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FORUM ON
**“Leveraging State Data
Ecosystems for State and District
Level Policy and Planning”**

17th November 2023 | Lucknow

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FOREWORD

In an increasingly interconnected world, data has become the cornerstone of informed decision-making. It is the fuel that propels effective planning and policy making, which enables policy makers, investors, researchers, and citizens to navigate complex challenges with precision and foresight. Whether in the realm of health care, education, economics, or environmental sustainability, the importance of reliable, comprehensive, and timely data cannot be overstated.

India has been a front-runner in digital transformation over the last decade. Around 1.3 billion people have been registered on Aadhaar, which has become ubiquitous in government-citizen, and increasingly in private sector interactions as well. Over 15 million micro, small, and medium sized enterprises (MSMEs) have been registered on the MSME Portal, UDYAM. A similar number of firms are registered as GST taxpayers. Hundreds of government services are now offered online through digital one-stop shops. This has unleashed digital data flows with an enormous potential for governance.

A key advantage of digitization is its ability to enhance the planning of process efficiency. With real-time data at their fingertips, policy makers can respond swiftly to emerging trends and challenges, ensuring that plans remain dynamic and adaptable. This is critical in order for India to achieve its goal of becoming a \$30 trillion economy by 2047. Moreover, data accessibility empowers policy makers to tailor their strategies to the specific needs of communities, paving the way for more targeted and impactful interventions at the local level. Districts have rightly been identified as critical administrative units for accelerating development. More localized data products and services for subnational and sub-state planning have now become possible as a result of India's data revolution.

Integrating digital technologies also enables an inclusive and participatory approach to policy making. Citizen engagement and feedback, facilitated by digital platforms, creates a more democratic and transparent decision-making process. Good governance is no longer just about efficient delivery services to citizens; it is also about actively involving them in the process, and ensuring that their diverse perspectives can help to shape government solutions.

The synergy of data, digitization, and technology unlocks new avenues for innovation and economic growth. Industries are being revolutionized, and new possibilities are emerging in fields such as artificial intelligence, machine learning, and predictive analytics. These advancements can streamline processes and create new opportunities for entrepreneurship and job creation.

On November 17, 2023, NITI Aayog, in partnership with the government of Uttar Pradesh, and with the support of the World Bank, convened a forum on Leveraging State Data Ecosystems for State and District-Level Policy and Planning. Around 100 representatives from central ministries and state governments participated.

The Forum served as a platform for peer-to-peer knowledge exchange between policy makers, data scientists, statisticians, and technologists at various levels of government. Several presentations showcased India's progress on digitization and data-driven governance, including many high-impact use cases. This report includes all of the presentations shared at the Forum, as well as an Executive Summary of the discussions. We hope that it will be a useful resource for those interested in learning more about the current status and future plans for data digitization in India.



Suman Bery
Vice Chairman
NITI Aayog



Auguste Tano Kouame
Country Director India
World Bank

PREFACE

The aspiration of becoming Viksit Bharat (Developed Nation) by 2047 has become the main goal of the National Development Agenda set by the Government. Hon'ble Prime Minister of India, Shri Narendra Modi has said that the country can only rise on the strong pillars of the states. Accordingly, NITI Aayog, as the premier think tank of the Government, has transitioned to a more proactive role under its mandate of fostering cooperative federalism to give States a center-stage in this mission.

The 'State Support Mission (SSM)' of NITI Aayog was set up in 2023 with the primary objective of supporting States/UTs to strengthen and institutionalize the ongoing engagement of NITI Aayog with States and UTs, which can act as a multi-disciplinary resource to steer the development strategies in the States/UTs. The Mission set for itself five major objectives, viz. (i) To support interested States/UTs to either establish SITs or strengthen their existing Planning Departments/Boards, (ii) To work with States/UTs in identifying key growth drivers and enablers, and leverage them to boost their economic growth. (iii) To support States/UTs to leverage the expertise of knowledge institutions, development partners, multi-lateral agencies, civil society, academia, etc. (iv) To enable States/UTs to strengthen the Monitoring & Evaluation ecosystem and data analytical systems for evidence-based decision making (v) To create a knowledge platform to enable States/UTs to learn from peers and share good governance and policy practices.

One of the major initiatives taken up by the Mission was to hold a NITI-State Workshop series with a focus on themes relevant to the socio-economic development of the States/UTs and other emerging areas of national and global interest. Under the umbrella of the workshop series, a workshop on "Leveraging State Data Ecosystem for State and District Policy level Policy and Planning" was organized on the 17th of November, 2023 in Lucknow, Uttar Pradesh. The objective is to support the States in developing robust data systems for monitoring and evaluation (M&E) of program outputs and outcomes, macroeconomic analytical work through monitoring of the state economy, and developing a State Data Analytics Platform. This will help to promote evidence-based policy-making and data-driven governance. The workshop brings together various stakeholders from 7 Central Ministries, 18 State Governments, and 3 Academic and think tanks, which present best practices and showcase impactful initiatives in terms of Data Governance, Data Initiative and Data Transformation at the state and district level. The day-long workshop saw state representatives actively debating on ways to establish a robust data ecosystem.

I hope the recommendation of the report will serve as valuable guidance for the states in developing and replicating the best practices and good governance in transforming the state data ecosystem to fulfill the aspiration of a Vikasit Bharat by 2047.



(V Radha)

Additional Secretary to the Government of India

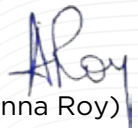
ACKNOWLEDGEMENT

The Data Forum on “Leveraging State Data Ecosystems for State and District Level Policy and Planning” was organized under the overall guidance of Suman K. Bery, Vice Chairperson, NITI Aayog, and Durga Shanker Mishra, Chief Secretary, Government of Uttar Pradesh. Collaboration with the World Bank as the knowledge partner has enriched this workshop’s discussion and deliberation. In developing this report, Thomas Danielewitz, Senior Economist, World Bank, Malarvizhi Veerappan, World Bank, Program Manager, Development Economics, World Bank; Shreya Dutt Mishra, Data Systems Specialist, Poverty and Equity Global Practice, World Bank; and Liankhankhup Guite, Assistant Director, NITI Aayog, made valuable contributions. The drafting of this report by Avik Sarkar and Sonia Chauhan, from the Indian School of Business, is also acknowledged.

This workshop could not have been organized without funding and valuable support from the State Support Mission of NITI Aayog. We are also grateful to Durga Shanker Mishra, Chief Secretary, and Alok Kumar, Principal Secretary of Planning, of the Government of Uttar Pradesh, for their support in hosting this workshop in Lucknow, Uttar Pradesh.

The presentations by and interaction with the central ministries and state governments, as well as those with academics, have brought forth interesting insights and stimulated valuable discussions on the frontier data ecosystem of the country. We acknowledge the participation of the Ministry of Finance; Department for Promotion of Industry and Internal Trade; Ministry of Electronics and IT; Direct Benefit Transfer Mission; Maharashtra Remote Sensing Applications Centre; Lal Bahadur Shastri National Academy of Administration; and the National Statistical Commission.

As states are key in reforming any data system, we acknowledge the participation of the governments of Uttar Pradesh, Andhra Pradesh, Assam, Karnataka, Arunachal Pradesh, Bihar, Goa, Manipur, Meghalaya, Odisha, Tamil Nadu, Uttarakhand, Mizoram, Tripura, Telangana, Rajasthan, Gujarat, and the Madhya Pradesh State Statistical Commission. We also acknowledge the overall coordination and organization of the workshop, which was carried out by Mohd Zubair Ali Hashmi, Director, NITI Aayog, and Liankhankhup Guite, Assistant Director, NITI Aayog. Logistics management and support, including session management, by NDAP PMU and Deloitte, and technical consultation by Object Technology Solutions Inc (OTSI) are also acknowledged.



(Anna Roy)

Principal Economic Adviser, NITI Aayog

ABBREVIATIONS AND ACRONYMS

ACI	Asia Competitiveness Institute
ADP	Aspirational Districts Program
AP	Andhra Pradesh
API	Application Programming Interface
AWS	Automatic Weather Stations
BIMS	Beneficiary Identification and Management System
CDAP	City Data Analytics Platform
CEDA	Centre for Economic Data and Analysis
CM	Chief Minister
CS	Chief Secretary
DDH	Data Development Hub
DDP	District Domestic Product
DEA	Department of Economic Affairs
DiCRA	Data in Climate Resilient Agriculture
DM	District Magistrate
DMU	Data Management Unit
DMEO	Development, Monitoring & Evaluation Office
DBT	Direct Benefit Transfer
EV	Electric Vehicle
FICCI	Federation of Indian Chambers of Commerce and Industry
GDO	Government Data office
GIS	Geographic Information System
GSDA	Ground Water Supply & Development Agency
GST	Goods and Service Tax
GoUP	Government of Uttar Pradesh

GSWS	Grama and Ward Sachivalayam
GDP	Gross Domestic Product
GVA	Gross Value Added
GSDA	Groundwater Survey & Development Agency
HAG	Higher Administrative Grade
IAS	Indian Administrative Service
IDI	Integrated Data Infrastructure
IDMO	India Data Management Office
IDP	India Datasets Platform
IIM	Indian Institute of Management
IMF	International Monetary Fund
ISB	Indian School of Business
ISRO	Indian Space & Research Organisation
JAM	Jan Dhan Account, Aadhar Card, Mobile Data
J&K	Jammu & Kashmir
KYC	Know Your Customer
LBSNAA	Lal Bahadur Shastri National Academy of Administration
LGD	Local Government Directory
LBD	Longitudinal Business Database
MADAT	Monitoring and Assessment of Drought using Advanced Technology
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoC	Ministry of Corporate Office
MRSAC	Maharashtra Remote Sensing Application Centere
MSME	Micro, Small & Medium Enterprise
Meity	Ministry of Electronics & Information Technology
MoSPI	Ministry of Statistics & Program Implementation
NCAER	National Council of Applied Economic Research
NDAP	National Data Analytics Platform

NDGP	National Data Governance Policy
NDMO	National Data Management Office
NDSAP	National Data Sharing and Accessibility Policy
NMP	National Master Plan
NSWS	National Single Window System
NSO	National Statistical Organization
OTSI	Object Technology Solutions Inc
PAHUNCH	Portal to Assess Habitaions Unserved and Needing College or High school
PPP	Public Private Partnership
PMU	Project Management Unit
SMM	Samruddhi Mahamarg
SBR	Statistical Business Register
SDG	Sustainable Development Goals
SITs	State Institution of Transformations
SMP	State Master Plan
SOP	Standard operating procedure
SSM	State Support Mission
TERI	The Energy and Resource Institute
TODP	Telangana Open Data Portal
ULIP	Unified Logistics Interface Program
UNDP	United Nations Development Programme
UP	Uttar Pradesh
UPI	Unified Payment Interface
UT	Union Territory(ies)
UN	United Nations
UN-GGIM	United Nations Global Geospatial Information Management

EXECUTIVE SUMMARY

The Leveraging State Data Ecosystems for State and District- Level Policy and Planning Forum was held on November 17, 2023 at Lucknow, Uttar Pradesh. The Forum was organized by NITI Aayog and the government of Uttar Pradesh, in collaboration with the World Bank. It brought together leading experts, stakeholders, and practitioners from the central and state governments, industries, leading academic universities, and global institutions to explore the latest innovations, challenges, and opportunities in establishing vibrant state data ecosystems in support of the India@2047 vision. The Forum served as a dynamic platform for knowledge exchange, collaboration and innovation, and for fostering dialogue on key themes related to data-driven governance.

The keynote addresses were delivered by the Honorable Vice Chairman of NITI Aayog, Mr. Suman Bery, and the Honorable Chief Secretary of the Government of Uttar Pradesh, Mr. Durga Shanker Mishra; they both emphasized the crucial role of data in good governance and in achieving the goals of the India@2047 vision and associated state efforts.

The agenda was divided into four distinct, but interrelated sessions:

1. Getting the Enabling Environment Right;
2. Transforming Data into Knowledge - Achieving the India@2047 Vision;
3. Transforming Data into Knowledge - Proactive and Preemptive Governance; and
4. Experiments on Data Dissemination and Promoting Analytics.

The first session on **Getting the Enabling Environment Right** featured presentations by distinguished speakers who spoke about the technological infrastructure, regulatory frameworks, data governance architecture, and skills needed for data initiatives that can add value to governance, service delivery, and planning.

In 2012, the Indian government launched the Open Data Initiative with the aim of promoting the transparency, accountability, and accessibility of government data. A National Data Sharing and Accessibility Policy (NDSAP) was adopted; NDSAP introduced the open government data platform, data.gov.in; standard operating protocols (SOPs) for data standardization; and the criteria for ensuring the quality of datasets.

Despite early successes, the national data ecosystem is still characterized by silos. Often there is a lack of uniform, harmonized procedures for collecting, curating, and sharing data. A new National Data Governance Framework Policy (NDGP) that aims to address the shortcomings of existing policies has been introduced. Under this new policy, the India Data Management Office (IDMO) will be created to develop rules, standards, and guidelines for data collection, curation, storage, and sharing. Several states are contemplating similar initiatives at the state level. The data management offices, which would be staffed by a Chief Data Officer and teams of data scientists, would have the overall responsibility for data standards; define rules for data-sharing; and develop use cases

to extract value from data. This session also featured international examples of data governance frameworks in countries like Australia, Denmark, New Zealand, and Singapore.

The second session, **Transforming Data into Knowledge**, focused on how data can bolster the India@2047 vision. Presenters gave examples of how administrative data, integrated with surveys and censuses, can enhance local planning at the district level. A standout example is the Prime Minister's Gati Shakti National Master Plan, which was initiated in 2021. This plan utilizes innovative geospatial information systems to streamline economic and social infrastructure planning and management at the local level. When combined with local statistical data, this approach has the potential to significantly enhance information for evidence-based planning and monitoring at the local level. Many specific use cases were given, from disaster risk management to the building of schools in underserved areas, and the identification of locations for new charging stations for electric vehicles.

