सत्यमेव जयते
NITI Aayog

A Compendium
on
"NITI-State Workshop Series"

An initiative to support States

FY 2024-25



VIKSIT BHARAT @ 2047



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*"If we seize this moment and move forward with our dreams and resolutions, we will fulfil the nation's aspirations for a **'Swarnim Bharat' (Golden India)** and achieve our goal of a developed Bharat by 2047."*

-Hon'ble Prime Minister



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MESSAGE

India's pursuit of *Viksit Bharat @2047* represents a blend of national ambition and localized innovation and collaborative governance. As the country navigates complex transitions-economic, social, technological, and environmental-it is the States and Union Territories that are best positioned to implement change that resonates with citizens. The State Support Mission (SSM) and its flagship NITI-State Workshop Series exemplify this decentralized, yet united, approach to India's transformation.

The FY 2024-25 edition of the workshop series continued the momentum established last year, focusing on emerging national priorities such as AI and cybersecurity, green transitions, care economy, women-led entrepreneurship, and data ecosystems. Over 30 workshops, involving thousands of stakeholders ranging from Chief Ministers to SHG representatives have produced a blueprint of what cooperative and competitive federalism can deliver when ideas are shared and action is localized.

This compendium captures not just ideas but commitments. It showcases how states like Punjab are strengthening MSMEs for export-led growth, how city-regions are being reimagined as economic hubs, how water systems are being redesigned in the Himalayas, and how India is preparing for challenges of aging, urbanization, and digital risk.

I commend the efforts of all participating states, NITI's divisions, and the Programme Team under the State Support Mission. In this decisive decade, this document can be a source of insight, innovation, and institutional memory for policymakers and practitioners across India.

-sd-

Suman Bery

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MESSAGE

The State Support Mission (SSM), under the States Division, continues to deliver on one of NITI Aayog's central tenets: that States are not just units of implementation, but engines of policy innovation. The FY 2024-25 NITI-State Workshop Series has significantly advanced this belief, creating a thriving forum where a total of 35 workshops were conducted across States/UTs and thematic areas, each co-created with NITI's divisions and ground-level actors.

This year, we saw a deepening of engagement across issues as varied as elderly care, carbon capture in cement, assistive technology ecosystems, forest-based tribal livelihoods, and internationalization of higher education. What is especially notable is the growing participation from line ministries, district administrators, knowledge partners, and multilateral institutions- testament to the credibility and practical value these workshops are delivering.

Outputs of these workshops are no longer limited to presentations. We now have white papers, policy notes, SOPs, and institutional prototypes that States are adapting. The strategic use of this knowledge base is also feeding into planning frameworks such as *District Vision 2047*, *Export Strategies*, and *Women-Led Development Missions* in aspirational districts.

As we move into FY 2025-26, I encourage all stakeholders to continue engaging with this platform not only as an event but as a policy and capacity building ecosystem. I thank our partners- Ministries, States and UTs, knowledge collaborators, and our SSM team – for their commitment to India's developmental journey.

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[B.V.R. Subrahmanyam]

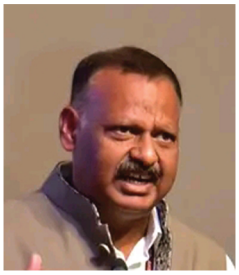
Dated: 15th September, 2025

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Special Message

From its inception, the NITI-State Workshop Series was envisioned as more than a knowledge platform-it was designed as an enabler of implementation. FY 2024-25 has seen this vision mature with an expanded set of workshops, greater participation from frontline implementers, and a strong convergence between national priorities and local action.

We have entered thematic territories this year that are not only contemporary but critical – such as cybersecurity architecture, scaling electric mobility, care economy for the elderly, and climate resilience in the Himalayan belt. Equally important have been deep-dives into sectors like MSME exports, teacher education, data systems, and gender inclusion. Our field visits, innovation expos, and site demonstrations have ensured that each policy discussion is rooted in reality.

The compendium holds the output of tireless work from division teams, partner States, and subject experts, all aligned in purpose. These takeaways are already informing the design of pilot programs, budgeting of SITs, and the refinement of the NITI for States digital platform.

I wish to extend my gratitude to all officials, participants, and development partners who lent their time, insights, and energy to these workshops. FY 2025-26 will see this initiative go deeper – into districts, community-led innovation, and systems-level institutional strengthening.

Let this compendium serve not just as a reference – but as a catalyst for the next wave of transformation across States & UTs.

(Rohit Kumar)

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Foreword

The strength of India's development journey lies in the ability of its States and Union Territories to innovate, adapt and deliver. The State Support Mission (SSM) was conceived to reinforce this strength by enhancing institutional capacity, fostering knowledge exchange and aligning regional priorities with the national vision of *Viksit Bharat @2047.*

The *NITI–State Workshop Series* has emerged as a cornerstone of this endeavor. By bringing together policymakers, experts and practitioners, it has nurtured open dialogue, cross-learning and collaborative problem-solving across diverse sectors. The workshops have explored themes ranging from scaling up electric mobility and strengthening MSMEs to re-imagining ICDS, improving senior citizen care, advancing green transitions and addressing challenges such as groundwater management and cyber governance. Each deliberation deepened our collective understanding and generated actionable, context-specific solutions for States and Union Territories.

This Compendium, building on the success of its first edition, captures the outcomes of 35 workshops held during 2024–25. It reflects the shared determination of States, the expertise of NITI Aayog, and the collective commitment of participants to shape transformative ideas. It is a testimony to the diverse perspectives and sustained efforts that drive India's developmental journey.

As we look ahead, I am confident that the insights captured here will continue to inspire policy thinking and strengthen institutional capacity across the country. More importantly, they reaffirm that India's progress rests on collaboration, innovation, and the willingness to learn from one another.

May this Compendium serve not only as a record of achievements but also as a guidepost for the path towards *Viksit Bharat @2047.*

(K.S. Rejimon)

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Preface

As the endeavours for *Viksit Bharat* @ 2047 stands, the efforts for better collaboration have begun to bear fruit. NITI Aayog is working towards fostering cooperative federalism through structured support initiatives and mechanisms with the States on a continuous basis. The foundational belief that the 'strong states make a strong nation' is the core motivation. For this purpose, State Support Mission (SSM) is strategically designed to support States/UTs in developing a roadmap and driving socio-economic reforms. The engagements of NITI Aayog with States under SSM got strengthened with the initiative of "NITI-State Workshop Series" centred around significant domains of National and State Development.

In FY 2023-24, the overwhelming success of workshops in adding value to public policy area through discussions and discourses stirred NITI Aayog to continue the initiative. The pan India coverage of NITI-State Workshop Series and enthusiasm of State officials to participate and contribute to the workshops has been the highlight. The workshops provided a platform for different stakeholders including Central Government, States Governments, district administration, block officials, multi-lateral organisations and development partners to collaborate and cross-learn on relevant themes of socio-economic development.

The workshops organised in FY 2024-25 witnessed the same zeal with more focus on contemporary themes of national and state agendas. The State Vision exercises got more attention along with themes of sustainability and data driven policies. The workshops acted as driver to more organised engagement with States. This year the workshops were designed with more sessions and panel discussions where the front-runner States got the opportunity to present their models and success stories. These workshops also supplemented the enforcement of recommendations and learning from the workshops held in the previous year.

List of Abbreviations

AI	Artificial Intelligence
NITI	National Institute for Transforming India
IIT	Indian Institute of Technology
FICCI	Federation of Indian Chambers of Commerce and Industry
ASSOCHAM	Associated Chambers of Commerce and Industry of India
CII	Confederation of Indian Industry
AIM	Atal Innovation Mission
S.A.F.E.	Site Adjacent Factory Employee
IIM	Indian Institute of Management
ADB	Asian Development Bank
UNFPA	United Nations Population Fund
WHO	World Health Organisation
UNRCO	United Nations Resident Coordinator's Office
SJE	Social Justice and Empowerment
UT	Union Territories
MoSJE	Ministry of Social Justice and Empowerment
MoHFW	Ministry of Health and Family Welfare
MoSPI	Ministry of Statistics and Programme
PFRDA	Pension Fund Regulatory and Development Authority
IRDAI	Insurance Regulatory and Development Authority of India
CSO	Civil Society Organisations
PVSM	Param Vishisht Seva Medal
AVSM	Ati Vishisht Seva Medal
SM	Subedar Major
VIF	Vivekananda International Foundation
AIIMS	All India Institute of Medical Sciences
HDFC	Housing Development Finance Corporation
IT	Information Technology
CERT	Computer Emergency Response Team
AWS	Amazon Web Services
NFSU	National Forensic Sciences University
IoT	Internet of Things
NCSC	National Cyber Security Coordinator
MeitY	Ministry of Electronics and Information Technology
NTRO	National Technical Research Organisation
NCIIPC	National Critical Information Infrastructure Protection Centre
NFSU	National Forensic Science Institute
AIM SCS	Advanced Institute of Mathematics, Statistics and Computer Science
DSCI	Data Security Council of India

