completeness)

» The number of stakeholders involved in the portal relative to the total number of players in the space

» The frequency of downloads of data sets hosted on the portal



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## Benchmark: Investment in mobility data initiatives

### Achieving this benchmark

- » Identify highest priority initiatives that require funding
- » Assess the amount of funds available and potential additional sources of funding
- » Evaluate which investments will have the highest impact on improving data collection, sharing, and use ecosystem

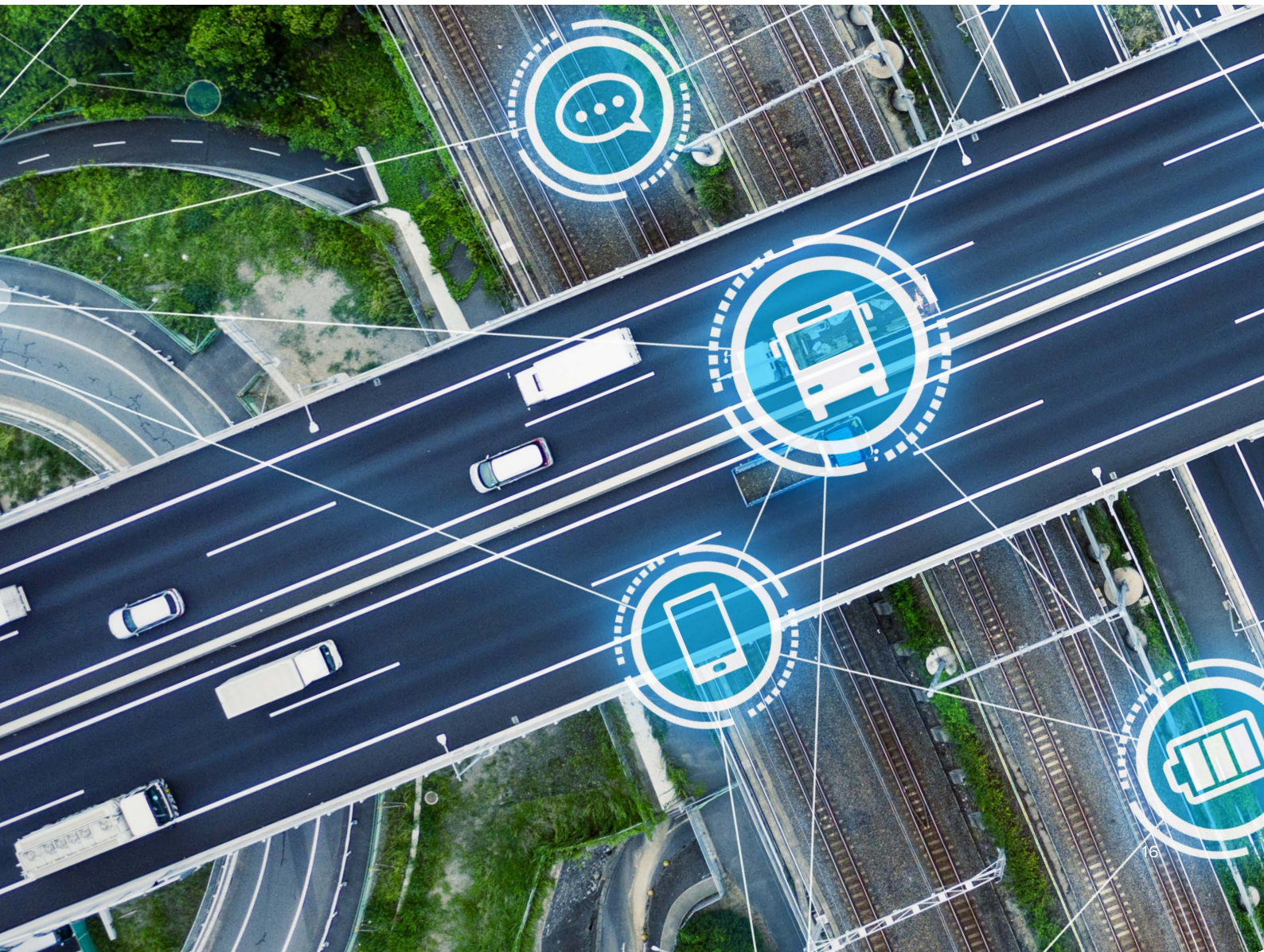
### Monitoring continued progress

- » Return on investment (e.g., relative to quality of data produced or improvement in KPIs of a particular project)

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### Authors:

Emily Goldfield  
Akshima Ghatе  
Clay Stranger

**Art Director:** Vindhya Tripathi

**Designer:** P. Pallavi Baasri

**Editorial Director:** Ashpreet Sethi

**Image Credits:** Shutterstock

## CONTACT

For more information, please contact:

**RMI:** [india\\_contact@rmi.org](mailto:india_contact@rmi.org)

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