However, presenters also recognized the ongoing and persistent challenge of obtaining high-quality statistical information below the state level. Uttar Pradesh and other states are adopting a bottom-up methodology to assess the local economy, evaluate its growth potential, and pinpoint critical growth industries and sectors. This methodology involves combining traditional data sources like surveys and censuses with the growing availability of administrative data sources such as business registers, and transactional data like the goods and services tax (GST) database. The integration of survey and administrative data in combination with geospatial data has enormous potential for revolutionizing the subnational data ecosystem.

The third session focused on using data systems for **Proactive and Preemptive Governance**. Presenters gave examples of how data can be used to improve service delivery to citizens and businesses. One notable example of this is the Direct Benefit Transfer (DBT) system, which seamlessly links data systems such as Aadhar, the Local Government Directory (LGD), and social registries. It uses these linked data to precisely target eligible beneficiaries, ensuring the transparent and efficient delivery of subsidies and other services. It is estimated that the DBT system has reduced leaks to the tune of 275,000 crore rupees, or 1.1 percent of GDP. Some states are using geographical information systems to proactively enhance citizen delivery services by geotagging beneficiaries and social, economic, and environmental assets. For example, in Andhra Pradesh (AP), the state government has built a network of technology portals combining data on the Sustainable Development Goals (SDGs) using the AP Seva Portal and the Navasakam Beneficiary Portal to identify underserved areas in need of improvement.

State remote-sensing agencies play a pivotal role in developing and deploying GIS tools for planning and service delivery. The Maharashtra Remote Sensing Application Centre (MRSAC) showcased a range of geospatial use cases for data, including transport, water resource management, soil and water conservation, crop mapping, and agricultural predictive analysis.

The concluding session of the Forum was focused on **Data Dissemination and Knowledge Generation**. This session emphasized the significance of making high-quality data and information accessible in machine-readable and user-friendly formats wherever and whenever needed. Meeting the diverse needs of data users, including government planners, administrators, researchers, media, and the public, requires tailored delivery mechanisms and formats. This session explored various methods for data dissemination and analytics, drawing on experiences from several states. These included “Chief Minister Dashboards” that provide high-level overviews of key statistics and performance indicators by district. Open-data platforms like data.gov.in and the National Data Analytics Platform (NDAP), along with initiatives targeting aspirational blocks and districts, were also highlighted as examples. A key takeaway from these discussions was the importance of adaptability and user-centric design in developing and sustaining such platforms. Looking ahead, as India advances its data agenda, there will be a growing need for increasingly specialized data platforms, such as the City Data Analytics Platform (CDAP), and a dedicated Gender Portal, to meet the evolving needs and priorities of diverse users.

The Forum provided a unique platform for policy makers, officials, data scientists, statisticians, researchers, and other experts to convene and take stock of India’s rapidly evolving public sector data landscape, and to share their experiences and best practices. As the first event of its kind focusing solely on state data ecosystems, its success was evident through the active engagement of presenters, organizers, and the audience. Given the immense interest in this topic, NITI Aayog and the World Bank hope to make the Data Forum a recurring event, so that additional data success stories can be shared, and knowledge exchange between states and the Center can be fostered.

Harnessing the momentum gained from this inaugural Data Forum can drive forward the transformative potential of data-driven governance. Working together, we can continue to champion innovation, collaboration, and transparency, and ensure that data remains a force for positive change, prosperity, and equitable development across all sectors and regions.





INTRODUCTION

To mark the 100th anniversary of India's independence, the Honorable Prime Minister Narendra Modi has envisioned reaching Viksit Bharat (Developed India) by 2047. This ambitious vision aims to complete India's transformation into a prosperous, equitable, and sustainable nation. Key aspects of the plan include robust economic development through the achievement of a \$30 trillion economy by 2047; making India a global economic powerhouse; promoting innovation and entrepreneurship; and creating millions of jobs across various sectors.

The vision of India as a Viksit Bharat involves creating an ecosystem that meets the aspirations of all citizens to achieve a living standard that meets basic socioeconomic parameters. It aims to ensure universal access to quality education and health care for all citizens; eliminate poverty and inequality; empower women and girls to reach their full potential; build a world-class infrastructure in the transportation, energy, and communication sectors; and develop smart cities that are sustainable and livable, while connecting rural and urban areas in order to promote balanced social development.

Furthermore, India aims to become a leader in emerging technologies like artificial intelligence, renewable energy, and biotechnology, and to leverage this technology to solve social and economic challenges, and to develop a robust digital infrastructure that supports e-governance and the digital economy. Viksit Bharat also aims for environmental sustainability by transitioning to clean energy sources to combat climate change; protecting and conserving biodiversity for future generations; and promoting sustainable practices in agriculture, industry, and other sectors.

The roadmap to achieving Viksit Bharat by 2047 will involve:

- **Strong political leadership** and commitment from the government;
- **Effective implementation** of policies and programs;
- **The active participation of all stakeholders**, including citizens, businesses, and civil society;
- **Continuous innovation**, and adaptation to changing circumstances.

Evidence-based decision-making for policy makers and governments is crucial in attaining the goals of Viksit Bharat. India has a rich data ecosystem that generates invaluable data that can be used for decision-making and research. We have witnessed the increasing role of digitization, and how data can assist in planning and decision-making during the COVID-19 pandemic; in the success of unified payment interface (UPI); in the rollout of the Direct Benefit Transfer (DBT) program, and in the extensive Good and Service Tax Network (GSTN) Network. The efficacy of targeted support under various government schemes where beneficiaries are identified on specific parameters has been demonstrated by the steep decline reported in the number of multidimensionally poor, from 29.17 percent to 11.28 percent from 2013-14 to 2022-23, as reported in the discussion paper on Multidimensional Poverty in India that was released on January 12, 2024.

The Aspirational District Program (ADP) has demonstrated the successful use of data as a crucial tool for informed decision-making, efficient resource allocation, and targeted interventions aimed at improving the key development parameters of the chosen districts.

Along with these initiatives, the foundational bedrock of the National Data Governance Framework Policy by the Ministry of Electronics & Information Technology (MeitY), and the National Policy on Official Statistics by the Ministry of Statistics & Program Implementation (MoSPI) are under development; they will streamline and integrate the data ecosystem of the country.

Based on the success of these projects, the Aspirational Blocks Program has recently been launched by NITI Aayog in order to enable development at the block level. Over the last few years, the central government has spearheaded several initiatives, but there is a different level of intensity in activities at the state and district levels. The National Data Analytics Platform (NDAP), which aims to improve access to and discoverability of published government datasets in an open, standardized, and coherent manner, was also recently launched by NITI Aayog. Under NDAP, states like Karnataka and Meghalaya have developed a State Data Analytics Platform along similar lines.

In order to institute a dialogue on key aspects of the country's data ecosystem, best practices, and how to arrive at a common minimum agenda among all constituents at the state and central levels, NITI Aayog held the Data Forum described in this report under its State Support Mission in Lucknow, Uttar Pradesh. This forum was organized with the government of Uttar Pradesh and with support from the World Bank. It aimed to bring relevant actors together at the central and state levels to discuss common interests relevant to the data agenda, and to share knowledge on recent experiences and good practices. It is intended to be the first in a series of regular events to discuss progress toward building an evidence-based decision-making support system for policy and planning.

The four sessions of this inaugural forum were:

- Session 1: Getting the Enabling Environment Right
- Session 2: Transforming Data into Knowledge - Achieving the India @2047 Vision
- Session 3: Transforming Data into Knowledge: Proactive and Preemptive Governance
- Session 4: Experiments on Data Dissemination and Promoting Analytics

This report summarizes the content covered during these sessions, and presents recommendations that state governments and their officials can adopt going forward.

INAUGURAL SESSION



Suman Bery
Vice Chairman (VC),
NITI Aayog



Durga Shanker Mishra
Chief Secretary (CS),
Uttar Pradesh (UP)



Avinash Awasthy
Advisor to CM,
Uttar Pradesh (UP)



Alok Kumar
Principal Secretary, Planning,
Uttar Pradesh (UP)

The purpose of the inaugural session was to introduce participants to the broad landscape of the use of data for improving policy making and governance at the state and district level. Speakers in this session included:

- Suman Bery, Vice Chairman (VC), NITI Aayog
- Durga Shanker Mishra, Chief Secretary (CS), Uttar Pradesh (UP)
- Avinash Awasthy, Advisor to the Chief Minister (CM), Uttar Pradesh (UP)
- Alok Kumar, Principal Secretary, Planning Department, Uttar Pradesh (UP)
- Anna Roy, Principal Economic Adviser, NITI Aayog
- Hoon Sahib Soh, Practice Manager, World Bank





Suman Bery
Vice Chairman (VC), NITI Aayog

Suman Bery is currently Vice Chairman, NITI Aayog, with the rank and status of a Cabinet Minister. An experienced policy economist and research administrator, he took over as NITI Aayog Vice Chairman on May 1, 2022. At the time of his appointment, he was a Senior Visiting Fellow at the Centre for Policy Research, New Delhi; a Global Fellow in the Asia Program of the Woodrow Wilson International Center for Scholars in Washington DC; and a nonresident fellow at Bruegel, an economic policy research institution in Brussels.

Keynote Address

In line with the Honorable Prime Minister's Vision for a Viksit Bharat by 2047, this workshop is an effort to foster cooperative federalism. The important role of data in policy making was witnessed during the COVID pandemic, as well as across multiple initiatives of NITI, such as the National Data Analytics Platform (NDAP) and the Aspirational Districts Program, as well as the data-based monitoring of central sector schemes by the Development Monitoring & Evaluation Office (DMEO) at NITI, among others. A data-driven paradigm will promote initiatives that aggregate data at different levels of granularity, by engaging with states.

NITI has launched the NITI for States initiative, an umbrella mechanism through which NITI Aayog assists states and UTs in developing capabilities in designing, implementing, and monitoring development strategies for achieving green, resilient, and inclusive growth. Underlining the importance of dialogue and deliberation, a NITI Task Force on the Indian Statistical System has provided a platform for bringing together various stakeholders in the data ecosystem. The Working Group on Business Statistics constituted as part of the Task Force has already made considerable progress, in collaboration with various central government ministries and the World Bank.

Underscoring the importance of data analysis and dissemination, NDAP has vastly improved the analytical value of published government data in a user-centric manner. Central and state governments generate valuable data at every level; however, thus far it largely exists in silos, creating challenges for its optimal use and dissemination.

States are encouraged to partner with NITI for showcasing and disseminating best practices. The importance of district-level planning -- a bottom-up approach of data collection and compilation leading to analytics -- should be undertaken uniformly across states. NITI Aayog will continue to extend support to all state governments for building a robust data ecosystem, under the aegis of the State Support Mission.



Durga Shanker Mishra
Chief Secretary (CS), Uttar Pradesh (UP)

Durga Shankar Mishra is the Chief Secretary of Uttar Pradesh. He is a 1984 batch Indian Administrative Service (IAS) officer of the Uttar Pradesh cadre. He was Housing and Urban Affairs Secretary, and Chairman of the Delhi Metro Rail Corporation from June 21, 2017 - December 29, 2021.

Inaugural Address

The government of Uttar Pradesh (UP) has an ambitious mission to become a \$1 trillion economy by 2027-28, leading to massive development within the state, thereby accelerating India's economic growth. "Strengthening Data Systems" is one of the core pillars toward achieving the target of a \$1 trillion economy for the state. To this end, access to reliable, frequent (monthly or quarterly), as well as granular (district or block-level) data is the cornerstone for creating a robust monitoring and planning system.

The availability of granular data becomes critical for informing district-specific policies and planning. For instance, the availability of disaggregated data allows district officials to know how their district is faring and where they should focus their efforts. If there is a lack of adequate data, or it is available only at infrequent intervals, it is less helpful in understanding whether a policy is working.

The states face several challenges in accessing reliable data (especially monthly or quarterly data) at the district or subdistrict level, or data that is disaggregated by sectors. For instance, if the GDP data comes only every quarter and after a time lag of two months, it isn't as helpful in measuring economic activity as it would be if the data were available more frequently. Furthermore, concerns regarding the quality of data leads to a low level of trust in government data. Finally, states aren't able to measure all of their economic activities, specifically those in the informal or digital sectors, if they aren't fully captured by traditional economic measurement methods.

The Planning Department has been at the fulcrum of efforts to address some of these challenges, improve data collection and monitoring, and analyze available data for better insights. The government of UP (GoUP) has been estimating the District Domestic Product (on the lines of GDP) for 75 districts of UP. At the state level, GoUP is taking the principle of competitive federalism to the districts; it wants to empower District Magistrates (DMs) to become district CEOs with tools to monitor their performance. Monthly review meetings at the district level will further facilitate the ability to do this. GoUP is also engaging with multiple knowledge partners to achieve our mission of \$1 trillion and effective monitoring - thus highlighting the key role of external partners like NITI Aayog, and academic institutions, toward state development.

In this regard, GoUP has been undertaking innovative steps to use digital systems and make targeted interventions. This is visible in the Aspirational Blocks Program, which was started by GoUP, and scaled nationally by NITI Aayog. GoUP has seen more effective functioning due to data systems, including tracking files digitally, monitoring flagship schemes and initiatives through dashboards, and listing all budget data on a portal (Koshvani) for public access.

In this manner, Uttar Pradesh is benefitting from its robust mechanism for data collection. This includes a dedicated division for data and monitoring and a district-level infrastructure including personnel deployed in each of the 826 blocks. UP was ranked 2nd in DBT Ranking by the government of India in 2022. With support from NITI Aayog's State Support Mission, the Planning Department is in the mature stages of conceiving a State Transformation Commission for UP that responds to its specific needs. The government of UP has also transitioned from pen-and-paper-based data collection to digital tools to smoothen this process and strengthen data quality. To this end, GoUP has procured electronic tablets for all of the state's enumerators.