LLC	Limited Liability Company
UPI	Unified Payments Interface
NGO	Non-Governmental Organisation
LAHDC	Ladakh Autonomous Hill Development Council
JJM	Jal Jeevan Mission
NIH	National Institutes of Health
CHIRAG	Central Himalayan Rural Action Group
UNICEF	United Nations International Children's Emergency Fund
PSI	Pounds per square inch
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
IARI	Indian Agricultural Research Institute
HDPE	High Density Polyethylene Pipe
SHG	Self Help Group
ISEG	Indian Society of Engineering Geology
WRI	World Resources Institute
G-Hub	Growth Hub
MMR	Mumbai Metropolitan Region
BCG	Boston Consulting Group
MSME	Micro, Small, and Medium Enterprises
FIEO	Federation of Indian Export Organisations
PHDCCI	PHD Chamber of Commerce and Industry
NIFT	National Institute of Fashion Technology
ASSET	Assessment of Scholastic Skills through Educational Testing
MoEFCC	Ministry of Environment, Forest and Climate Change
MoP	Ministry of Power
MNRE	Ministry of New and Renewable Energy
SECI	Solar Energy Corporation of India
MoPNG	Ministry of Petroleum and Natural Gas
RE	Renewable Energy
KPTCL	Karnataka Power Transmission Corporation Limited
GPCL	Gujarat Power Corporation Limited
JSW	Jindal South west
BESS	Battery Energy Storage Systems
RTC	Round-the-clock
GEAPP	Global Energy Alliance for People and Planet
TBCB	Tariff-Based Competitive Bidding
CEA	Central Electricity Authority
DTC	Delhi Transport Corporation
COO	Chief Operating Officer
CEO	Chief Executive Officer
COE	Centres of Excellence

DISCOM	Distribution Company
SETU	State Institute for Empowering and Transforming Uttarakhand
CPPGG	Centre for Public Policy and Good Governance
NPO	Non-Profit Organisation
UANA	Uttaranchal Association of North America
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy
GI	Geographical Indication
GIS	Geographic Information System
GCC	Global Capability Centre
DPIIT	Department for Promotion of Industry and Internal Trade
TERI	The Energy and Resources Institute
VCOAS	Vice Chief of the Army Staff
GRIHA	Green Rating for Integrated Habitat Assessment
DG	Director General
BEL	Bharat Electronics Limited
GHG	Green House Gases
AR	Augmented Reality
VR	Virtual Reality
STP	Systematic Transfer Plan
VSM	Vishisht Seva Medal
MSTC	Metal Scrap Trade Corporation Limited
SONAR	Sound Navigation and Ranging
LCA	Life Cycle Assessment
CAGR	Compounded Annual Growth Rate
REE	Rare Earth Elements
IAS	Indian Administrative Service
IFS	Indian Foreign Service
IRS	Indian Revenue Service
CONCOR	Container Corporation of India Limited
FMCG	Fast Moving Consumer Goods
CCUS	Carbon Capture, Utilization, and Storage
CSIR	Council of Scientific and Industrial Research
GT	General Trade
E&C	Electronics & Communication
DST	Department of Science & Technology
NTPC	National Thermal Power Corporation
NETRA	Networking Traffic Analysis
JNCASR	Jawaharlal Nehru Centre for Advanced Scientific Research
R&D	Research & Development
DAC	Direct Air Capture
DME	Dimethyl Ether

LC3	Low Complexity Communication Codec
SPV	Special Purpose Vehicle
CMD	Chairman and Managing Director
CoEES	Centre of Excellence of Energy Studies
NGRI	National Geophysical Research Institute
CBRI	Central Building Research Institute
ONGC	Oil and Natural Gas Corporation
EOR	Enhanced Oil Recovery
TPD	Trade Policy Division
BEE	Bureau of Energy Efficiency
PSA	Principal Scientific Adviser
NCCBM	National Council for Cement and Building Materials
BIS	Bureau of Indian Standards
DGH	Directorate General of Hydrocarbons
MHI	Ministry of Heavy Industries
CCI	Competition Commission of India
GCCA	Global Climate Change Alliance
CRISIL	Credit Rating Information Services of India Limited
CMA	Cost and Management Accountant
ICGEB	International Centre for Genetic Engineering and Biotechnology
BPCL	Bharat Petroleum Corporation Limited
MOES	Ministry of Earth Sciences
ICDS	Integrated Child Development Services
MU	University of Mumbai
NIHE	National Institute of Himalayan Environment
ICIMOD	International Centre for Integrated Mountain Development
IHR	International Himalayan Region
GTC	Green Transition, Climate and Environment
SARRA	Spring And River Rejuvenation Authority
EbA	Ecosystem-based Adaptation
NERIWALM	North Eastern Regional Institute of Water and Land Management
DLSV	Dudhatoli Lok Vikas Sansthan
KMUM	Kasturba Mahila Uthan Mandal
WII	Wildlife Institute of India
FSI	Forest Survey of India
SDC	Swiss Agency for Development and Cooperation
IUCN	International Union for Conservation of Nature
UNDP	United Nations Development Programme
HNB	Hemvati Nandan Bahuguna
IIRS	Indian Institute of Remote Sensing
FRI	Forest Research Institute

DAV	Dayanand Anglo Vedic
SRHU	Swami Rama Himalayan University
LBSNAA	Lal Bahadur Shastri National Academy of Administration
CSO	Chief Security Officer
ACWADAM	Advanced Centre for Water Resources Development and Management
CORD	Chinmaya Organisation for Rural Development
KMUM	Kasturba Mahila Uthan Mandal
PES	Payment for Ecosystem Services
NAPCC	National Adaptation Plan for Climate Change
SDG	Sustainable Development Goals
SSM	State Support Mission
SDGCAC	SDG Coordination and Acceleration Centre
SDGCC	SDG Coordination Centre
VNR	Voluntary National Review
VLR	Voluntary Local Review
HLPF	High-Level Political Forum
PRI	Panchayati Raj Institution
LNOB	Leave No One Behind
MDPI	Multidimensional Poverty Index
NIF & SIF	National & State Indicator Frameworks
EV	Electric Vehicle
T4SDG	Tourism for Sustainable Development Goals
NIPFP	National Institute of Public Finance and Policy
CSR	Corporate Social Responsibility
ILFF	Integrated Local Financial Frameworks
WEP	Women Entrepreneurship Platform
ATR	Award To Reward
GDP	Gross Domestic Product
DBT	Direct Benefit Transfer
STEM	Science, Technology, Engineering, and Mathematics
AICTE	All India Council for Technical Education
SEED	Science for Equity Empowerment and Development
CST	Council of Science and Technology
ASTEC	Assam Science Technology and Environment
ED	Enforcement Directorate
GUJCOST	Gujarat Council on Science and Technology
MPCST	Madhya Pradesh Council of Science and Technology
KSCSTE	Kerala State Council for Science, Technology and Environment
NDRC	National Development and Reform Commission
TNSCST	Tamil Nadu State Council for Science and Technology
MISTIC	Mizoram Science, Technology and Innovation Council

KSCST	Karnataka State Council for Science and Technology
CCRAS	Central Council for Research in Ayurvedic Sciences
NASSCOM	National Association of Software and Services Companies
PM E-DRIVE	PM Electric Drive Revolution in Innovative Vehicle Enhancement
OEM	Original Equipment Manufacturers
PLI	Production Linked Incentive
ACC	Advanced Chemistry Cells
CNG	Compressed Natural Gas
LNG	Liquefied Natural Gas
BS6	Bharat Stage 6
CAFE	Corporate Average Fuel Economy
ASTRU	Association of State Road Transport Undertakings
MoRTH	Ministry of Road Transport and Highways
ULB	Urban Local Bodies
PSU	Public Sector Undertaking
RDSS	Revamped Distribution Sector Scheme
ToD	Time of Day
CERC	Central Electricity Regulatory Commission
MoHUA	Ministry of Housing and Urban Affairs
DPR	Detailed Project Report
O& M	Operations & Maintenance
NSDC	National Skill Development Corporation
RMI	Rocky Mountain Institute
NH	National Highway
PPP	Public Private Partnership
ICE	Institution of Civil Engineers
ACMA	Automotive Component Manufacturers Association
ARAI	Automotive Research Association of India
SIAM	Society of Indian Automobile Manufacturers
ICAT	International Centre for Automotive Technology
SEWA	Self-Employed Women's Association
CIBIL	Credit Information Bureau (India) Limited
UPICON	Uttar Pradesh Industrial Consultants Limited
SoI	Statement of Intent
PHE	Public Health Engineering
GII	Global Innovation Index
GIFT	Gujarat International Finance Tec-City
GUJCOST	Gujarat Council of Science and Technology
WIPO	World Intellectual Property Organisation
IP	Intellectual Property
NCSTC	National Council for Science and Technology Communication