"LEVERAGING STATE DATA ECOSYSTEM FOR STATE & DISTRICT LEVEL POLICY AND PLANNING"

in presence of

Shri Suman Bery
Vice Chairperson
NITI Aayog

Shri Durga Shanker Mishra
Chief Secretary
Govt of Uttar Pradesh

17 Nov 2023



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SESSION 1:

Getting The Enabling Environment Right



Session Chair
Prof. Rajeeva Laxman Karandikar
Director of Chennai Mathematical Institute

PANELISTS



Abhishek Singh
Additional Secretary,
MeitY



Paul Cheung
Former Chief Statistician of
Singapore and Director of the United
Nations Statistics Division



Pravin Srivastava
Chairman,
Madhya Pradesh
State Statistical Commission



Dayanandam
Director,
Government of Telengana

SESSION CHAIR



Rajeeva Laxman Karandikar
Director of Chennai Mathematical Institute

Professor Rajeeva L. Karandikar is currently the Chairperson of the National Statistics Commission and Professor Emeritus at Chennai Mathematical Institute. Rajeeva obtained his PhD at the Indian Statistical Institute, Kolkata in 1981. He spent some years as a visiting professor in the USA and returned to the Indian Statistical Institute, Delhi, in 1984 as an Associate Professor. He became a full professor in 1989 and served as Head of the Department of Mathematics and Statistics at the Institute, and as Head of the Delhi Centre of the Institute. He was the Director of Chennai Mathematical Institute, Chennai, India, from 2011 until 2021.

Opening Remarks by Prof Rajeeva Laxman Karandikar, Session Chair.

When governments and policy makers make decisions based on data, they can achieve more effective and holistic results. This makes data a high-value asset throughout the globe. India is on a mission to become a developed nation by 2047 based on a data-driven economy within the next few decades. However, certain aspects of the data ecosystem regarding collation, sharing, and dissemination must be revamped in order to take advantage of the underlying data.

India is the most populated country in the world. This means that there is extensive human capital generating unmatched quantities of data. At the same time, it urges the creation of public systems that can harness this data to help govern citizens efficiently and bring them on board with our dream of a digital economy.

To make use of its full potential, India's data ecosystem needs some revamping. As a first step, an organized way must be developed to collate, process, and share data within governmental set-ups. India does have an open government data portal, data.gov.in, which stores high-level data shared by different ministries; but it lacks continuity, completeness, and granular data. India currently lacks the institutional frameworks needed to oversee and manage this data-sharing.

Also, supporting structures for data-sharing, such as metadata standards and citizen privacy protections must be created during data-sharing. Presently, most data-sharing initiatives are undertaken in silos within a particular ministry or department, or through a few states sharing data through a state data portal. There is no real inter governmental data-sharing taking place on a large scale. Further, there are no appropriate mechanisms for data discovery because there aren't any dedicated data departments, or teams within departments or ministries that can cater to the



precise data needs of the government. There is, therefore, a definite need for a national-level data governance policy that covers all the above.

This session provides an overview of best practices in data-sharing and management in several countries. **Singapore**, for instance, is one of the most data-forward nations in the world. Several of their government ministries have data centers. They have a clearly defined data-sharing strategy, and have drafted legal and regulatory considerations, including technical and organizational considerations concerning data-sharing. Data-sharing is done with transparency, accountability, legal compliance, retention, and data disposal in mind. Singapore also has a Government Data Office that implements data strategy. Data scientists and chief data officers oversee the framework of data governance. Data custodians and data stewards work under them, performing specific roles relating to data management.

New Zealand has a unique approach to data management. They have developed an Integrated Data Infrastructure (IDI) that merges data from various sectors, and a Longitudinal Business Database (LBD) that contains financial and agricultural data. **Australia** is also strengthening its data strategy and building a niche for data specialists.

Learning from the above examples, MeitY have developed a robust digital governance framework with a defined structure, and precise definitions and work processes.

Creating trust and maintaining citizen privacy are some of the critical challenges in governing data and developing a data-sharing infrastructure. Other challenging aspects can be ensuring that the data quality is maintained while sharing, merging, and dissecting datasets; continuously updating data sets and ensuring that they can adapt to an ecosystem of constant change; and deciding which data to retain. The supervision of data infrastructure and constant reporting to ensure that all standards are being met are additional challenges.

An integrated data-cum-statistics approach can help in navigating these challenges because the country's statistics departments have the most experience holding and managing historical data across states, sectors, and divisions. MeitY has proposed a simple, straightforward solution in the form of a National Data Governance Policy (NDGP). First an institutional framework must be developed to govern data management. There will be sector-specific management units within ministries and departments, with a definite hierarchy of officers whose sole responsibility will be to take care of all aspects related to governing data. Some states have adopted an open data policy with data governance methods for storing data, data-sharing between ministries, and the development of open data portals, as demonstrated in the state of Telangana.

Telangana is greatly committed to data-driven governance. In 2016 they adopted an Open Data Policy, and in 2017 they created a portal called Open Data Telangana which contains high-value datasets on various sectors within the state. Open Data, by definition, means data that can be freely used, reused, distributed, and redistributed for analysis and innovation. Telangana's government has uploaded freely available data and resources onto their portal in a machine-readable format that citizens, researchers, and organizations can read and use. All datasets are updated monthly so that the latest information is available. Open Data Telangana furthers transparency, because all of the data is freely available to the public. It aids collaboration between interested third parties, including government departments--for example, between Transportation and City Planning--to achieve cross-perspective and drive successful projects that lead to development in the state. An interesting example is the AI4AI project, which brought together climate data with agricultural patterns to further food initiatives.

The talks and presentations in this session will highlight some of the gaps in the current ecosystem, and international best practices for sharing and managing data, along with a proposed approach to enabling a robust data ecosystem.



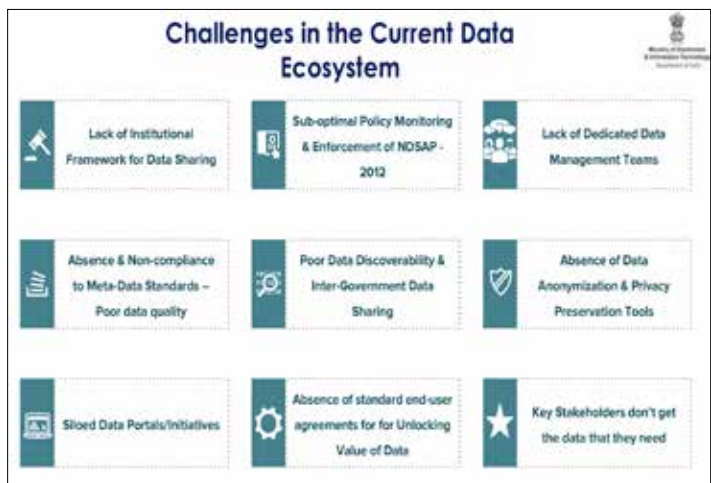
Abhishek Singh
Additional Secretary, MeitY

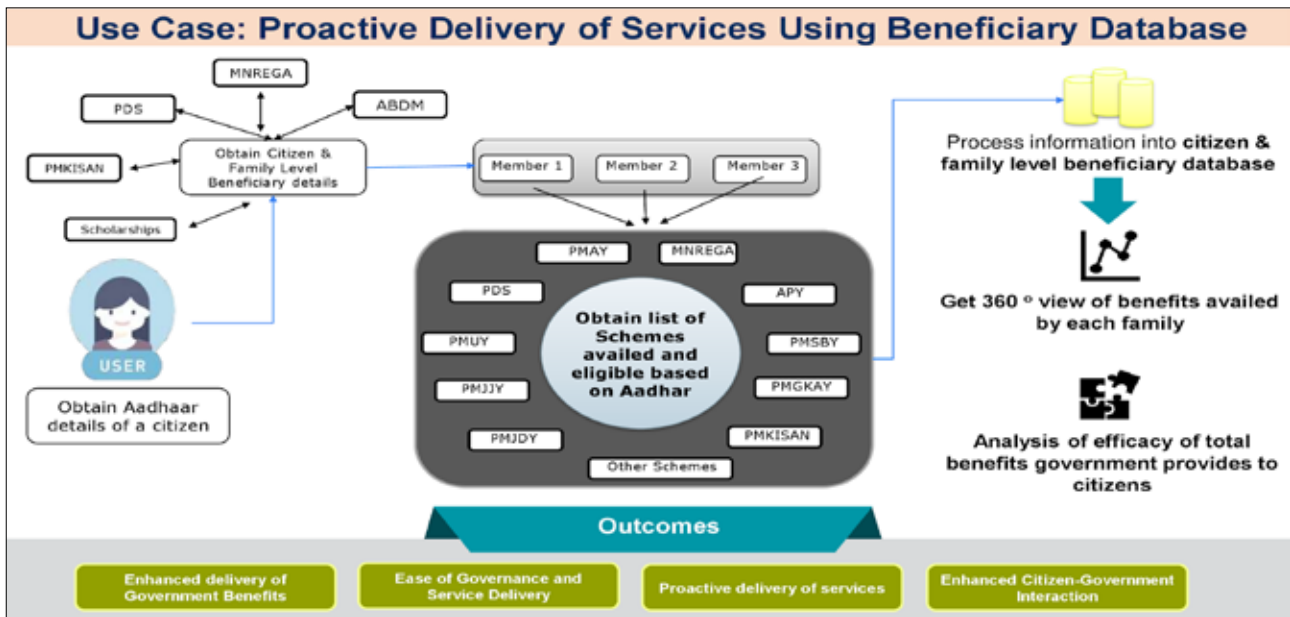
Abhishek Singh is a Civil Servant with 27 years of experience in governance and policy formulation. He specializes in the use of technology for improving governance. In his role as President & CEO of the National e-Governance Division, and MD&CEO of Digital India Corporation, he leads major Digital India Initiatives, including projects in the field of artificial intelligence and emerging technologies, and he oversees India’s artificial intelligence program. He has been involved in several e-governance initiatives, and has firsthand experience in using data for economic growth and policy making.

Building Blocks for Data Governance

In line with the vision of the Honorable Prime Minister of India to have a data-driven economy, the aim is to hold data as a high-value commodity and use the huge volumes of data created by India’s growing digital population to improve current public systems, develop future policies, and foster a digital economy. That said, there are definite challenges in our current data ecosystem. The key challenges noted are lack of institutional frameworks for data-sharing; lack of metadata standards; siloed data initiatives; poor mechanisms for data discovery and intergovernmental data-sharing; and lack of dedicated data teams.

MeitY has proposed developing the **National Data Governance Policy (NDGP)** to mitigate these challenges, by enabling intragovernmental data-sharing for economic benefit and inclusive growth. The policy aims to enhance the quality and use of nonpersonal data so that governments and researchers can access high-quality data while ensuring privacy and trust. The following actions are suggested to further operationalization of the policy:





- An institutional framework is needed, to bind and govern data management and processing. A **National Data Management Office (NDMO)** that will oversee the availability and quality of datasets, and how they are accessed, stored, and made available to and used by various third parties should be set up.
- Sector-specific management units to implement the above governing framework should then be established. Every ministry must have a **Data Management Unit (DMU)** headed by a Chief Data Officer. This unit will curate high-quality, accurate datasets of the ministry, and chalk out a data strategy in line with the standards prescribed by the National Data Management Office.
- Once the datasets are in place, there should be programs and platforms to help catalyze research and innovation. The **India Datasets Program** should identify and curate datasets by government ministries and private entities to further AI research and to disrupt the existing technology ecosystem in India. This could be done by the **India Datasets Platform (IDP)**, which will provide a real-time interface where these authenticated, anonymized, and meta standard-complying datasets are uploaded and maintained.
- MeitY also aims to improve public service delivery by integrating the beneficiary database across multiple central schemes of the government. This would be achieved by accessing and processing information from citizen and family-level beneficiary databases, where a 360-degree view of the benefits received by each family can be accessed and acted upon. Already, the Aadhaar Card has been linked with various central government schemes, which allows government departments to access the schemes availed by the beneficiary. This will enhance the delivery of government benefits, ease of governance and service delivery, enable proactive delivery services, and enhance citizen-government interaction.



Paul Cheung
Former Chief Statistician of Singapore,
and Director of the United Nations Statistics Division

Paul Cheung is the Director of the Asia Competitiveness Institute (ACI) and Professor in Practice at the Lee Kuan Yew School of Public Policy, National University of Singapore. Professor Cheung served as the Director of the United Nations Statistics Office from 2004 to 2012. As the Chief Statistician at the UN, he facilitated the development of the global statistical system, and was responsible for implementing UN mandates on geospatial data and analytics. In 2011, the UN endorsed Professor Cheung's initiative of establishing an intergovernmental platform to address issues on Global Geospatial Information Management (UN-GGIM).

Frontiers of Data-Driven Decision Support Systems

Looking at various data and statistical modernization projects in Singapore and other nations reveal that there are key factors that are critical for the success of such projects. One is that governments aim to foster a cohesive data ecosystem by combining multiple data streams. This approach is reflected by various nations in their data strategies, as can be seen from the following examples:

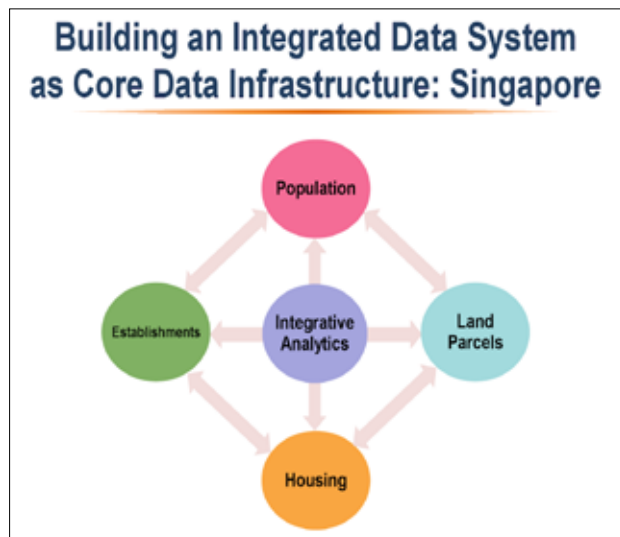
Singapore

- The key principles for Singapore's data ecosystem are viewing data as a service with the continuous addition of new data sources, secure data exchanges, and knowledge generation. Currently, data centers exist for several ministries and private entities in Singapore.
- Data-sharing consists of four essential parameters:
 - **Data-Sharing Strategy:** Data models, and the value of data, are properly understood;
 - **Legal and Regulatory:** Data-sharing contracts are developed;
 - **Technical and Organizational Data-Sharing;** Understanding the considerations; and
 - **Operationalizing Data-Sharing:** Transparency, accountability, legal compliance, and the retention and disposal of data.
- Singapore's governance system focuses on four key aspects: Leadership and Intent, Technical Standards, Custodianship, and Sharing.

- The Government Data Office (GDO) implements a data strategy. Civil servants are trained in data science so they can navigate the ecosystem. A Data Science and Chief Data Officer is appointed to oversee the competency framework for civil servants.
- To support the data infrastructure, data custodians perform specific roles like collecting, managing, storing, and ensuring data quality. Data stewards are professionals who oversee the data production process.

Singapore has developed an integrated data system called the Singpass myinfo, which is a digital identity for all Singapore citizens and residents that allows them to access over 460 government agencies and businesses with 1,700+ digital services, both online and in person.

- With Singpass Myinfo integration, users can easily access their personal data and control how it is shared with private and public sectors securely. By giving consent through Singpass, users can share their information without the need for manual data entry, leading to better data quality and “instant” approvals. Myinfo retrieves data from various government sources, streamlining the “Know-Your-Customer” (KYC) process for businesses, and eliminating the need for customers to provide additional verification documents.
- Businesses can leverage Singpass Myinfo integration API with their own digital services, enabling more efficient and more instant provision of products; an improved customer experience; and increased customer satisfaction.



New Zealand

- The government’s principles are: Investment in making the **correct data** available at the right time; **transparent processes**; and **intra- and intergovernmental partnerships**.
- Integrated Data Infrastructure (IDI) ensures the amalgamation of data from various sectors (education, housing, etc.); the Longitudinal Business Database (LBD) contains financial, agricultural, and other data. The IDI and LBD are linked through tax data.

Denmark

- Denmark specifically focuses on **making data usable and reusable across authorities and sectors**. The aim is to create digital solutions of strategic importance to society.
- The foundation is **transparent and high-quality data sources** consisting of digital base registers on people, businesses, addresses, and buildings, supplemented by a network of secondary interoperable sectoral registers. Digital infrastructure has been built to facilitate seamless data exchange and integration for users with varying access levels.

Australia

- In 2020, Australia launched its Data Profession Strategy with the aim of strengthening the professionalism and talent acquisition of data scientists across government.



Pravin Srivastava
Chairman of the Madhya Pradesh State Statistical Commission

Pravin Srivastava currently serves as Chairman of the Madhya Pradesh State Statistical Commission. He superannuated from the Indian Statistical Service as Chief Statistician of India and Secretary, Government of India in the year 2020 after rendering 37 years in the Indian Statistical System. He has provided statistical leadership to the country and led teams in subjects of official statistics, statistical analysis, macroeconomics, information technology systems, web portal systems, business process restructuring, and so on.

Data Governance Architecture

The data initiatives for improved decision-making in several states suggest the strong need for data governance. Data governance enables states to use data as a true asset that not only supports informed action, but is also compliant with defined rules aligned across organizations. For this, a cross-organizational framework that will be a mechanism for controlling and trusting data is suggested.

From an organizational perspective, a data governance framework protects the needs of stakeholders, creates processes and standards, and reduces operational friction.

A strong data governance program has a **defined structure**

(Data Governance Board, data stewards, review boards, etc.); **definitions** (described in handbooks, mission, and scope); and **work processes** (communication, culture, and continuous improvement).

The Data Governance Board should contain the heads of all relevant departments. They should have monthly meetings, and should set guiding principles, and actionable agenda items, with timelines. In line with this, the Data Steward Workgroup should have the core responsibilities of managing metadata; ensuring high quality; communicating changed data requirements; determining the need for the retention of data; overseeing data analysis; and reporting on all of the above aspects. The Workgroup should report to the Data Governance Board.



Data governance can crystalize many gray areas in the sector. It manages data, controls quality, audits, and extends to post-secondary data. It also fosters consistent communication among external stakeholders. Trust is a big factor that links all of this. **Five principles of trustworthiness** are suggested that are used for official statistics as well:

- Necessity and proportionality;
- Professional independence;
- Privacy;
- Quality; and
- National and international comparability.

Statistics Approach

- The United National Statistics Division (UNSD) manages its data through built-in processes. The National Statistics Office acts as Data Steward, based on clear governance principles. Privacy is upheld and a holistic approach to data and policies is encouraged.
- A simple yet clear hierarchy while defining data governance can be seen in this way: Executive Leadership (Chief Minister /Chief Secretary level), Governance Board (State Planning Commission / NITI), Data Owners (Departments), Data Steward Workgroups (Chief Data Officer / IT Team).
- For example, in Madhya Pradesh, the MP State Statistical Commission was established to coordinate data flow across departments. After capacity building, they generated their District Domestic Product using a bottom-up approach. This is how they created a state-level Statistical Business Register.



Presentation by the Government of Telangana on Open Data Telangana

Open Data Telangana

Open Data Telangana stands out as a pioneering effort by the state government to provide structured, machine-readable access to government-held data. This initiative, which spans the health, education, agriculture, energy, industry, and urban development sectors, aims to bolster transparency, empower citizens, and drive economic growth through data-driven innovation. By making vast repositories of information publicly available, the government is nurturing trust and engagement with its citizens.

The Innovation: While the concept itself might not be new, what sets this portal apart is its monthly updates for many granular datasets; superior filters for data discoverability; ease of navigation; Application Programming Interface (API) interoperability; unique datasets; and various applications and models that can be built out of the data from this portal, which features global standards, policy-backed procedures, and user-centric norms.



The Open Data portal expanded even further, with over 3,535 resources available, updated up to the most granular level every month. Start-ups and not-for-profit organizations can actively use the data for various projects. Collaborations with organizations such as the World Economic Forum, UNDP, and the Agri AI start-ups have strengthened the use of open data in initiatives related to agriculture and food systems.

Being an open data portal that ensures transparency and cross-perspective, TODP drives collaboration between state departments, for example between Transportation and City Planning (General Transit Feed Specification); health care and tech collaborations; and the use of weather data to predict emergencies and facilitate the provision of real-time help. TODP regularly collaborates with international forums to drive innovation and better policies. Some examples are the Saagu Baagu AI4AI Project to harness agri innovation, and DiCRA (Data in Climate Resilient Agriculture) with UNDP, to develop a “data for policy” food initiative on food systems.



SESSION 2:

TRANSFORMING DATA INTO KNOWLEDGE - ACHIEVING THE INDIA @2047 VISION



Session Chair

Thomas Danielewitz

Senior Economist/Statistician for World Bank
Poverty and Equity Global Practice in the South-Asia Region

PANELISTS



Arthur Giesbert

Statistician/Economist
at the World Bank's Development
Data Group



K.V.Raju

Professor Emeritus
at Chanakya University,
Bengaluru, India



Pallavi Choudhuri

Senior Fellow at the
NCAER-National Data Innovation
Center



Surendra Kumar

Joint Secretary,
Department of Commerce,
Ministry of Commerce & Industries

SESSION CHAIR



Thomas Danielewitz
Senior Economist/Statistician for World Bank
Poverty and Equity Global Practice in the South-Asia Region

Thomas Danielewitz is a senior economist/statistician for the World Bank Poverty and Equity Global Practice in the South-Asia Region posted in Colombo, Sri Lanka. He joined the World Bank in 2008 and is an economist by training. He has been Task Team Leader for numerous World Bank lending projects and advisory tasks within data and statistical system development across several regions in the Bank. Currently, he coleads the World Bank's Global Solutions Group on Statistical Modernization, and the StatCap Community of Practice. Before joining the World Bank, he worked as an economist at Statistics Denmark, where he was responsible for national accounts, government finance statistics, and technical assistance projects.

Opening Remarks by Thomas Danielewitz, Session Chair

The main value of data is its ability to inform decision-making. Data has the potential to provide facts and insights about society, the economy, and the environment that decision-makers need to make informed choices. It helps us to understand trends, patterns, and relationships that may not be apparent otherwise, and it can help drive resource allocation more efficiently by identifying areas where resources are being underutilized, or where there is a need for additional resources. We live in a world with an abundance of data. However, a key challenge is transforming those raw numbers into information and actionable knowledge. This session highlights some of those challenges and some potential use cases.

Most public sector data is collected through administrative registration and transactions with citizens and business, as well as through periodic surveys and censuses. These data sources have different strengths and weaknesses vis-a-vis decision-making. **Surveys** can be tailored to respond to the exact needs of policy makers, but they are collected infrequently, sometimes only annually or every five years; and they take time and effort to implement. Survey data can also be riddled with bias due to nonresponses, making the findings inaccurate. **Administrative data**, on the other hand, is freely available as a by-product from interactions with citizens and businesses as well as internal government operations. However, administrative data is often unstructured, and can suffer from a range of issues including lack of uniform standards, storage, and exchange. Moreover, it does not always respond to the exact topic of interest to policy makers, and is generally harder to transform into useful knowledge compared to a well-designed survey. However, the combination of survey

and administrative data has the potential to yield new and faster insights to help decision-making, especially at the local level.

Districts are recognized as India's growth engines. Hence, in-depth district-level planning is needed to accelerate the country's overall growth. Just as nations measure the value added by goods and services in a year through GDP, districts can do this by calculating their District Domestic Product (DDP), which is the total value added of goods and services produced within the territorial boundaries of a district. To manage economic growth, districts must have a system to estimate DDP for the district as well as for key industries. To arrive at DDP, states must use administrative data sources, since few surveys are detailed enough to be representative at that level; there are a few strategies that can be implemented to estimate DDP through the combined use of administrative data and surveys.

Another important mechanism that can be used to turn data into insights is the combination of statistical and geographical information. A prime example is PM Gati Shakti, a digital initiative by the central government to improve infrastructure planning across various ministries. Gati Shakti contains a National Master Plan (NMP) and a State Master Plan (SMP), including a geo-referenced collection of over 300 central, state, and UT government projects. The session also delves upon the utilization of PM Gati Shakti to drive decision-making through power of data.



Arthur Giesbert
Statistician/Economist at the World Bank's Development Data Group

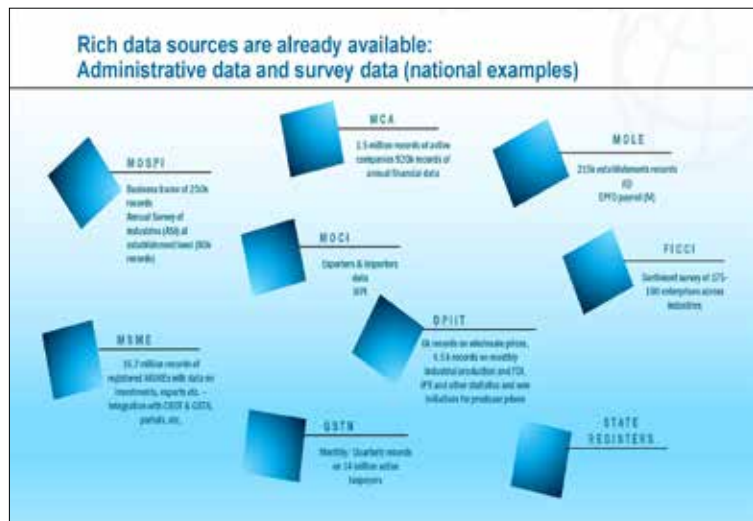
Arthur Giesbert has been working as a Statistician/Economist at the World Bank's Development Data Group since April 2019. His main responsibilities include developing methodologies and instruments in the field of business statistics, and providing technical assistance, training, and capacity building. He mostly works with and for national statistical institutes in close cooperation with other departments in the World Bank. The immediate outputs of his work are new, improved, or more timely business statistics, and better inputs to national accounts.

Towards District GDP: Leveraging (Regional) Business Statistics for State and District-Level Policy and Planning

The calculation of annual District GDP will give a breakdown of each district's progress in a state; this can be calculated by using a Supply and Use table. **Supply** includes the output of all industries and imports, while **Use** contains consumption, exports, and investments. To achieve this, many variables must first be consolidated and then used.

Another way to arrive at District GDP might be a generic work program in business statistics combined with national accounts. This is a feasible

best practice, as implementation can be gradual and dynamic due to changing economies and requirements. All systems can only generate outputs based on data. Several data-rich kinds of administrative data and survey data can be used for this purpose: for example the data collected and retained by the Ministry of Statistics and Program Implementation (MOSPI); the Federation of Indian Chambers of Commerce and Industry (FICCI); and the Ministry of Corporate Affairs (MOC), among many others.



Massive amounts of business statistics data already available at the state and national level must be better used for this purpose. Some next steps might be using all census, administrative, and district survey data to create a proof of concept, and form an inventory of best practices.

The content needed for a Statistical Business Register (SBR) comes from singular enterprises, local units, enterprise groups, and legal units. SBR can also create business demographic publications by sampling, weighing, and grossing up survey data. In this way, a complete and mature SBR can be achieved and maintained by using census data, survey data, and administrative data from the private and public sectors, as well as through profiling within the National Statistical Organization (NSO).





K.V.Raju
Professor Emeritus at Chanakya University, Bengaluru, India

K.V. Raju is Professor Emeritus at Chanakya University, Bengaluru, India. He is currently working as the Economic Advisor to the Chief Minister, Government of Uttar Pradesh. Earlier, he worked as the Economic Advisor to the Chief Minister, Government of Karnataka. He was Principal Scientist, Policy and Impact, Asia Division, for the International Crops Research Institute for Semi-Arid Tropics, in Hyderabad; Social Scientist, International Water Management Institute, Colombo; Visiting Senior Research Fellow at the International Food Policy Research Institute, Washington DC; and Professor and Head at the Center for Ecological Economics and Natural Resources, Institute for Social and Economic Change, Bengaluru.