NIF	National Innovation Foundation
UNESCO	United Nations Educational, Scientific and Cultural Organisation
BIRAC	Biotechnology Industry Research Assistance Council
DISA	Directorate of Innovation, Startup & Acceleration
NeGD	National E-Governance Division
SMVD	Shri Mata Vaishno Devi University
FICCI	Federation of Indian Chambers of Commerce and Industry
SKUAST	Sher-e-Kashmir University of Agricultural Sciences and Technology
YUVA	Young Authors Mentorship Scheme
CiTAG	Centre for Innovation and transformation in Governance
ONDC	Open Network for Digital Commerce
JKTPO	Jammu and Kashmir Trade Promotion Organisation
NTFP	Non-Timber Forest Produce
PCCF	Principal Chief conservator of Forests
HoFF	Head of Forest Force
HRD& IT	Human Resource Development & Information Technology
MFP	Minor Forest Produce
MSP	Minimum Support Price
PM-JANMAN	Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan
PVTG	Particularly Vulnerable Tribal Group
TRIFED	Tribal Cooperative Marketing Development Federation of India
VDVK	Van Dhan Vikas Kendras
JLR	Jungle Lodges and Resorts
JFMC	Joint Forest Management Committee
TFRI	Tropical Forest Research Institute
PCOD	Polycystic Ovarian Disease
CCF	Congestive Cardiac failure
AIU	Association of Indian Universities
NEP	National Education Policy
APAIE	Asia-Pacific Association for International Education
MIT ADT	MIT Art, Design and Technology
STEMM	Science, Technology, Engineering, Mathematics, and Medicine
VIT	Vellore Institute of Technology
ASEAN	Association of South East Asian Nations
HEI	Higher Education Institutions
YASHADA	Yashwantrao Chavan Academy of Development Administration
AT	Assistive Technology
ICRC	International Committee of the Red Cross
UNRCO	United Nations Resident Coordinator's Office
SITA	State Innovation and Transformation Aayog
INM	Integrated Nutrient Management

SWOT	Strengths, weaknesses, Opportunities, and Threats
MoRTH	Ministry of Road Transport and Highways of India
AEGCL	Assam Electricity Grid Corporation
SIEMAT	State Institute of Educational Management and Training
NAS	National Achievement Survey
TEIs	Teacher Education Institutions
DoSEL	Department of School Education &Literacy
BSNL	Bharat Sanchar Nigam Limited
NCERT	National Council of Educational Research and Training
DIETs	District Institutes of Education and Training
SCERTs	State Councils of Educational Research and Training
CETE	Centre of Excellence in Teacher Education
TISS	Tata Institute of Social Sciences
B.Ed.	Bachelor of Education
NCTE	National Council for Teacher Education
HECI	Higher Education commission of India
ITEP	Integrated Teacher Education Programme
PBL	Project-Based Learning
MD	Managing Director
NWFP	Non-Wood Forest Produce
DCF	Deputy Conservator of Forests
CG	Chhattisgarh
PESA	Panchayats (Extension to Scheduled Areas) Act,1996
EMRS	Eklavya Model Residential Schools
B2B	Business-to-Business
C9	China 9
PhD	Doctor of Philosophy
UK	United Kingdom
US	United States
CSSDA	Chhattisgarh State Skill Development Authority
TRIF	Transforming Rural India Foundation
IWWAGE	Initiative for What Works to Advance Women and Girls
FLFPR	Female Labour Force Participation Rtae
NIT	National Institute of Technology
ITI	Industrial Training Institute
AWCs	Anganwadi Centres
AWWs	Anganwadi Workers
SBCC	Social and Behavior Change Communication
CREDAI	Confederation of Real Estate Developers' Associations of India
NIIF	National Investment and Infrastructure Fund

Introduction

State Support Mission is successively making efforts in supporting States/Union Territories (UTs) to redefine their development objectives. At the core of this initiative lies the vision of establishing State Institutions for Transformation (SITs) — dedicated bodies that strengthen planning processes and serve as knowledge hubs and strategic partners in driving growth. While each State/UT must chart its own development path, these efforts must remain aligned with the nation's broader goals of all-encompassing progress. Strong governance systems and proficient institutions at the State level are vital for India's advancement towards the vision of *Viksit Bharat.*

To deepen strategic engagement and reinforce cooperation between NITI Aayog and the States, the NITI-State Workshop Series was conceptualised. These workshops uphold the spirit of cooperative and competitive federalism, focusing on issues central to the socio-economic growth of various regions, along with key national and global priorities. Serving as a common platform for collaboration, cross-learning, and knowledge exchange, the workshops enabled States/UTs to share experiences, policy insights, and proven governance practices. Each session was anchored by subject Divisions of NITI Aayog, ensuring focused deliberations on critical themes of national and regional interest.

The broader aim of these workshops was to stimulate action at every administrative level — State, District, and Block — in pursuit of the *Viksit Bharat @2047* vision. These workshops encouraged stakeholders to align national priorities with local needs by identifying and integrating region-specific focus areas within wider thematic frameworks. These workshops promoted a collaborative and innovative approach to inclusive and sustainable growth.

A key highlight of the series was the emphasis on idea generation and diverse participation, bringing together policymakers, domain experts, and local stakeholders — from the National level down to the Block level — to learn, share, and co-develop practical solutions. The workshops included a wide variety of themes, such as shaping agricultural plans, expanding electric mobility, strengthening MSMEs, improving teacher training, and ensuring better care for senior citizens. Each workshop combined interactive sessions with field visits to ensure practical and context-driven learning. By fostering close collaboration with States, the workshops aimed to bridge local priorities with national goals, advancing a shared development vision.

As India aims to grow together, leaving no one behind, the workshops proved invaluable in strengthening the policy ecosystem. They demonstrated good policies and best practices on the ground, making it easier for States/UTs to learn from one another and replicate successful concepts to improve service delivery. By inviting domain specialists and enabling open dialogue and collaboration, these workshops also gathered appreciated perceptions that will guide future actions. They provided a platform for building the skills and capacities of all participants through practical sessions and exposure, while establishing a robust system for knowledge exchange, innovation, and entrepreneurial support for Central Ministries and State governments alike.

One of the key outcomes of these engagements has been the generation of detailed reports documenting discussions, research insights, and actionable recommendations. These reports serve as valuable references for policymakers, researchers, and the general public. They are

also published on the NITI for States platform to facilitate wider access to critical information and data for stakeholders across the country.

The commitment and subject expertise demonstrated by the Divisions of NITI Aayog deserve special recognition for their integral role in supporting the State Support Mission. This year's compendium captures the essence of the workshops conducted across various regions, highlighting the discussions that helped States and UTs learn, exchange ideas, and co-create effective, ground-level solutions.

In FY 2024-25, the following 35 workshops were successfully conducted:

S. N.	Workshop Name
1	Vision Assam 2047
2	Workshop on Data Forum
3	Scaling up Electric Mobility & Charging Infra: Role of States/UTs
4	MSMEs as a Driver of Export Growth: Strategies, Opportunities, and Challenges, Chandigarh
5	Stakeholder Connect Workshop -Chhattisgarh's New Industrial Policy in Focus, Export Promotion and Rollout of 'Invitation to Invest' Letters
6	Empowering MSMEs for Export-led Growth and Innovation in Andhra Pradesh
7	Strengthening the Sustainability Initiatives of the Armed Forces
8	Securing the Future: Cyber Policies & Governance
9	Future Ready Uttarakhand: Conclave-cum-Workshop on Skills & Employment
10	Skilling, Employment & Livelihood for women, tribal, and youth in Chhattisgarh
11	National Workshop on Teacher Education
12	National Workshop on Quality Education
13	Internationalisation of Higher Education in India: Challenges, Best Practices, and Policy Interventions
14	Securing Tomorrow: Unravelling the Intersection of AI and Cybersecurity
15	Enabling women-led development through Entrepreneurship
16	Enabling women-led development through Entrepreneurship for the North Eastern Region
17	Care Services in India and Beyond
18	Developing an Ecosystem for Assistive Technology in India

19	National Workshop on Fast-tracking and Reporting of Progress on Sustainable Development
20	National Workshop on Strengthening Senior Citizen Care in India
21	Re-imagining ICDS for 2030
22	Regional Workshop on Improving the Education KPIs in Aspirational Districts and Blocks of north Eastern States - A NeVolution Initiative
23	National Workshop on Building Synergy in the Indian Innovation Ecosystem
24	Empowering State S&T Councils: Towards a Collaborative Approach for Improving India's R&D Ecosystem
25	City-regions as Growth Hubs
26	Urban management
27	All-Weather Tap Water Supply in the Higher Reaches of the Himalayas.
28	Sustaining the Groundwater Sources for the drinking water supply
29	Symposium: Green Transition in States
30	Carbon Capture, Utilisation, and Storage (CCUS) in the Indian Cement Sector
31	Spring Shed Management and Climate Adaptation: Strategies for Sustainable Development in the Indian Himalayan Region
32	Forest-based livelihood opportunities for tribal communities
33	Mining Methodologies and Techniques with special reference to the Hilly Terrain in north Eastern States
34	Site Adjacent Factory Employee (S.A.F.E.) Accommodation
35	Promoting Innovation, Investment, and Industry in the MSME Sector, focusing on Textiles, Food Processing & Tourism

Site Adjacent Factory Employee (S.A.F.E.) Accommodation

New Delhi

Empowering India's workforce is pivotal to unlocking the nation's manufacturing potential. One strategic lever to achieve this is the provision of well-planned, accessible accommodation for factory workers on or near industrial sites. The "SAFE Accommodation: Workers' Housing for Manufacturing Growth" model plays a crucial role in advancing this objective. By promoting worker well-being, reducing commute-related fatigue, and lowering transportation costs, SAFE housing directly contributes to greater productivity and the sustainable expansion of the manufacturing sector.