District Domestic Product Estimation

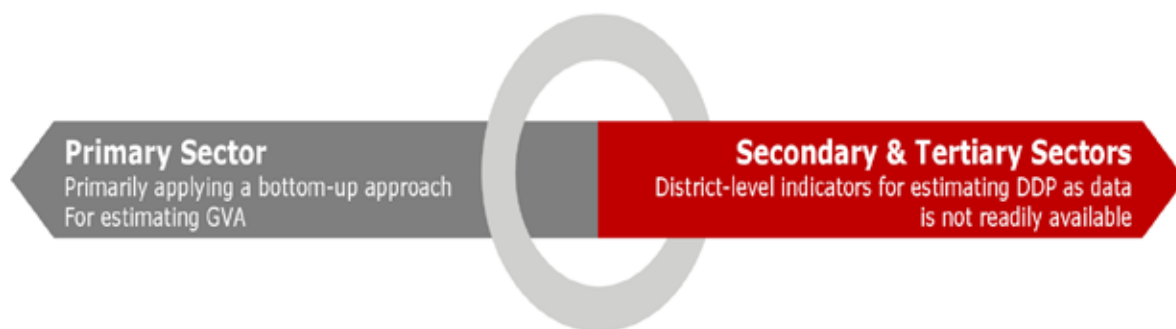
The government of Uttar Pradesh has developed an approach for developing the District Domestic Product (DDP). The DDP methodology was jointly created by the Directorate of Economics and Statistics, Karnataka and Uttar Pradesh in 1998. Today, DDP is estimated in 19 states of India across the primary, secondary, and tertiary sectors of the economy.

The district-level estimation process helps state governments arrive at the gross state-added-value of their state. For this, a district-wise and sector-wise estimation is helpful. Presently, district-wise Gross Value Added (GVA) is arrived at by apportioning State GVA to districts based on specific indicators - workforce, wages, railway tracks, electricity units, buildings, etc.

The Directorate has proposed a bottom-up approach for the District Level Estimation Process. For the primary sector, GVA can be estimated through this approach. For the secondary and tertiary sectors, district-level indicators for estimating DDP can be used, as this data is not readily available. The bottom-up approach is proposed for the secondary and tertiary sectors in four districts of UP - Meerut, Kanpur Nagar, Gorakhpur, and Varanasi. Gross District Value Added will be calculated based on balance sheets from departmental and non departmental enterprises, workforce wages, and salaries for the organized sector. For the unorganized sector, it will be calculated by the Labor Force Survey and the Survey on Unincorporated Sector Enterprises.

These estimates are for defined sectors of the economy; and a key cross-cutting sector in Uttar Pradesh is tourism. This sector indirectly impacts many other sectors, such as hospitality, trade, and transport. Therefore, tourism's value addition is vital to calculate so that the sector's contribution to the state's economy can be understood. To arrive at the DDP of tourism in a district of Uttar Pradesh, the prediction model uses datasets on tourist footfall, average tourist spending, and average stay duration, and bunches them together. Separately, datasets on the investment-led tourist contribution are also obtained through reported GST turnover, construction services of hotels, halls, parking spaces, etc.

DDP Estimation for Four Districts through Bottom-Up Approach



Initiatives are being taken to apply the bottom up approach to prepare the DDP Estimates in Secondary and Tertiary sectors for 4 districts **e.g. Meerut, Kanpur Nagar, Gorakhpur & Varanasi**

Organised Sector GDVA

- GSVA on the basis of balance sheet analysis of each DE & NDE (State & Central), directly allocated to districts where it is located
- For multi-district DEs & NDEs, allocated on the basis of either workforce or Wages & Salaries of Workers, as per availability of data

Unorganised Sector GDVA

Labour Force Survey (LFS) & Survey on Unincorporated Sector Enterprises (SUSE) are proposed for the four districts

While these estimates are for the defined sectors of the economy, a key cross-cutting sector in UP is tourism



Pallavi Choudhuri
Senior Fellow at the NCAER-National Data Innovation Center

Pallavi Choudhuri is a Senior Fellow at the NCAER-National Data Innovation Center. Her research primarily focuses on employment, social protection, and gender. Prior to joining NCAER, Choudhuri taught courses in Economics at the Grand Valley State University in Michigan as a Visiting Assistant Professor. She has a PhD in Economics from the University of Wyoming, and has also served on government committees while working at NCAER.

Harmonization of Data: Integrating Survey and Non-Survey Data Sources for Faster, More Accurate Insights into District Growth

There is a growing need to use both kinds of data – non-survey and survey--to support policy making and planning by the states. Data must be evaluated over time to understand its long-term impact, and policies must be formulated after analyzing costs and benefits and targeting beneficiaries. **Survey data** comes with many advantages – robust, representative data for various indicators that cover those at the lower end of the economic spectrum and contain a thick layer of information providing socioeconomic context. However, it also poses certain challenges – infrequent collection (annual or five-yearly); nonresponse bias of items; quality; and issues in harmonizing across industries.

ECONOMIC ACTIVITY / WORKFORCE STATISTICS	
Non-survey data	Survey data
<ul style="list-style-type: none"> ▪ MCA-21 data: coverage of the organized sector, both manufacturing and services sectors <ul style="list-style-type: none"> ○ lacks clear identifiers for classification companies into respective sectors; lacks geographical identifiers. ▪ Monthly payroll data by the Employees Provident Fund Organisation (EPFO) <ul style="list-style-type: none"> ○ Only registered organized sector ▪ E-shram portal – unorganized sector worker <ul style="list-style-type: none"> ○ Mobilization, self-selection, static in nature ▪ Geo-referenced night-lights data 	<ul style="list-style-type: none"> ▪ Annual Survey of Industries (ASI) for organized manufacturing only (factories). ▪ NSSO Unorganized sector survey (5 years interval) ▪ NSSO Service sector survey ▪ Economic Census (2004-06, 2013-14) ▪ Periodic Labour Force Survey (PLFS) - Household survey with broader coverage encompassing both organized and unorganized sector. <ul style="list-style-type: none"> ○ PLFS may not even serve to estimate state-level quarterly changes in employment ▪ Use alternative methodologies, such as small area estimation techniques to obtain district-level estimates

Non-survey data has its own advantages. **Administrative data** is usually low-cost, regularly updated, and consistent across individuals. **Geospatial data** is known for its accuracy, as it is collected by technology; the challenges it poses are that it is unstructured, or only semi-structured, so there's no heterogeneity. There are also questions of quality and bias.



There are several challenges in integrating survey and nonsurvey data, and with both kinds, proper cautions should be taken. Some of the challenges are:

- The need for research error properties of organic data and possible links to survey data;
- How deanonymized administrative data might intersect with survey data;
- The sample sizes of each subset may not be representative of the underlying population;
- How to document cross-walking across various datasets while comparing economic indicators.



Surendra Kumar
Joint Secretary, Department of Commerce, Ministry of Commerce & Industries

Surendra Kumar Ahirwar is a 1996 batch officer of the Indian Railway Traffic Service. He is currently posted as Joint Secretary in the Department of Commerce, Ministry of Commerce & Industries, overseeing Logistics. Before joining the Ministry of Commerce and Industries in 2018, he worked in the Ministry of Railways in various positions: managing operations, marketing, infrastructure planning, project implementation, PPP Project planning & implementation, and the Mumbai-Ahmedabad High-Speed Rail Project. He has been the recipient of many awards, including the National Award for Improving Efficiency in Railway Operations.

Supporting Districts as a Fulcrum of Growth

PM Gati Shakti, the National Master Plan for Multi-Modal Connectivity, is a \$1.2 trillion megaproject to improve India's manufacturing competitiveness and is used to identify and build a "growth corridor" at the subnational level.

India aspires to be a \$32 trillion economy by 2047. For this, there is a need to accelerate infrastructure development at an unprecedented rate. The government is undertaking an integrated, cross-functional approach to ensure that all stakeholders are simultaneously involved. This can be best realized through data-driven decision-making.

The government has two core systems to ensure infrastructure development: efficient governance of projects, and an efficient logistics system. These are achieved through digital initiatives such as PM Gati Shakti NMP, the National Single Window System (NSWS), the Unified Logistics Interface Program (ULIP), and VAHAN and SARTHI, among others.

Gati Shakti is a GIS-based platform that contains a National Master Plan (NMP) and a State Master Plan. It is based on geospatial technology encompassing over 100 critical



transport infrastructure projects that ensure Shapela-last-mile connectivity, and over 300 projects of the central, state, and UT governments that are examined using NMP and SMP at the national and state levels, respectively. This has led to reduced timelines, digitized approvals, visible GIS-based layers, accuracy in alignment planning, and holistic social and economic infrastructure planning.

PM Gati Shakti is also operational in social sector planning across 22 social ministries where health, sports, and school data are integrated in various individual portals and through NMP. This facilitates better planning for social welfare schemes such as:

- Goa – Disaster management plan for flood-prone areas;
- J&K – Suitable locations for electric vehicle (EV) charging stations;
- UP – PAHUNCH portal identifies sites for high schools in unserved and needy areas;
- Gujarat –
 - Finalization of alignment of the Gujarat coastal corridor (300 km)
 - Gap Identification Tool for identifying land to construct new Aanganwadi
- Maharashtra – Planning of Samruddhi Mahamarg (SMM)

At the district level, data can be collated on various platforms. Sector-specific applications can be developed to plan and implement projects, and integrate available digital platforms like Gati Shakti, the State Remote Sensing Application Centre, the Road Accident Database, etc.



SESSION 3:

TRANSFORMING DATA INTO KNOWLEDGE - PROACTIVE AND PREEMPTIVE GOVERNANCE



Session Chair

Avik Sarkar

Professor,
Indian School of Business

PANELISTS



Ashok Kumar Joshi

Director of Maharashtra Remote
Sensing Applications Centre
[MRSAC], Nagpur



Bhawana Vashista

IAS



Saurabh Kumar Tiwari

Joint Secretary, DBT Mission,
Cabinet Secretariat

SESSION CHAIR



Avik Sarkar
Professor, Indian School of Business

Dr. Avik Sarkar is currently associated with the Indian School of Business (ISB), where he works and teaches Data Science, Artificial Intelligence, Emerging Technology, and Public Policy. At ISB, Dr. Sarkar headed the development of the India Data Portal, a one-stop portal for analyzing and visualizing government data and working on the societal and policy aspects related to emerging technologies like artificial intelligence trustworthiness, ethics, data privacy, and e-commerce policy. Dr. Sarkar previously headed the Data Analytics Cell at NITI Aayog, where he helped develop India's first AI Strategy and roadmap for the use of data, analytics, and artificial intelligence for governance and policy making across various sectors for India's inclusive growth and led efforts toward setting up the first high-performance computing-based Data Analytics Lab and Energy Modeling Unit at NITI Aayog.

Opening remarks by Prof. Avik Sarkar, Session Chair

Various projects have already been undertaken to improve state governance based on administrative data. A few of these projects have included the use of tax collection data to identify fraud in corporate tax payments for the government of Assam, and the use of medicine delivery data to reduce medicine shortages in government hospitals across Punjab.

State governments have a massive repository of data that can be used to transform existing policies and make evidence-based decisions regarding the administration of districts and blocks. Various states are undertaking different data initiatives to improve governance. This session analyzes some examples of where data-driven narratives have achieved great results for both state and central governments.

The central government has launched the Direct Benefit Transfer (DBT) Mission to provide government subsidies and benefits to needy citizens. The DBT Mission extracted and merged the necessary data from the JAM Trinity - Jan Dhan Account, Aadhar Card, and Mobile data. Since the above data points are linked with each other, it becomes easy to eliminate redundant as well as fraudulent data, and to streamline beneficiaries. DBT is an example of large-scale data transformation, but because of its gigantic scale, it faces many data-related challenges: for example, maintaining accurate transaction records; database management; removal of duplication; payment failures; regular updating; standardized mechanisms for state benefit schemes; infrastructure

flexibility issues; and grievance redressal. Nevertheless, the DBT Mission is an active repository of over a billion people garnering worldwide praise from various international organizations like the World Bank and the International Monetary Fund.

Another excellent example of using available data to improve governance is how the **Maharashtra** government is using GIS data to implement policies. The government collects geospatial data such as geographic imagery and mapping technology, and they use this information for e-governance projects to achieve various objectives, including groundwater mapping in remote villages; mapping crop cycles and predicting harvest quality; analysis of agricultural market trends; and mapping hilly areas within the states. Two critical uses of geospatial information are predicting adverse weather, and natural calamities that can harm crops. The Maharashtra government has developed a mobile app, MahaMADAT (Monitoring and Assessment of Drought using Advanced Technology) to distill and predict the weather and inform farmers beforehand so they can prepare accordingly. This can be helpful when predicting drought-like situations by the e-Panchnama app, which tracks damage caused by drought; identifies people who need relief; and then keeps track of the beneficiaries.

Aligned with the aim of data initiatives to improve governance, in 2019 the government of **Andhra Pradesh** launched a Grama and Ward Sachivalayam (GSWS). These are local government facilities set up in villages and wards to decentralize governance and provide policy makers with access to every resident in each village of the state. These village secretariats cater to all the requirements of citizens, including welfare benefits such as pension and monthly provisions, administrative grievance redressal, and so on, through a single window system. To achieve this, the AP government has set up various tech portals so that all the work at the government's end can be done together. If data collected in silos by targeted portals is collated through a data exchange platform. In this manner, the AP government has made many successful interventions through the GSWS program, and the apps and portals designed under it. The government has adopted the 116 indicators developed by NITI Aayog in line with the 16 Sustainability Development Goals (SDGs). All portals created under the GSWS program collect and analyze data, which is then used toward various social welfare objectives, such as eliminating anemia amongst school-going girls, readmitting children who have dropped out of school, and so on.