Recognising the urgency and importance of this issue, NITI Aayog organised a one-day National Workshop on "SAFE Accommodation: Worker's Housing for Manufacturing Growth" on 7th August 2024 at Bharat Mandapam, New Delhi. The workshop aimed to bring together key stakeholders to collaboratively explore comprehensive strategies for integrating worker housing into industrial and urban planning, with a vision to boost productivity and drive economic growth.



The National Workshop on "SAFE Accommodation: Workers' Housing for Manufacturing Growth" brought together a diverse coalition of stakeholders committed to shaping an inclusive and forward-thinking approach to worker housing. Key institutional participants included the Ministry of Housing and Urban Affairs (MoHUA), the Ministry of Textiles, the Department for Promotion of Industry and Internal Trade (DPIIT), and the Department of Economic Affairs.

Several progressive states showcased their innovative models and policy frameworks aimed at supporting factory worker accommodation, including Tamil Nadu, Gujarat, Andhra Pradesh, Uttar Pradesh, Telangana, Maharashtra, and Karnataka.

The workshop was enriched by insights from the Jana Group, the designated Knowledge Partner, whose deep expertise in urban planning and worker housing added a strategic perspective to the discussions. Prominent industry associations such as CREDAI and National Investment and Infrastructure Fund (NIIF) provided the private sector lens, emphasising scalable public-private partnership models, land use planning, and viable investment frameworks.

Several distinguished leaders from government and industry participated in the workshop, contributing meaningful insights and recommendations. Their perspectives played a pivotal role in shaping the key policy proposals outlined in the *"SAFE Accommodation: Workers' Housing for Manufacturing Growth"* report.



Inaugural Session

The Inaugural Session set the context of the workshop. After providing brief introduction on State Support Mission, the presentation on SAFE accommodation emphasised the importance of workers' accommodation in industrial estates. The presentation also highlighted worker accommodation as essential infrastructure for rapid large-scale industrialisation. Proper accommodation significantly impacts workers' productivity and well-being. If factories are located far from worker homes, substantial time and money are spent on travel, effectively reducing real wages. Addressing these housing challenges is essential for India to tap into its underutilised workforce of approximately 120 million people in the coming years. Integrating worker housing with industrial planning is vital to enhance productivity and support economic growth.

Session I: Understanding State's initiatives in India and analysing possible models for Factory Workers Accommodation

This session was about Understanding State's initiatives in India and analysing possible models for Factory Workers Accommodation. This session analysed the bottlenecks that the country faces in scaling up factory accommodation and discussed the efficacy of certain models

that could potentially work for India. Emerging initiatives by states of Andhra Pradesh and Tamil Nadu were showcased to understand the models, operational constraints, and scaling possibilities. All possible models, both existing and proposed, were analysed and deliberated. Accommodation opportunities and challenges for textiles and leather sectors were discussed at length during this session.



Session II: Analysing regulations, reforms, operating models and incentives by Central Government to promote SAFE accommodation

In this session, participants discussed the various enablers for SAFE accommodation to scale in India. The discussion focused on regulatory and policy changes needed specifically around land use, zoning laws, building bye-laws etc, design standards and specifications needed to ensure worker welfare. The discussion touched upon how these aspects may vary across contexts like brownfield vs greenfield development, large scale manufacturing vs MSME etc. State initiatives were presented by Uttar Pradesh and Karnataka. Electronics and Automobiles are two sectors that were presented during the session by respective sectoral experts. Since, these two sectors were high-value and high-skill sectors, factory accommodation as an additional incentive for retaining talent was emphasised upon. The session underscored the necessity of ease of doing business, and regulatory reforms to unlock the potential of manufacturing sector through affordable accommodation for its workers.

Session III: Harnessing the Potential of Public Private Partnerships for Worker Accommodation

This session on "Harnessing the Potential of Public Private Partnerships for Worker Accommodation" discussed the role of the major players involved for scaling up factory workers' accommodation viz. Central Government, State Governments, Private Developers and financiers. This session also highlighted how the role of each of the players are distinctly different form that of others. The session extensively analysed the broad role that each stakeholder has to undertake and the expectation of each stakeholder from each other to

accelerate adoption of SAFE accommodation. This section also discussed strategies that the Government can use to stimulate private investment including viability gap funding (VGF) possibilities through Public-Private Partnership (PPP) models.

The concluding session summed up the proceedings of the entire day. In this session, the key takeaways from previous sessions were discussed and the future course of action/way forward was laid down.



Outcomes

In the Union Budget 2024, Hon'ble Finance Minister had announced a significant initiative to address the need for workers' accommodation: "Rental housing with dormitory-type accommodation for industrial workers will be facilitated in public-private partnership (PPP) mode with Viability Gap Funding (VGF) support and commitment from anchor industries." Based on the findings of the Workshop, a Working Group on Site Adjacent Factory Employee (S.A.F.E.) Accommodation to develop actionable strategies for scaling workers' accommodation across industrial sectors was formed. Based on the recommendations of the working group, NITI Aayog released a detailed report with key policy recommendations on "SAFE Accommodation: Worker Housing for Manufacturing Growth" during December, 2024. This Report identifies key challenges, offers actionable solutions, and highlights the pivotal interventions required to scale up such housing facilities across the country. This report has been shared with MoHUA for further necessary action.

Securing Tomorrow: Unravelling the Intersection of AI and Cybersecurity

New Delhi

The world has become increasingly interconnected, and almost all sectors are relying upon digital technologies. The intersection of Artificial Intelligence (AI) and Cybersecurity has emerged as a critical area of concern for Governments, Industries, and Policymakers worldwide. Recognising the strategic importance of this domain, a workshop was organised under the NITI State Workshop series, an initiative of the State Support Mission and the Science & Technology Vertical of NITI Aayog.

The workshop aimed to provide a strategic policy perspective on bridging the gap between India's existing capabilities and global benchmarks in AI-driven cybersecurity. The initiative focuses on identifying actionable pathways to strengthen India's digital resilience and enhance its preparedness against evolving cyber threats.

The workshop witnessed active participation from several key Central Ministries and Departments, reflecting a broad and integrated approach to innovation and sectoral development. These included the Department of Science & Technology, Department of Biotechnology, and the Department of Scientific & Industrial Research, along with the Department of Health Research and the Ministry of Electronics & Information Technology. Strategic domains were represented by the Department of Atomic Energy, the Department of Space, and the Department of Earth Sciences, while environmental and climate concerns were addressed by the Department of Environment, Forests, and Climate Change. Energy transition and sustainability were supported through participation from the Ministry of New & Renewable Energy, and the Department of Agricultural Research and Education contributed insights on Agri-based innovation and rural development.

The representatives from all States and Union Territories participated along with academic institutions like the Indian Institutes of Technology (IITs). The industry participants from the Federation of Indian Chambers of Commerce and Industry (FICCI), Associated Chambers of Commerce and Industry of India (ASSOCHAM), and Confederation of Indian Industry (CII) also joined the workshop.

Session Details

The workshop consisted of 4 sessions:

a. Recent Trends and Emerging Cyber Threats: Report from the ground

b. Is Cybersecurity the New Warfare: A Strategic Perspective

c. The Evolution of AI and Its Strategic Importance

d. Collaboration and Partnerships: Transforming Data Security and Cyber Defences

The urgent need for India was emphasised to develop a cohesive, long-term strategy that leverages the power of AI to strengthen India's digital defence. Additionally, the rapidly evolving landscape of cyber threats demands an advanced and well-equipped infrastructure mechanism to ensure a secure digital platform and to position India as a global force in the sector.

An urge for policymakers to take steps towards a comprehensive national strategy that seamlessly integrates AI and cybersecurity. The call to action was emphasised. The importance of collective and collaborative efforts of the diverse stakeholders towards the success of India's AI-driven cybersecurity initiatives. The investment in large-scale talent development programmes was emphasised. Additionally, India's steps directed towards achieving technological self-reliance, with a thriving domestic AI research ecosystem, product development, and commercialisation, were given importance. The significance of the shared duty of various stakeholders – citizens, organisation, and institutions within the country, along with the Government, in securing India's digital landscape was highlighted in the workshop.

Outcomes

- Data Security: With digitalisation, there is an increased focus on data security, securing supply chains, and managing insider threats. The data security as a subject matter is evolving with terms like "Zero Trust Architecture", "Cloud Security", and "compliance with stringent data privacy regulations". In light of this, the workshop focused on technologies like Blockchain and Quantum-safe Cryptography, which offer new avenues for secure data handling. The innovation in the latest technologies was stressed to ensure a secure data platform.
- Rising Cyber Attacks**:** The workshop focused on the vulnerability of critical infrastructures to cyberattacks. The evidence on the involvement of the Nation State actors in the recent attacks on critical infrastructure creates an urgency in ensuring cyber-aware digital transformation for the successful implementation of schemes like Digital India, Smart Cities Mission, and other emerging initiatives such as the Green Hydrogen Mission.
- Key Challenges to Combat Cyber Attacks**:** The workshop focused on the key challenges that India is confronting in effectively combating cyberattacks. The limited awareness and preparedness on cybersecurity, a fragmented regulatory framework, a shortage of skilled cybersecurity professionals, an insufficient cybersecurity infrastructure, rapid digital transformation, geopolitical tensions and threat actors, privacy, and data protection concerns are some of the areas that are essential for data safety and security in India.
- Evolution of Artificial Intelligence**:** The evolution of Artificial Intelligence (AI) can be traced back to rule-based systems and expert systems in the mid-20th century. The late 20th century saw advances in machine learning and neural networks, resulting in a more sophisticated pattern of recognition and predictive analytics. The breakthrough in image and speech recognition was seen with the rise of Deep Learning in the 2010s. The workshop discussed how recently AI has been integrated with big data and cloud computing, resulting in the enhancement of its accessibility and capabilities. AI is increasingly used across various industries, driving advanced innovation and automation in the present times.
- AI for Security**:** The workshop discussed the effective use of AI in Governance, Enforcement, and the development of Automated reasoning. The efficiency in the detection, prediction, and response to cyber threats shall be enhanced with the integration of AI into cybersecurity policies and strategies. The incidence and intensity of cyber threats are on the rise, thereby AI plays a strategic role in cybersecurity in the present times.

- AI War**:** The AI-driven technologies have the potential and capabilities to execute and implement complex missions with precision and speed, encompassing human capacity. The dignitaries discussed the ethical concerns associated with the rise of AI in warfare, and the risk of unintended consequences such as loss of human control, and increased potential for conflict escalation. International regulations and agreements were debated regarding the management of AI in the military sector.
- Quantum Ecosystem**:** The potential of quantum technology in transforming data security was discussed. The technology provides advanced tools and methods to secure information against emerging threats.
- Building Capabilities**:** The workshop discussed the urgency of employing highly secure software in the telecom networks. Additionally, integrating AI into educational curricula at all levels to cultivate a skilled workforce and adopting a design-centric approach to enhance cybersecurity were emphasised.
- Indigenous Software**:** India's impetus for Atmanirbhar Bharat (Self-Reliant India) was highlighted in the discussion by placing more emphasis on the development of indigenous technologies equipped with advanced threat intelligence, understanding Trojan capabilities of hardware, and improving the maturity levels of defensive actions.
- Leveraging Blockchains**:** Modern technologies such as Blockchain can be effectively leveraged to combat crimes based on crypto chain networks. The open-source data science algorithms may be utilised to mitigate cybercrimes perpetrated by Generative AI Models, and for establishing ethical hacker teams to counter cyberattacks.

Care Services for India and Beyond

Shillong, Meghalaya

As part of its NITI-State Workshop Series under the SSM Initiative, NITI Aayog, in collaboration with the Government of Meghalaya and IIM Shillong, organised a one day workshop titled "Care Services for India and Beyond" on 30th August 2024 at IIM Shillong. The workshop aimed to provide a platform for key stakeholders, including government representatives, international organisations, and industry experts, to deliberate upon the various aspects of the care ecosystem in India. Discussions focused on the growing demand and supply of caregiver services for elderly persons, considering their increasing population and evolving needs.

The event witnessed the participation of concerned Central Ministries, representatives from State and Union Territory Governments, and leading international organisations, including, World Bank, Asian Development Bank (ADB), United Nations Population Fund (UNFPA), World Health Organization (WHO) and United Nations Resident Coordinator's Office (UNRCO). Representatives from 28 States actively contributed to discussions on policy interventions, institutional frameworks, and sustainable models for developing the care services sector. The Central Ministry of Social Justice and Empowerment, Department of Empowerment of Persons with Disabilities, Ministry of External Affairs, Ministry of Skill Development and Entrepreneurship, and Ministry of Health and Family Welfare also participated in the workshop.



The workshop had following three technical sessions in addition to the inaugural session.

a. State Initiatives for Senior Care and Care Services: Mizoram, Andhra Pradesh, Kerala, Tamil Nadu, Sikkim, Gujarat and Karnataka presented their best practices.
b. Capacity Building and Employability of Caregivers: MoSJE, MoRD, MEA, MoHFW and MSDE made presentations.
c. International Best Practices and Overseas Opportunities in Senior Care: ADB, World Bank, WHO, UNFPA, ILO, IOM and UN Women share global best practices.

In the first Technical Session on 'State Initiatives for Senior Care and Care Services', the representatives of 07 state Governments, viz., Government of Mizoram, Andhra Pradesh, Kerala, Tamil Nadu, Sikkim, Gujarat and Karnataka shared their best practices, significant initiatives taken, followed by the panel discussion. Some of the key points that emerged during the discussions are summarised below:

Sikkim Initiatives

- Financial security through Old Age Pension and Disability Pension Schemes.
- Atal Vayo Abhyuday Yojana supports training for geriatric caregivers and the distribution of assistive devices.
- Recommendations include expanding training programs, increasing distribution reach, and enhancing institutional care.

Gujarat Initiatives

- Healthcare services under the AB-PMJAY-MA scheme offer health coverage and pilot home visit services.
- Training programs like the Elderly Home Care Assistant Course.
- Suggested actions include expanding healthcare services, increasing caregiver training opportunities, and improving healthcare accessibility.



Tamil Nadu Initiatives

- Social security through Old Age Pension Scheme and integrated complexes for seniors.
- Healthcare initiatives include pneumonia vaccination and specialised medical support.
- Recommendations focus on expanding pension coverage, developing retirement complexes, and enhancing geriatric healthcare.
- Andhra Pradesh Initiatives
- Social security pensions for millions and establishment of Maintenance Tribunals.
- Geriatric care through daily OPDs and dedicated hospital wards.
- Suggested improvements include developing Centers of Excellence, enhancing healthcare accessibility, and strengthening home-based care.

Kerala Initiatives

- Focus on dementia care and home-based support.
- Establishment of care centres and training programs for caregivers.
- Recommendations include addressing caregiver shortages, enhancing service monitoring, and expanding dementia care.

During the second Technical Session on 'Capacity Building and Employability of Caregivers', the representatives of the Central Ministries, viz., Ministry of Social Justice and Empowerment, Ministry of Rural Development, Ministry of External Affairs, Ministry of Skill Development and Entrepreneurship, Ministry of Health and Family Welfare presented their initiatives taken for the elderly care Central Ministries' Recommendations. Key Points shared by the Ministries viz.

MoRD, emphasised improving rural infrastructure, including the elderly in livelihood activities, and enhancing digital accessibility; MSDE highlighted the need for a national system of elderly caregivers and coordinated efforts between healthcare professionals; MoHFW stressed on addressing the shortage of healthcare professionals and improving coverage for elderly healthcare needs.

In the third Technical Session on 'International Best Practices and Overseas Opportunities in Senior Care', International organizations such as the Asian Development Bank, World Bank, UNRC, World Health Organization, International Organisation for Migration, International Labour Organisation, and UNFPA during the technical session on deliberated upon the International best practices and overseas opportunities in Senior Care and how India's demographic capital can be channelized for providing caregiving services in India and beyond. This included details of the ongoing regional projects such as Odisha Skill Development Projects, Madhya Pradesh Skills Development Project, Himachal Pradesh Skills Development Project, etc.

Status of elder care globally and mismatch between the demand and supply of elder care services was also discussed. Strategies to leverage and incorporate best practices, i.e., Assessment of local population requiring LTC, mapping current LTC coverage, designing LTC Package, Integrating and aligning interventions. Additionally monitoring of care delivery, etc., review and expansion of coverage was deliberated. Goa Initiative PPP model, assisted living facilities, leveraged technology, etc. were highlighted.