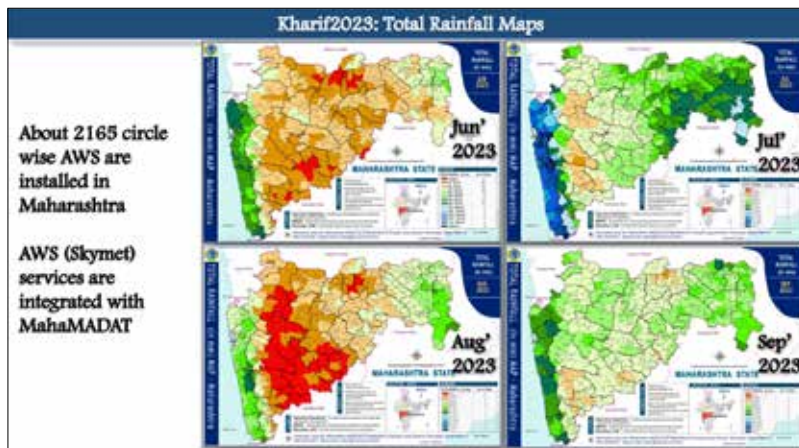


Ashok Kumar Joshi
Director of Maharashtra Remote Sensing Applications Centre (MRSAC), Nagpur

Ashok Kumar Joshi serves as Director of Maharashtra Remote Sensing Applications Centre (MRSAC), Nagpur. He is also a Scientist/Engineer at the National Remote Sensing Centre, Indian Space Research Organization (ISRO), Bengaluru.

Using GIS Data to Improve Service Delivery

The Maharashtra government uses GIS data to effect decentralized planning and to implement policies. MRSAC is the nodal agency for generating and disseminating geospatial information in the state. They have had a huge repository of geospatial data since 1988, which they use it for e-governance projects with various departments. Some examples are:



- The MahaBHUMI project (Planning Department): For land use, transport, and water resources;
- SMART village-Groundwater Survey & Development Agency (GSDA): Mapping for soil and water conservation structures;
- Maha-AgriTech Project (Agriculture Department): For crop mapping, predictive analysis, and agri-market analysis;
- Hill Area Development Project (Planning Department): List of villages in core and buffer areas.

During the monsoon (Kharif) 2023, about 2,165 circle-wide Automatic Weather Stations (AWS) were installed in Maharashtra. These services are integrated with the MahaMADAT (Monitoring and Assessment of Drought using Advanced Technology) mobile app. Using this app, weather information can be distilled and predicted; this can help farmers by providing them with sufficient information regarding the Kharif season so that they can make appropriate crop plantation decisions.

This information system is critical during drought. The e-Panchnama app predicts drought-like situations and periods; does damage assessment during natural calamities; prepares district, Taluka and village-affected area reports; undertakes crop-mapping reports; identifies approved beneficiaries for all Talukas; and gives a detailed Calamity Report of each village to the concerned authorities. Once the relief is distributed, it keeps track of the beneficiaries and the relief amounts.

This approach can be adopted and applied across various sectors to create an evidence-based relief and payment system for all government activities funded out of the state budget. Mobile apps can collect field inputs of development; monitor activities; periodically assess department implementation; correct and coordinate activities; and provide decision support.

Future : Evidence based payment system for all activities from the Govt Budget.

Mobile and Satellite data shall provide proof of development activity
Mobile App to collect field inputs for each development work
Periodic monitoring of completed /ongoing activities
Performance of the department /implementation agency monthly/quarterly
Non-satisfactory progress – Analysis, Correction measures, Coordination
Assessment of budget utilization based on data collected
Continuous updation of GIS data
Decision Support System and Analytics for each department

Gap finding and proposal for new asset development for next financial year

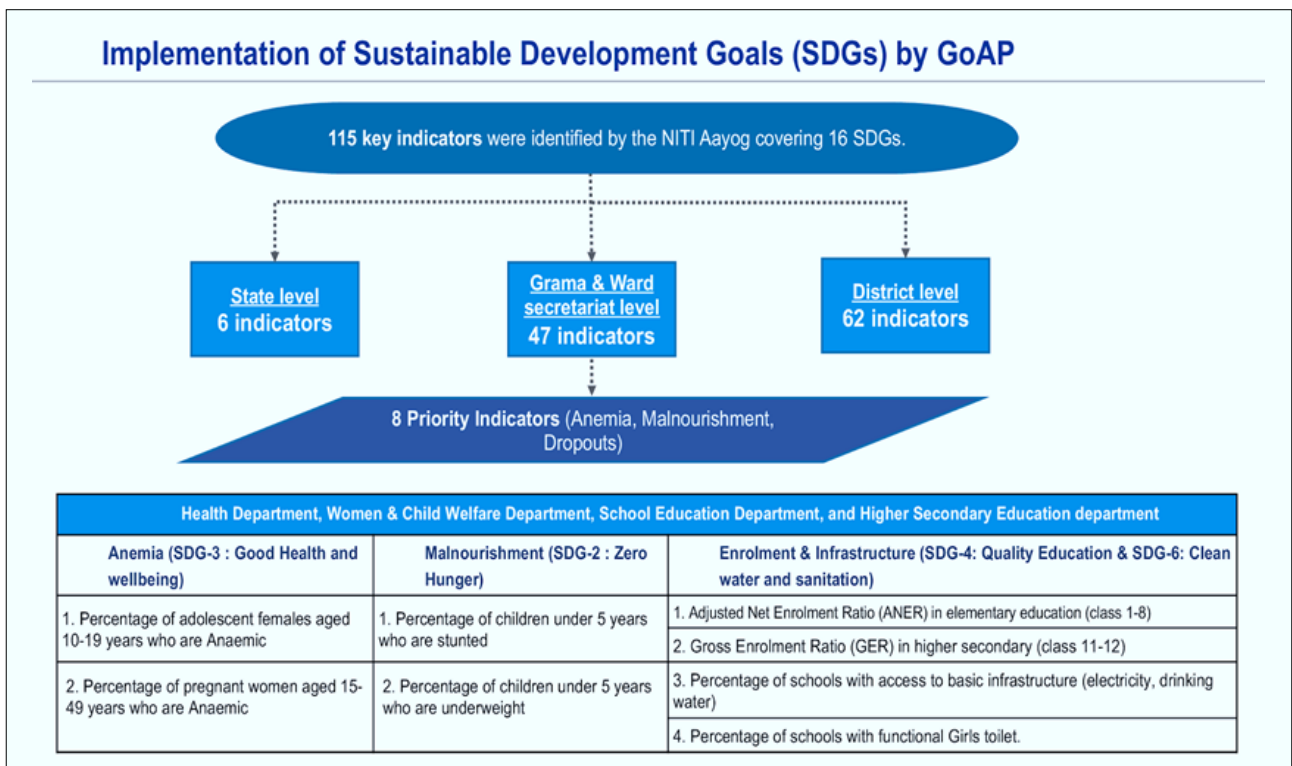


**Bhawana Vashista
IAS**

Bhawana Vashishtha is a member of the Indian Administrative Service.

Data Analytics for Localizing and Upscaling Implementation of the SDGs

The Government of Andhra Pradesh has launched a Gram/Ward Sachivalayam (GSWS), a one-stop solution to address citizen requirements related to welfare schemes and deliver sustainable services at doorsteps. Its objectives are to provide welfare benefits to all eligible beneficiaries through a single window system; act as a supporting arm to Panchayats and local bodies; develop policies in line with the SDGs; and redress citizen grievances at the secretariat level. To achieve this, GSWS has a robust network of tech portals such as the Sustainable Goals Development Portal, AP Seva Portal, and the Navasakam Beneficiary Portal.



NITI Aayog identified 115 growth indicators covering 16 of the 17 SDGs. The government picked these SDGs and aligned their health and education-related programs with them. In this project, the government developed mobile apps and portals as digitized interventions. An integrated dashboard that monitors and details district-level government interventions was compiled out of state-level data to reflect all of this. This has allowed many successful interventions to be executed and monitored by government officials. Here are two examples:

- *Eliminating Anemia*: Identifying and targeting anemia in girls at educational institutions. All data points from respective departments (Health Department, GSWS) were collected and collated.
- *Putting Children Back in School*: Massive survey data was gathered by volunteers on the ground, and data was entered into the Volunteer App. A Student Info Portal was also developed as a single enrollment source for each child.

The Navasakam Beneficiary Portal is a BIMS (Beneficiary Identification and Management System) that connects government schemes to residents. To this end, it collects resident data on vehicle ownership, land ownership, electricity consumption, tax status, employment status, and so on. Disparate data collected by various departments are then collated through a data exchange platform.



Saurabh Kumar Tiwari
Joint Secretary, DBT Mission, Cabinet Secretariat

Saurabh Kumar Tiwari is Joint Secretary at DBT Mission, Cabinet Secretariat. With a master's degree in Political Science, an LLB, and an MBA, he has wide-ranging experience in the government of India and its state-owned entities. Since 2018, as Joint Secretary in the Cabinet Secretariat, he has been overseeing the operations of the Direct Benefit Transfer Mission, and dealing with the legal, technical, and administrative policy framework of DBT schemes across the ministries of the central government as well as state governments.

Using Data to Improve the Targeting of Schemes and Public Services – DBT 2.0 and 3.0


The Direct Benefit Transfer (DBT) Mission is a government initiative that provides efficient, transparent, and targeted delivery of government subsidies and benefits to eligible citizens, whether in cash or in kind. This talk summarizes the journey of DBT and the generational changes in its evolution.

DBT has been made possible due to the amalgamation of the JAM trinity, which consists of the following data sources:

- JAN DHAN (160 million bank accounts, including 507 million Jan Dhan accounts)
- AADHAAR (1.38 billion citizens on the identification system)
- MOBILE (more than 1.2 billion mobile connections)


DBT is constantly improved, and newer versions tackle the issues not addressed by the previous version, such as improving eligibility verification and developing a social registry. DBT has been applauded internationally by the World Bank and IMF for stellar work at providing support to

Global acclaim for Aadhaar-based DBT



David Malpass (former President, World Bank)

• "...through digital cash transfer, India was able to provide food and cash support to 85 per cent of the households in rural areas and 69 per cent of the households in the urban area, which is remarkable..."



Paulo Mauro (Dy Dir, Fiscal Affairs, IMF)

• "...it is a logistical marvel how these programmes that seek to help people who are at low-income levels reach literally hundreds of millions of people..."

hundreds of millions of citizens; and as per their estimates by March 2021, it had reduced leakages to 1.1 percent of GDP. Up to 2022, the cumulative estimated savings/benefits achieved was about Rs 2,73,093 crores.

DBT is an outstanding example of using data for efficient social governance. District-level data is being harnessed in DBT version 2.0 for efficient beneficiary verification. Furthermore, social registries have been created in states like Haryana, Rajasthan, Madhya Pradesh, and Karnataka. DBT 3.0 aims to automate the determination of citizen eligibility for various schemes, enabling suo moto targeting in welfare schemes, and the proactive sharing of information with citizens. The interlinking of the databases of the Digital Public Infrastructure has created innovative solutions for an efficient public service delivery ecosystem: Aadhaar Card to Mobile linking, Aadhaar Card to Bank Account, Mobile to Bank Accounts and vice versa are some core examples. Linking multiple databases also creates efficient and effective verification systems that can prevent fraud. A Local Government Directory (LGD) is also used to identify beneficiaries and geographical areas that need attention.





SESSION 4: EXPERIMENTS ON DATA DISSEMINATION & PROMOTING ANALYTICS



Session Chair

D Tripati Rao

Professor of Economics [HAG]
at IIM Lucknow

PANELISTS



Anna Roy

Principal Economic Adviser
Government of India



Anand Iyer

Chief Policy & Insights Officer
at Janaagraha



Yamini Atmavilas

President,
The Udaiti Foundation



Malarvizhi Veerappan

Program Manager &
Senior Data Scientist at
the World Bank



Nand Kumarum

Deputy Director,
LBSNAA



Deeksha Supyaal Bisht

Deputy Director,
Dept. of Economic Affairs

SESSION CHAIR



D Tripati Rao
Professor of Economics (HAG) at IIM Lucknow

D. Tripati Rao is currently Professor of Economics in the Business Environment Area at the Indian Institute of Management, Lucknow. He has his PhD from the Department of Economics, University of Mumbai under the auspices of RBI Monetary Economics Endowment Research Fellowship and his M.Phil degree in Applied Economics from CDS, Trivandrum, JNU.

Opening remarks by D Tripati Rao, Session Chair

Given the phenomenal growth of connected devices, enhancing various means of communication to enable end users is increasingly important. The core challenge in a highly connected environment is how to design a smart data dissemination strategy for exchanging information between devices based on the nature and type of events. This is also needed to facilitate public policy delivery effectively. Therefore, data usage analytics should aim for accessibility, accuracy, and ease of use for a scalable aggregation of data. This session will be focused on these issues, drawn from the experience of the panelists at the international, state, and meso (sectoral) levels.

The Indian government has launched data.gov.in, the Open Government Data Platform India. This portal offers one-point access to datasets published by various government ministries. Though it is a great initiative, because of a lack of continuity in uploading data onto the portal by the ministries, it is not yet very effective. A large amount of data across domains has been made available by ministries, but this data is shared in ministry websites in non-machine-readable format (for example, as scanned PDF files); this makes data discovery and use a challenge for both the government and the public. There are also many private initiatives collecting data across websites and putting them in a central portal for better data dissemination: for example, - India Data Portal by the Indian School of Business, Jano India by Swaniti Initiative, Open Budgets India Platform by Civic Data Labs, Centre for Economic Data and Analysis (CEDA) by Ashoka University, How India Lives, India Data Hub, etc.

In line with the open data mission, several state governments have launched their own CM Dashboard, a step toward improving transparency by sharing several data points, which helps to receive feedback on government officers working on all levels across state government offices.

Similarly, the CM Helpline is the grievance redressal mechanism combining over 50 Madhya Pradesh government departments. Another redressal mechanism along the same lines is Samadhan Ek Din, which recruits designated officers who are only geared towards grievance redressal and provide disposal of grievances within the same day. State data is collected and uploaded into the CM Dashboards to enable governments to make informed decisions based on data and engage citizens in every step of governance.

Governments also use data to navigate unprecedented circumstances such as the COVID-19 pandemic. During this time, India's government used high-frequency indicators such as fuel consumption, freight and cargo trade, currency circulation, power consumption, and retail mobility to monitor India's macroeconomic situation. These indicators are regularly mapped by the Monthly Economic Review of the Ministry of Finance's **Department of Economic Affairs (DEA)**. The fact that this data was at hand helped shape the nation's economic atmosphere during a global resource crunch.

Other disaggregated data collected across sectors is integrated and used by governments to transform the lives of citizens. The **Aspirational Districts Program (ADP)**, in which data captured across state dashboards in real time is analyzed to create a baseline ranking, and every district in India is ranked accordingly, is one example. This gives state governments defined targets and areas of improvement, to help localize governance efforts in otherwise ignored districts.

There is enormous scope for improving the mechanisms for data-sharing and dissemination by government ministries, including the aspect related to discoverability and further data analysis. Presently, most data are still collected in silos because each department or governing body is only looking at a small data pie. Furthermore, the data collection methodology is riddled with errors and inaccuracies. Efforts towards resolving this aspect of data governance need to be undertaken. Standard mechanisms are required for data-sharing by ministries that consider citizen privacy, and a one-stop data portal that presents data in a consolidated and machine-readable format. Data in this format will be potentially richer in insights, and will push innovation more than any other subset of data.

The World Bank is on a data dissemination mission: they believe in open, harmonized standards for data interoperability. The **World Bank Data Development Hub (DDH)** has been put in place by the World Bank to create and maintain a catalog of datasets out of all the data it collects through its operations, projects, and research activities. The DDH has a team of curated technologists, data scientists, statisticians, and managers who work toward making all the data collected by the World Bank into a machine-readable, easy-to-access, easy-to-use, search-enabled, and downloadable format. There are also guidelines for who can access data, and the licensing of datasets.

NITI Aayog has launched a flagship data portal, the **National Data Analytics Platform (NDAP)**, to facilitate and improve access to Indian government data. Citizens, organizations, and researchers can use NDAP to access datasets from India's extensive administrative landscape. **All the foundational datasets from the central and state governments are available on NDAP in a machine-readable format.** The aim of NDAP is to provide last-mile delivery, and enable access to government data through an intuitive, user-friendly platform.

NDAP collects all government data in one place. It has a powerful search engine that promotes ease of access and discovery for the end user. All data is first standardized and cleaned to make it available in a cohesive, readable format. NDAP's features are very user-centric, so it increases

user interactivity with the portal. All available data is interoperable across ministries and state departments; that is, it gives out streamlined datasets to end users. Furthermore, these datasets will have advanced search-query-enabled, and available in downloadable formats. NDAP is already a powerful data tool that disseminates data in the most enabling and innovation-centric way. Still, specific improvements can move India's governance to new heights; and this can only be achieved through data.

One improvement needed is gaining access to city datasets. Forty percent of Indians are going to live in cities by 2030. City governments are the closest to the citizens; therefore, city-level data is crucial for inclusive and equitable governance and development. The **City Data Analytics Platform (CDAP)** is a portal modeled as an extension to NITI Aayog's NDAP; it will focus on collating urban datasets from across the nation with the support of state governments. Currently, most data are in silos within sectors: planning, electricity, tourism, hospitality, agriculture, revenue, and so on. CDAP will interweave all this data to form cohesive datasets containing cross-sectional, spatialized, and time-series data. All of this information will be presented in clean, state-of-the-art, visualization-enabled datasets. All this information will be presented in clean, state-of-the-art, visualization-enabled datasets.

Another area where NDAP can improve is gender-based data. Today, gender data is fragmented across various administrative landscapes of state governments. The Udaiti Foundation is collaborating with NITI Aayog to create The Gender Data portal. Their aim is to provide value-rich women-centric datasets that will be helpful in making decisions related to women's economic empowerment. The Gender Data Portal will provide gender-segregated data across eight key themes, including employment, education, entrepreneurship, health, and ownership of assets. Workshops are being conducted to brainstorm what the Gender Data Portal should contain, and how it can help the future of women citizens.

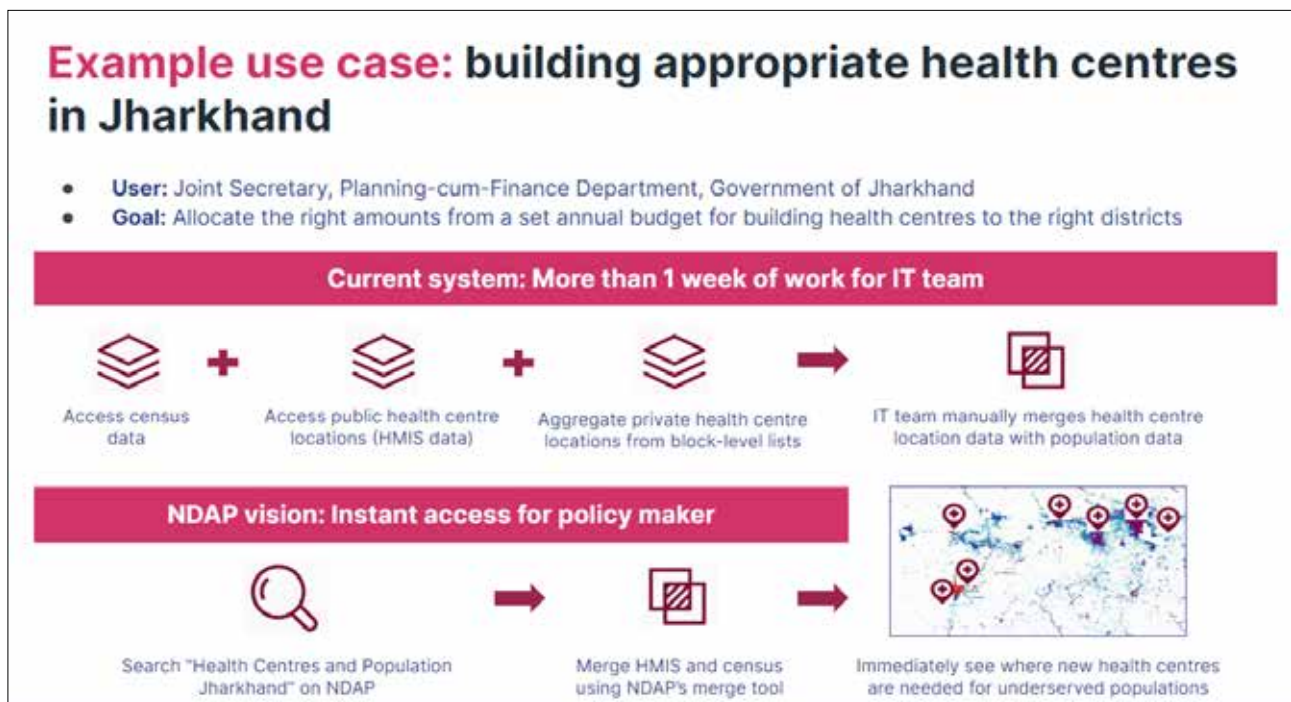


Anna Roy
Principal Economic Adviser, Government of India

Anna Roy is a 1992-batch officer of the Indian Economic Service (IES) serving as Principal Economic Adviser, Government of India. She received her education from Shri Ram College of Commerce, Delhi University, and the Delhi School of Economics. She has been a lecturer at Delhi University and worked at the Energy and Resource Institute (TERI) before joining the IES. She has worked in the Ministry of Finance, the Ministry of Civil Aviation, and NITI Aayog.

Overview of NDAP 2.0: Toward Enabling Data Analytics

The NDAP National Data Analytics Platform (NDAP) is the flagship data portal launched by NITI Aayog, which facilitates and improves access to Indian government data. Its vision is to improve last-mile delivery and enable seamless use of published government data through an intuitive, user-friendly platform that:



- Collates data from 3,000+ sources in one place;
- Contains standardized, clean, easily downloadable data;
- Is a powerful yet simple search engine with user-centric features.

The datasets are identified from ministries and sectors and use-case scenarios, and are onboarded onto NDAP. Granular datasets across states, districts, blocks, and villages are also included, to ensure last-mile access. NDAP combines datasets from multiple sources into an intuitive, single dataset where all data is accessible in a machine-readable format and is keyword search enabled.

NDAP provides a rich user experience through interactive visualizations so that users can create maps, and bar and line charts, using any dataset and indicator. It also aims to provide the highest spatial and temporal resolution data possible.

Among the numerous use-case scenarios of NDAP, here are a few:

- **Jharkhand:** Merging healthcare location data with population census data to identify where new healthcare centers are needed.
- **Karnataka:** Merging district-wise National Health Survey data with the district information system for education to calculate the estimated number of anemic girls in schools.
- **National Level:** Combining district-level climate vulnerability indicators (focusing on per capita income) and National Family Health Survey data (focusing on overweight or obese women) to plan state nutrition programs.



Anand Iyer
Chief Policy & Insights Officer at Janaagraha

Anand Iyer is the Chief Policy & Insights Officer at Janaagraha. Over the last 22 years, he has worked across state and central government in urban development; in the private sector consulting in land, infrastructure, and building; in academia and in practice, in architecture and design. He now works with a civil society organization in citizenship and democracy.

City Data Analytics Platform (CDAP) 2.0: City-Level Data

City governments are the closest to the people and have the maximum potential to impact lives. Analytics on city-level data will aid data-based decision-making for inclusive, sustainable, and equitable urban development.

CDAP homepage hosted on NDAP portal

Microsite to NDAP: Cities as the anchor

City Data and Analytics Platform (CDAP)

About CDAP: Approach/philosophy: City is the anchor

Data

- Data on 12 sectors/quality of life areas
- Cross-sectional data
- Time series data
- Spatialization of data
- Data visualization and overlaying

Downloadable data and visualizations

Data sources

Data ethics

Participating cities

- Clickable list of participating cities

Currently, the data available across various platforms is fragmented, and is specified to central and state schemes, or development statistics. CDAP (the City Data Analytics Platform) will be built on the pattern of NITI's National Data and Analytics Program, and will focus on synthesizing urban datasets across departments and sectors – streets, polling areas, wards, zones, districts, states, and unions. All of the data will be presented in a state-of-the-art visualization format to make it user-friendly and downloadable. Ethical parameters will be kept in mind so that citizen privacy is upheld.

In this way, CDAP will have a comprehensive account of several types of datasets:

- **Cross-sectional data**, including that from nonurban departments, that affect quality of life issues in urban areas (livelihoods, access to services, quality of infrastructure, etc.)
- **Spatialized Data** across districts, states, and cities
- **Time-Series Data** across annual quarterly collections and several decades.

CDAP will focus on the needs of different stakeholders, prioritizing urban governance decision-makers, and will bring our most relevant analytics, while heavy data can limit visibility and access. Some administrative boundaries may change over time, which must also be considered when collating time series data

The layered and localized nature of our urban issues makes it imperative to adopt a place-based approach to urban planning. Initiatives and policies need to be tailored to the specific attributes and needs of neighborhoods, aiming for inclusivity and sustainability. Inadequate data at the city level is a challenge, and even what little exists is organized across sectoral silos and distinct spatial units, rather than along a consistent unit of local governance. This makes it impossible to overlay the datasets for meaningful analysis.

Local governments need place-based data for holistic urban planning and sustainable, equitable development. This will benefit many user groups: local governments, urban planners, CSOs/CBOs, researchers, academicians, businesses, citizens, infrastructure and utility providers, public health agencies, transportation service providers. Indian cities have only scratched the surface when it comes to data-driven innovations. As cities expand and evolve, commensurate improvement in data management practices becomes necessary. CDAP is an early but essential step in that direction. It will enable informed decision-making, optimization of resources, and address urban challenges with precision, while promoting transparency, accountability, and evidence-based policymaking.



Yamini Atmavilas
President, The Udaiti Foundation

Yamini Atmavilas is a gender sector leader with a track record of building impactful partnerships for advancing gender justice in the public, social, and philanthropic areas. She is currently President of the Udaiti Foundation, which seeks to advance women's employment, entrepreneurship, and agency.

Gender Portal on NDAP 2.0

Gender data is currently fragmented across economic, social, and health data. In May 2022, NITI Aayog launched the National Data Analytics Platform (NDAP) to improve the use of published government data. The Udaiti Foundation has collaborated with the NITI Aayog-NDAP team and the World Bank to develop a gender layer within NDAP: The Gender Data Portal. The vision is to make NDAP the foundation for data-informed conversations and decisions on women's economic empowerment. NDAP breaks the siloed view of data that leads to inefficient and piecemeal decision-making.

The Gender Data Portal has been designed to provide users access to 89 gender indicators spanning eight key themes:

- Work & Employment
- Education, Training, and Skills
- Entrepreneurship
- Health & Demographics
- Decision-Making
- Ownership of Assets / Access to Services
- Leadership
- Violence

A design thinking workshop was conducted in October 2023 to solicit insights for the Gender Data Portal. Members from the Ministry of Women & Child Development, UN Women, the Population

Council of India, the National Council for Applied Economic Research, and other vital organizations participated, and suggested specific use cases where the above indicators can be derived to support policy and programs.

One interesting finding was that the workshop participants tended to look at the performance of each indicator in correlation to other indicators rather than looking at them independently. Budget also emerged as an essential theme: participants said they wanted a separate category to address indicators that fall under budget. It was also noted that gender-segregated data at the state and district levels would accelerate the achievement of “Goal 5 – Gender Equality” in India.

NDAP Design Thinking Workshop





A design thinking workshop was organised at the NITI Aayog on 27th October, 2023 to solicit insights on the NDAP gender portal.

The workshop brought together key gender and data experts from the ecosystem to brainstorm and share their insights on -

- I. What should be the key priority indicators** across 8 different themes within the gender domain? (based on their relevance to policy formulation and frequent utilization by policymakers, researchers, development practitioners, and private sector users)
- I. Suggestions and insights on the distinct use cases** that these indicators can help derive to support policy/ programmes

Key participants across policymakers, non-profit entities and gender data experts

Ministry of WCD, NCAER, UNWomen, Population Council of India, IFPRI, IWWAGE, 3ie, TRIF, The Quantum Hub, IDInsight, Sambodhi



Malarvizhi Veerappan
Program Manager and Senior Data Scientist at the World Bank

Malar Veerappan specializes in large-scale data governance, management, analytics, and technology implementations, and brings a wealth of experience gained from collaborating with countries across Africa, Asia, Latin America, and Europe in various sectors. She has coauthored influential reports like “Digital-in-Health: Unlocking Value for Everyone” and the 2021 World Development Report, “Data for Better Lives.” She has also led initiatives to modernize the World Bank’s data architecture and launch its Open Data Initiative. Her role in establishing the Bank’s Data Council and Development Data Hub has significantly advanced data-sharing efforts.