Further, the workshop was concluded with remarks from the Hon'ble Member, who highlighted the need to develop the Indian model of caregiving services, prioritising older women and addressing gaps in urban and rural regions for providing care to elderly persons.

Outcomes

The workshop provided a platform for representatives from State Governments and key stakeholders to deepen their understanding of the care services landscape, its rising significance in a transitioning demographic context, and the imperative role of state-level action in shaping a responsive and inclusive care ecosystem in India. Through interactive sessions and expert-led discussions, States were introduced to diverse policy approaches, scheme architectures, and replicable best practices from pioneering states such as Kerala and Tamil Nadu—highlighting scalable models of integrated care delivery.



By bringing together policymakers, industry leaders, civil society actors, and international experts, the workshop enabled meaningful dialogue and strategic convergence on critical aspects of care provision. It catalyzed forward-looking collaboration, encouraged policy innovation, and laid the groundwork for the formulation of effective, context-sensitive implementation frameworks. The deliberations underscored the urgency of fostering a coordinated and future-ready care economy—one that is sustainable, equitable, and attuned to the evolving needs of India's diverse population, especially the elderly and vulnerable groups.

The workshop provided platform for the representatives of State Government and other The insights, recommendations, and strategic inputs gathered during the workshop have been incorporated in the Discussion Paper titled "Reimagining Care: Strategies for Empowering Caregivers in Viksit Bharat' being prepared by the Social Justice and Empowerment (SJE) Division. This document will serve as a policy framework for addressing the growing demand for caregiver services, enhancing institutional support, and ensuring comprehensive care solutions for elderly persons across the country.

Strengthening Senior Citizen Care in India

Thiruvananthapuram, Kerala

India's elderly population is experiencing rapid growth, with projections indicating an increase from 149 million in 2022 to 347 million by 2050. This demographic transition presents significant challenges and opportunities across various sectors, including healthcare systems, economic and financial markets, social protection, digital inclusion, and senior living solutions. The state-wise share of the elderly population is expected to rise from 10.1% in 2021 to 15% in 2036, with 12 states surpassing the national average of 15% by 2036. The anticipated demographic shift necessitates comprehensive strategies to strengthen infrastructure, policy frameworks, and service delivery mechanisms, ensuring holistic care and social security for senior citizens.

With the aging population expected to strain existing healthcare and social care systems, it is imperative to reassess service delivery models, understand the financial needs of the elderly, and implement targeted policies to facilitate dignified and secure living conditions. India must rapidly adapt to the evolving health, social, and economic challenges posed by these demographic changes.



The Health and Family Welfare division of NITI Aayog, in collaboration with the Ministry of Social Justice and Empowerment and the Department of Social Justice, Government of Kerala, conducted a National Workshop on "Strengthening Senior Citizen Care in India" on 27th September 2024 at the Institute of Management in Government, Thiruvananthapuram, Kerala. The workshop was inaugurated by the Chief Guest, Dr. R. Bindu, Hon'ble Minister of

Higher Education and Social Justice, Government of Kerala, who underscored the progressive initiatives undertaken by the Kerala Government to enhance senior citizen care. The workshop was chaired by Dr. V.K. Paul, Hon'ble Member (Health), NITI Aayog. Senior officials from MoSJE, MoHFW, and other participating ministries and state governments. Sectoral and technical experts from PFRDA, World Bank, WHO India, IRDAI, and other national and international Organisations.

The primary objective of this workshop was to gather insights and recommendations from States and Union Territories (UTs) on Strengthening Senior Citizen Care in India, with a focus on:

a. Identifying Policy Gaps – Assessing existing policies and recognising areas requiring policy revisions or new interventions.

b. Enhancing Infrastructure – Discussing healthcare facilities, senior living spaces, and digital inclusion strategies essential for elderly care.

c. Capacity Building – Exploring training programmes for caregivers, healthcare professionals, and community-based Organisations.

d. Promoting Best Practices – Sharing successful regional models to encourage collaborative approaches to elderly care.

The sessions of the workshop were strategically designed to explore various dimensions of senior citizen care, covering policy frameworks, healthcare services, digital literacy, and financial security.



The key areas addressed during the workshop included:

1. Quality Care and Well-Being – Developing robust policy frameworks to improve healthcare accessibility, social security measures, and legal protections for the elderly.
2. Integrated Healthcare Services – Strengthening physical, mental, and emotional health services, including primary care, home-based healthcare solutions, and geriatric care models.
3. Bridging the Digital Divide – Promoting digital literacy and online safety for senior citizens, ensuring seamless access to digital services and healthcare innovations.
4. Financial Security for Senior Citizens – Establishing effective financial planning mechanisms, improving access to financial services, insurance schemes, and fraud prevention measures.

Panellists included representatives from Central Ministries, State Governments, non-governmental organisation (both national and international), and sectoral experts, offering valuable insights on policy interventions and best practices for senior citizen welfare.

This collaborative initiative sought to foster an inclusive and supportive environment, enabling senior citizens to live with dignity, security, and well-being. The key emerging themes were:

a. Health Systems – Strengthening geriatric care, chronic disease management, and mental health support.

b. Economic and Financial Security – Ensuring financial stability for seniors through pension schemes, savings initiatives, and employment opportunities.

c. Social Protection – Reinforcing legal frameworks and expanding social safety nets for elderly citizens.

d. Digital Inclusion – Promoting digital literacy and facilitating technology-driven solutions for seniors.

e. Senior Living – Developing age-friendly communities and housing solutions tailored for older adults.



Outcomes

The discussions and round table sessions underscored the importance of a multi-faceted approach to senior care, integrating healthcare, technology, community resources, and financial planning.

- Policy & Legal Frameworks**:** Comprehensive policy reforms are essential to address evolving senior care needs. Insights from Kerala's successful models in senior care highlight scalable strategies for other states. A unified legal framework is necessary to safeguard the well-being of the elderly.
- Care Provisions & Workforce Development: Training caregivers and strengthening healthcare delivery for elderly citizens is a priority. Leveraging community-based resources can enhance elderly care initiatives.
- Integrated Healthcare Services: Primary care and home-based solutions should be integrated into mainstream healthcare. Technology-driven healthcare innovations will enhance accessibility and service delivery.
- Digital Literacy & Inclusion: Bridging the digital divide will empower seniors with tech-driven convenience. Ensuring online safety and data security for elderly users is crucial.
- Financial Security: Access to pensions, savings instruments, and financial services must be expanded. Fraud prevention strategies should be prioritised to protect elderly citizens.

The workshop received excellent feedback from participants, who praised the well-structured sessions, valuable insights, and comprehensive approach to elderly care. The discussions generated thought-provoking recommendations, laying the groundwork for future policy developments.

The commitment to continuous improvement and innovation in senior care remains a national priority, ensuring India adapts effectively to the demographic transition and evolving needs of its aging population.

Securing the Future: Cyber Policies and Governance

New Delhi

In the contemporary digital era, cybersecurity constitutes a vital pillar for a nation's development, stability, and prosperity. However, it is frequently overlooked by various government entities and service providers, resulting in significant consequences. Such neglect not only compromises national security but also adversely impacts citizens, exposing them to data breaches, financial fraud, and systemic vulnerabilities. As India advances towards its aspirational goal of "Viksit Bharat 2047," cybersecurity emerges as a crucial enabler of national progress and protection.

Cybersecurity is not merely a technical requirement but a foundational element in India's pursuit of becoming a "Viksit Bharat 2047." The objective is to establish a secure, trusted, and resilient cyber ecosystem that safeguards future generations while ensuring preparedness against the evolving landscape of cyber threats.

The workshop aimed to address several critical objectives essential for strengthening India's cyber resilience. These included the need to establish a comprehensive national Cyber Security Framework and to bridge existing gaps in cyber governance and policy implementation. Emphasis was placed on fostering convergence among government, industry, and academia to create a unified and collaborative approach. Additionally, the workshop sought to raise awareness about cybersecurity, cyber defence, and cyber hygiene across states, departments, and entities managing Critical Information Infrastructure. It also highlighted the importance of advancing legal frameworks and enforcing stringent cybersecurity laws to support national cybersecurity efforts.



Dr. Vijay Kumar Saraswat, Member, NITI Aayog, highlighted the cybersecurity vulnerabilities emerging from digitisation, especially in critical infrastructure, and emphasised social engineering threats, the need for a multi-layered defence approach, and the urgency of closing policy and governance gaps.

Shri BVR Subrahmanyam, CEO, NITI Aayog, underscored the cybersecurity implications of India's rapid digital growth and proposed a dedicated session for states at the upcoming Chief Secretary Conference, Lieutenant General M. U. Nair, PVSM, AVSM, SM National Cyber Security Coordinator, National Security Council Secretariat, India, and Dr. Gulshan Rai, Distinguished Fellow, Vivekananda International Foundation (VIF) Former National Cyber Security Coordinator, Government of India recommended assigning cybersecurity responsibility to executive heads of organisations and including it in annual reports.