International Experience in Data Dissemination

Effective data dissemination practices are crucial for enhancing data use and reuse. Good dissemination practices not only enhance transparency but also provide valuable insights that are helpful in government decision-making; foster citizen trust in government data and institutions; and facilitate a favorable capital market to foster growth.

Key Lessons



Digital first approach to data dissemination



Clear policies, standards and guidance on data disclosure and dissemination practices



User centric design (reduce the number of clicks to access data)



User engagement is critical for increasing data demand



Data management and curation team with diverse skillset



Culture of data use

Increased data use can lead to improvements in data quality over time. When more people use data, there are more eyes on the data, which can lead to the identification and correction of errors or inconsistencies. Additionally, increased use may prompt organizations to invest more resources in data collection, storage, and maintenance, which can further enhance data quality. As data becomes more integral to operations and decision-making processes, there's typically greater emphasis placed on ensuring its accuracy, completeness, and reliability.

The World Bank has been a strong advocate for the data agenda for many years. The launch of the flagship World Development Report 2021, "Data for Better Lives," the first such report entirely devoted to data, is an example of the Bank's commitment to this agenda. Since its launch in 2010, the World Bank's Open Data Initiative has provided free and open access to the Bank's development data. The Bank has continuously updated its data dissemination and visualization tools, and has supported countries in launching their own data initiatives.

Today, data is the number-one reason people visit the World Bank's website, accounting for over 30 percent of its overall traffic. The Bank's data catalog provides a fully searchable central location for users to access various types of data, including microdata and geospatial data assets.

The World Bank's commitment to evolving into a data-informed organization is centered on embracing a digital-first approach by moving away from printed reports to digital dissemination practices that can reach wider audiences. This transition is coupled with a focus on enhanced data-sharing, and (re)use of the large volumes of development data it generates. The core principles guiding our approach include fostering a culture of data-sharing and maximizing dataset use and reuse; improving interoperability; and promoting data literacy.

A significant milestone was the establishment of the Development Data Hub (DDH), the Bank's first integrated data hub. DDH connects datasets across the organization, and is governed by a data classification policy. This initiative rests on three key pillars: policies, platforms, and people. It encompasses transparent policies and processes; data and metadata standards and protocols for dissemination; and clear guidelines on data access and licensing, along with platforms for data storage, management, and access. Additionally, it relies on a dedicated data management team comprised of the technologists, statisticians, data scientists, and program managers who are essential for its success.

All of these enhancements are continuously and consistently pursued with the goal of facilitating easy access and (re)use of our data; expanding its reach for productive purposes; and fostering innovation and collaboration, empowering everyone to shape a brighter future together.



Nand Kumarum
Deputy Director, LBSNAA

Nand Kumarum is an IAS Officer of 2008 Batch. He belongs to Madhya Pradesh Cadre. Currently he serves as Senior Deputy Director at LBSNAA, Mussoorie.

Importance of Feedback Using Service Delivery Data & the CM Dashboard

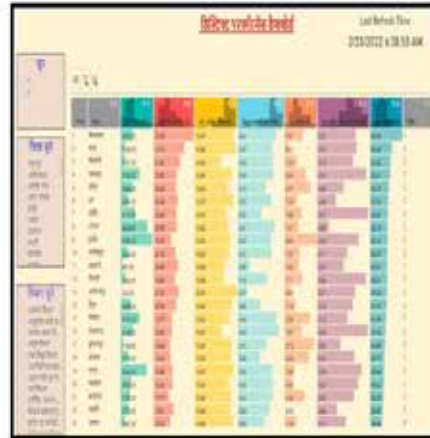
Feedback is a crucial part of system improvement for governments. Sources of feedback include the CM Helpline, Samadhan Online, the CM Dashboard, News Media Management, and Settlement Analysis. Insight gathered from feedback has led to many successful action plans, including the following:

- **CM Helpline:** The Madhya Pradesh CM Helpline Program is a centralized grievance redressal system combining 55 governmental departments. It also integrates all helpline call centers across all districts.
- **Samadhan Online:** A digital system that shortlists the complainant's review and the action mechanism by the Chief Minister's office. Departments are graded for their grievance redressal, and top performers are recognized.
- **CM Dashboard:** Information from different applications of state citizen services is collected, integrated, analyzed, and uploaded to the dashboard for the user. The dashboard has application modules across various departments and districts.
- **Service Notification & Process Re-engineering:** First, the departments' services are studied, and a Service Notification is released, leading to re-engineering of the process, after which a to-be solution is proposed. A revised service is designed and rolled out after formulation and testing. Finally, the performance is managed.
- **Samadhan Ek Din:** Thirty-four services are being provided under this initiative, which are implemented by designated officers appointed at Lok Seva Kendras. Government Process Re-engineering has been done for these services. It has a 99.8 percent same-day disposal rate.
- **Single Citizen Database (SCD):** SCD is a verified demographic information of citizens via Common API that maps each citizen family and monitors the benefits provided to them. Citizens can easily discover and access government schemes, while the government can provide demand-based governance.

Glimpse of Dashboards



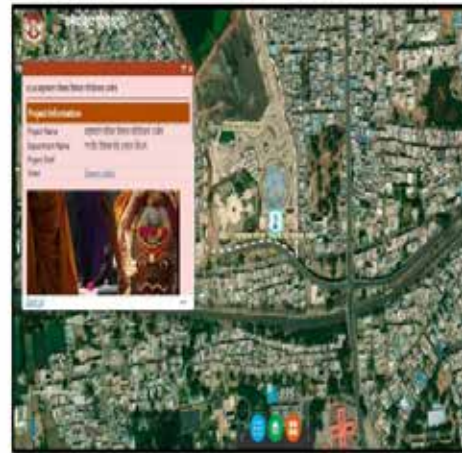
Dashboard having Single Data Source



District Ranking Dashboards having single/ multiple data sources



Integrated dashboard having multiple data sources



Flagship Projects



Deeksha Supyaal Bisht
Deputy Director, Dept. of Economic Affairs
Government of India

Deeksha Supyaal Bisht is an officer of the Indian Economic Service, 2018 batch. She is currently posted as Deputy Director in the Department of Economic Affairs, Ministry of Finance, where she analyzes labor market trends, poverty, inequality, health, and education.

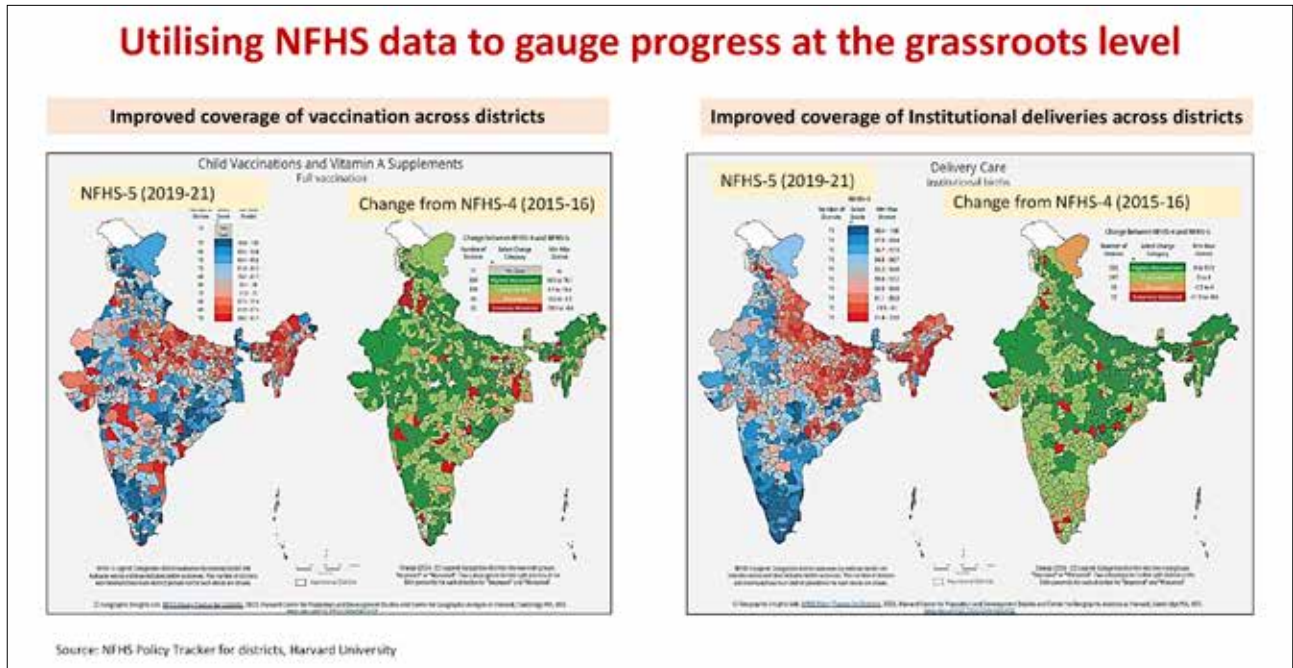
Data for Development

When used well, data can revolutionize the way government functions. The government of India uses data to monitor and assess every sector, ministry, and industry. During the COVID pandemic, the government used high-frequency indicators like domestic vehicular sales, UPI and ATM transactions, crude oil supply, and foreign exchange reserves to monitor the macroeconomic situation. These datasets enabled efficient decision-making during a period of extreme global uncertainty.

In the social sector, e-governance initiatives, social initiatives, and central government programs such as GST e-way bills, the NITI Aayog Multidimensional Poverty Index, MGNREGS data, the Jal Jeevan Mission, and the Swachh Bharat Mission capture real-time data, analyze datasets, and present them in an accessible, downloadable format. NDAP is the centralized platform for government data, capturing data from various sectors, ministries, time, and space. Government officials and researchers can use NDAP for various purposes, such as tallying industry credit with industry growth, or predicting climate vulnerability. Disaggregated data is also used to identify specific pockets of deprivation where aggregate numbers may be concealing the granular picture at the state, district, or village level. For example, the national poverty rate is around 15 percent, but there is a wide range around this figure. Governments gather district-wise data (such as the District MPI Score) to identify and focus their efforts on the areas where they are most needed.

Today, governments make heavy use of local-level data analytics to provide tailor-made solutions for their citizens. For example, Montgomery, Alabama has introduced new software to identify urban decay using census, utility, and building data; and Tempe, Arizona has been using water analytics to collect data on opioid abuse.

Data is at the foundation of the Aspirational Districts Program (ADP), which has transformed the lives of 25 crore people in 112 districts. Data was a critical input from identification to planning to real-time monitoring of the steady progress of aspirational districts. Forty-nine sector indicators were identified, then a baseline ranking was released, and the dashboard captured data in real time. Inspired by ADP, the Aspirational Blocks Program was launched recently to drill down further into each district.





RECOMMENDATIONS AND WAY FORWARD

The deliberations throughout the sessions of this Forum have highlighted the vast potential for accelerating social and economic development by adopting data-based methods. Some states have already taken significant data-led initiatives toward improving governance; this provides a blueprint that other states can adopt with the support of NITI Aayog.

The following are some of the key initiatives state governments can adopt to leverage data for state and district-level planning and policy making.

State Open Data Policy: This policy advocates for interoperability, highlighting its crucial role in optimizing data collection and minimizing redundancy, and provides clear guidelines for how to realize it. An Open Data Portal that contains high-value datasets at the most granular level on various sectors and departments—for example, transport, vehicular, online sales, and weather data--can be created. This can help financial firms, start-ups, and industry players innovate using the available data, and can give insight into economic growth at the state level.

State Data Governance: A state data governance policy can enhance the quality and use of non-personal data so that governments and researchers can access high-quality data while ensuring privacy and trust. This would lead to better-quality data and improved operational efficiency, collaboration and communication, policy and decision-making, service delivery, transparency and accountability, as well as reduced costs, greater efficiency, and citizen engagement.

NITI for States: NITI Aayog has been engaged with some states to improve governance and citizen welfare. In the future, states will also be able to engage with NITI Aayog in accelerating development activities, especially those that are evidence-based policy making.

State Data Portal Based on NDAP: The National Data Analytics Platform (NDAP) is a treasure trove of 2000+ government data sources that consists of data from all states. States can access data specific to them and create a State NDAP based on the same architecture and technical stack. State governments can also add other administrative or state-specific data points to enhance and customize their own data portals.

Identification of Use Cases: State planning departments must continuously engage with their line ministries in order to identify the critical developmental, policy, and/or governance issues that a particular ministry is facing. Based on these use cases, the planning or data department must first identify the availability of suitable data sources to resolve these issues. If specific necessary data points are missing, the state can start collecting those data, or can explore alternative “Big Data” sources to act as a proxy for the missing data aspects.

Collaboration with Academia or Multilateral bodies: Often the state government doesn't have the skilled resources needed to start analyzing the data. It is always a good idea to find a relevant partner with expertise in data collection and analysis who can help guide the data collection process, put quality measures in place, and develop the analytical use cases required for planning and policy making. This will help states jump-start their data-based policy-making journeys; interpret the initial results; and then scale up their efforts.

Attend Data Forums: The Data Forum will be organized annually by NITI Aayog under its State Support Mission initiative. State nodal officers will be identified to enable year-long engagement leading up to the next forum, which will then be designed more collaboratively. Based on interest, regional forums may also be organized as feeder forums for the national forum.

CONTACT DETAILS

S.No.	Name	Organisation	Email ID
1	Ms. Anna Roy	NITI Aayog	annaroy@nic.in
2	Mr. Mohd Zubair Ali Hashmi	NITI Aayog	zubair.hashmi@ias.nic.in
3	Mr. Liankhankhup Guite	NITI Aayog	khup.guite15@gov.in
4	Mr. Thomas Danielewitz	World Bank	tdanielewitz@worldbank.org
5	Ms. Malarvizhi Veerappan	World Bank	mveerappan@worldbank.org
6	Ms. Shreya Dutt	World Bank	sdutt@worldbank.org

Designed by:





सत्यमेव जयते

NITI Aayog