Academia experts called for capacity building, increased industry collaboration, robust hardware and firmware testing, and algorithm-level cybersecurity research. Private sector representatives from Google and Microsoft emphasised the importance of AI, Zero Trust architecture, policy interoperability, cyber-forensics privatisation, and adopting a trusted geographical approach to enhance national cybersecurity and bridge skill gaps.



The workshop served as a strategic platform to enhance India's cyber resilience by fostering collaboration among the Government, Industry, and Academia.

a. High-Level Participation & Stakeholder Engagement**:** Senior leaders, including Dr. Vijay Kumar Saraswat, Shri BVR Subrahmanyam, Lt. Gen. M.U. Nair and Dr. Gulshan Rai emphasised urgent reforms, cross-sector synergy, and policy innovation.

b. India's Growing Cyber Threat Landscape & Security Challenges: India's escalating cyber threat landscape, evident from 116,000 incidents in 2023, impacting institutions like AIIMS, HDFC Bank, and Paytm, highlighted vulnerabilities in digital infrastructure and the need for a unified National Cybersecurity Framework.

c. Call for a Comprehensive National Cybersecurity Framework**:** Experts underscored fragmented governance under the IT Act 2000 and CERT-In, calling for an integrated policy and enforcement.

d. Multi-Layered Cybersecurity Approach for National Security: Dr. Vijay Kumar Saraswat advocated a multi-layered cybersecurity approach combining defensive and offensive strategies, AI-driven threat detection, and predictive analytics.

e. Private Sector's Role in Strengthening Cybersecurity**:** The private sector, including Google, Microsoft, and AWS, emphasised Zero Trust Architecture, real-time intelligence sharing, and public-private partnerships for indigenous cybersecurity solutions.

f. Academia's Contribution to Cybersecurity Research & Development: Academic representatives from IIT Madras, NFSU, and CR Rao AIMSCS stressed capacity building, hardware testing, and integrating cybersecurity into curricula to foster innovation.

g. Emerging Technologies & Evolving Cyber Threats: Key concerns included AI-based threats, quantum computing risks, and critical infrastructure vulnerabilities, calling for post-quantum cryptography and stronger IoT security.



Policy recommendations included a dedicated cybersecurity session at the Chief Secretaries' Conference, a national legal framework with strict penalties and mandatory audits, and support for the indigenisation of cybersecurity technology. The workshop also emphasised nationwide awareness campaigns, leveraging National Cybersecurity Month, and integrating cybersecurity education in schools to build long-term capacity and cyber hygiene.

The workshop saw the participation of key stakeholders from both government and industry, reflecting a strong collaborative approach to national innovation and cybersecurity. Major participants included the Ministry of Home Affairs, the Ministry of Defence, and the National Cyber Security Coordinator (NCSC). Technical and digital security representation came from the Ministry of Electronics and Information Technology (MeitY), including CERT-In, along with the National Technical Research Organisation (NTRO) and NCIIPC. The National Forensic Science University (NFSU) contributed expertise in digital forensics, while academic and research perspectives were offered by the Indian Institute of Technology Madras (IIT Madras) and the CR Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIM SCS), Hyderabad. From the private sector, leading firms such as Google LLC, Microsoft Corporation, and Amazon Web Services brought forward insights on digital innovation and data security. Emerging players like Kristellar Aerospace and DC Infotech, and Communication Ltd also contributed to the dialogue, reinforcing the role of startups in shaping India's digital and defence future.



Outcomes

India's accelerated digital transformation necessitates a robust and comprehensive cybersecurity framework to safeguard critical infrastructure and ensure data resilience. The workshop identified key strategic priorities and actionable measures across multiple domains:

- Strengthening Cybersecurity in Critical Infrastructure: Emphasis was placed on regular cybersecurity assessments, developing both defensive and offensive strategies, and establishing security frameworks for critical systems like UPI. Dedicated IT security funds were recommended for infrastructure protection and risk management.
- Boosting National Cyber Awareness and Education: Stakeholders proposed leveraging National Cybersecurity Month for awareness, integrating cybersecurity into school curricula, and launching campaigns on phishing, social engineering, and data protection to build national cyber hygiene.
- Advancing Technology-Specific Security Frameworks: Experts highlighted the urgency to prepare AI, 5G, and quantum-specific cybersecurity frameworks. Real-time network monitoring and international regulatory collaboration were identified as key to managing emerging risks.
- Innovation and Regional Cybersecurity Partnerships: The need to address supply chain risks through Asia-centric guidelines and promote innovation via NTRO-led initiatives for infrastructure protection was emphasised.
- Fostering a Secure Data Economy: Recommendations included enforcing data management protocols, updating data protection laws, and enhancing security in digital infrastructures to support India's expanding data economy.
- Strategic Leadership and AI in Cyber Defence: AI and machine learning were identified as essential for predictive threat detection, response automation, and AI-centric cyber warfare capabilities for national defence.
- Focus on IoT Security: The workshop called for strong security protocols for IoT devices, including encryption standards and secure data management to prevent system-level vulnerabilities.
- Enhanced Cyber Forensics and Post-Attack Response Mechanisms: Enhancing forensic capabilities through targeted training and promoting advanced post-incident analysis was recommended to strengthen cyberattack recovery and investigation processes.
- Ensuring Secure Communication Networks: Deployment of secure, private communication networks for critical government and defence entities was proposed to mitigate cyber espionage threats.
- Strengthening Industry-Government Collaboration: The workshop encouraged cohesive public-private strategies, joint audits, and threat intelligence sharing platforms to fortify national cybersecurity.
- Enhancing Digital Infrastructure Security: The adoption of unified frameworks featuring Zero Trust Architecture, AI-powered risk assessment, and hardware security measures was recommended to safeguard digital assets.
- Improving Cyber Forensics and Post-Attack Resilience: Strengthening tracing capabilities, attacker identification, and developing resilient post-attack protocols were suggested to improve incident handling.
- Policy Strengthening and Regulatory Reforms: Sector-specific regulations, expedited national policy development, and regular audits were proposed to maintain compliance with evolving global standards.
- Capacity Building and Talent Development: To address skill shortages, stakeholders advocated for early cybersecurity education, certification programs, simulations, and state-level collaboration.

- Focus on Emerging Technologies and Quantum-Resistant Security: Priorities included developing post-quantum cryptography, defending against AI data poisoning, and deploying AI sensors in data centres for proactive threat mitigation.
- International Cooperation and Cybersecurity Standards: India was urged to engage in global treaties, align with international standards, and address cybersecurity across the supply chain and geographies.
- Advancing AI and Technology in Cyber Defence: Widespread adoption of AI in defence, Zero Trust protocols, and continuous access control were underscored to enhance threat response capabilities.
- Developing Resilient Data and Communication Infrastructures: Investments in local data centres, secure cloud storage, and Zero Trust data management practices were emphasised to protect against cross-border cyber threats.



All-Weather Tap Water Supply in the Higher Reaches of the Himalayas

Shimla, Himachal Pradesh

NITI Aayog, in collaboration with the Planning Department, Government of Himachal Pradesh, held a workshop titled "All-Weather Tap Water Supply in Higher Reaches of the Himalayas" from October 22-23, 2024, in Shimla. The event focused on addressing significant challenges in maintaining continuous water supply in high-altitude Himalayan regions, where extreme weather often causes freezing and bursting of water pipes. The workshop brought together stakeholders from various Indian Himalayan states, government bodies, NGOs, and water experts to foster collaboration and exchange solutions. The objectives of the workshop were as follows:

a. To identify the specific challenges faced by Himalayan regions in securing a reliable, all-weather water supply.

b. To explore diverse approaches to ensure year-round water access in high-altitude Himalayan states.

c. To address water supply issues based on regional geography, affected populations, and financial considerations.

d. To examine potential technological solutions, including IoT, AI, and frontier technologies, in solving water supply challenges.

e. To compile global and regional best practices that could be adapted to the Himalayas.

f. To develop strategies for designing and implementing a continuous 24/7 water supply in remote, high-altitude areas.



The workshop included presentations from experts and highlighted case studies, such as the Ladakh model under the Jal Jeevan Mission. This model provided insights into innovative solutions like solar-powered water supply, advanced pipe insulation, and IoT-based monitoring for ensuring safe, reliable access. The collaborative discussions and shared experiences over the two days laid the groundwork for future improvements in water security and quality of life across the Himalayan region.

The Workshop was attended by distinguished members- Dr. V.K. Paul, Hon'ble Member, NITI Aayog, Sh. Stanzin Chosphel, Hon'ble Deputy Minister, Executive Councillor (Agriculture), LAHDC- Leh, Govt of Ladakh (UT), Sh. Onkar Sharma, Addl. Chief Secretary (Jal Shakti), Govt. of Himachal Pradesh, Sh. Pradeep Singh, Director (JJM), Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Er Anju Sharma, Engineer in Chief, Govt of Himachal Pradesh, 8 Himalayan states: Ladakh (UT), Himachal Pradesh, Uttarakhand, Assam, Jammu & Kashmir (UT), Sikkim, Arunachal Pradesh, Nagaland, Experts/Knowledge Partner: NIH Roorke, IIT Roorke, GB Pant National Institute of Himalayan Environment Uttarakhand, IIT Mandi, CHIRAG Foundation Uttarakhand, Pipal Foundation Himachal Pradesh, UNICEF, PSI Uttarakhand, GIZ, Himmothan Uttarakhand, Water Technology Centre (IARI) New Delhi, and Assistant Engineers/ Superintendent Engineers from Aspirational Districts and Blocks of the 8 Himalayan States.



The plenary featured addresses by Hon'ble Member Dr. V.K. Paul NITI Aayog, Sh. Onkar Sharma, Addl. Chief Secretary, Jal Shakti Vibhag, Himachal Pradesh, and Sh. Stanzin Chosphel, Hon'ble Deputy Minister, Executive Councillor (Agriculture), Govt of Ladakh. It celebrated the rapid expansion of rural tap water connections under the Jal Jeevan Mission (JJM), highlighting the health, gender, and livelihood benefits. The Ladakh model, using insulated pipes and community ownership, was recommended for replication. Emphasis was placed on antifreeze techniques and community-driven approaches for sustainability in high-altitude areas.

Session I

This session on India's Water Supply – Systems, Challenges, and Innovations provided a national and regional overview of water supply progress under the Jal Jeevan Mission, highlighting remarkable gains in rural tap water coverage. Presentations emphasized that Himalayan states face unique geographical and climatic hurdles such as freezing, spring depletion, and terrain instability, necessitating higher investments and localized solutions. Ladakh's innovative use of heat-trace cables, insulated pipes, and solar systems was commended as a replicable model. The session stressed the importance of community-led operations, digital monitoring (e.g., water quality portals), and a shift from infrastructure delivery to functionality. Key recommendations included the need for comprehensive spring data, better operation and maintenance mechanisms, and multi-agency coordination.

Session II

Representatives from Assam, Jammu and Kashmir, Uttarakhand, Sikkim, Arunachal Pradesh, and civil society gave presentations and shared on-the-ground insights & experiences. Common challenges included difficult access, source sustainability, contamination, freezing infrastructure, and limited community trust in treated water. States like Arunachal and Sikkim showcased successful models integrating tourism, SCADA monitoring, solar pumps, and lake rejuvenation. Others highlighted the need for decentralized schemes, preventive maintenance, community engagement, and legal frameworks like Arunachal's Catchment Protection Act.



Session III

This session explored advanced tools and strategies for managing Himalayan water systems. Presenters showcased Artificial Intelligence (AI) and Internet of Things (IoT) based technologies for real-time monitoring, leak detection, and water quality prediction. Emphasis was placed on spring-shed management through geo-tagging, vulnerability mapping, and integrating hydrological data with local knowledge. Traditional practices like Kuhl systems and snow harvesting were revisited in light of climate challenges, while researchers called for improved classification of spring types and coordination across ministries. The session

concluded with calls to scale up data-driven, community-inclusive solutions, supported by robust instrumentation and targeted policies.

Session IV

The final session brought together development practitioners and government officials to discuss implementation realities and best practices. Presenters shared successful decentralized models from Uttarakhand's remote villages and Himachal's watershed programs under Pradhan Mantri Krishi Sinchayee Yojana. Emphasis was placed on community participation, geo-hydrological mapping, GIS-based planning, and use of mobile apps. The discussion also highlighted the integration of water security with livelihoods, sanitation, and health outcomes. Recommendations included sustaining community engagement, addressing forest clearance delays, and scaling up adaptive, climate-resilient approaches for vulnerable Himalayan zones.



Outcomes

- Identification of Key Challenges: Participants pinpointed unique challenges faced by Himalayan regions, such as extreme cold, difficult terrain, and limited infrastructure, which often disrupt water supply.
- Compilation of Best Practices: The workshop highlighted successful models, like the Ladakh Jal Jeevan Mission model, which uses High-Density Polyethylene (HDPE) pipe, insulation, and solar-powered systems to overcome freezing temperatures.
- Framework for Technology Integration**:** Experts presented frameworks for deploying Internet of Things, Artificial Intelligence, and other frontier technologies for real-time monitoring and maintenance, helping prevent disruptions and improve water quality.
- Policy Recommendations**:** Based on the discussion during the workshop, policy recommendations to strengthen water supply systems in high-altitude areas, including suggestions for funding and regulatory support, may be made.
- Formation of a Stakeholder Network**:** A dedicated network of government officials, technical experts, NGOs, and SHGs would be established to support ongoing collaboration, knowledge sharing, and coordinated efforts across the Himalayan states.

Workshop on City-regions as Growth Hub

New Delhi

NITI Aayog hosted a national workshop on 'City Regions as Growth Hubs', where urban development leaders gathered to explore how city regions can serve as engines of India's economic transformation. Panel discussions with experts from NITI Aayog, State governments, ISEG, and WRI provided strategic insights into shaping thriving, resilient cities as India moves toward becoming a $30 trillion economy by 2047.

Urban planning with a focus on spatial aspects and the provision of services often overlooks economic visioning. Also, rather than limiting urban planning to city boundaries, a more regional approach is more judicious. Considering the role of urban centres as the catalyst of economic growth, developing city regions as growth hubs becomes critical to unlocking the full potential of urban centres to contribute to achieving the vision for 2047. To pioneer a transformative shift in urban development, NITI Aayog has taken up the 'Growth Hub (G-Hub) Initiative', prioritising economic master planning as the cornerstone for accelerated economic growth.



By delineating city regions beyond traditional urban boundaries, the initiative sought to develop a comprehensive economic master plan centred around three key pillars:

a. Economic and Investment plan;

b. Quality of Life; and

c. Inclusivity and Sustainability plan. Embracing the spirit of cooperative federalism, the initiative commenced with 4 pilot city regions viz. Mumbai Metropolitan Region

(MMR), Surat, Varanasi and Vishakhapatnam where NITI Aayog in collaboration with respective State Governments and relevant stakeholders, crafted economic blueprints and implementation frameworks. Around 24 States participated including UTs and the major development partners were BCG, ISEG & WRI.

The workshop on 'City Regions as Growth Hub' showcased NITI Aayog's initiative, inspiring states to adopt a regional approach to urban development. By following the successful model of economic master planning in pilot city regions like Mumbai and Surat, states can unlock the economic potential of their city regions, contributing to India's 2047 vision. The Workshop was attended by delegation from the States of Andhra Pradesh, Arunachal Pradesh, Bihar, Chandigarh, Chhattisgarh, Gujarat, Haryana, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Leh, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Puducherry, Rajasthan, Sikkim, Tripura, Uttar Pradesh and Uttarakhand.

Objectives

The workshop aimed to:

- Foster discussions on the role of urban centres in economic growth and development.
- Highlight the importance of integrated city-region planning, focusing on economic, spatial, and transportation strategies.
- Share insights into NITI Aayog's G-Hub initiative, its inception and focusing on economic planning for urban centres.
- Provide a platform for knowledge exchange between urban leaders, state governments, and stakeholders, and share best practices from India and abroad.



Sessions

The workshop commenced with a keynote address by the CEO of NITI Aayog, who set the tone for the day by underscoring the critical role of cities in driving economic growth. This was followed by remarks from the Chief Secretary of Maharashtra, who emphasised the vital role of state governments in enabling urban development and the importance of coordinated planning efforts.

The sessions that followed included thematic presentations and interactive panel discussions. The PD, Urban, NITI Aayog, presented the G-Hub concept, introducing the initiative aimed at developing economic plans for urban regions. The presentation detailed the conceptual evolution of the Growth Hub initiative and outlined a five-step process designed to guide its implementation.

This was followed by an interactive panel discussion on "City Planning through an Economic Lens," moderated by the CEO of NITI Aayog. Panelists included Dr. O. P. Agarwal, Distinguished Fellow at NITI Aayog; Shirish Sankhe from the ISEG Foundation; and Rejeet Mathews from WRI. The discussion explored how cities can integrate economic thinking into urban planning, drawing on global perspectives and expert insights into the economic dimensions of urban development.



The presentations continued with a representative from the Government of Gujarat sharing insights into Surat's economic growth strategy, highlighting its emergence as a dynamic growth hub. Dr. Sanjay Mukherjee, Metropolitan Commissioner of MMRDA (TBC), then offered a comprehensive overview of economic and infrastructure planning in the Mumbai Metropolitan Region (MMR). A Q&A session followed, during which participants engaged the speakers on the economic strategies of both Surat and MMR.

This was followed by an open dialogue and Q&A, where participants and speakers engaged in discussion of key issues and potential solutions related to crafting a robust economic vision. The CEO, NITI Aayog, concluded the workshop with reflections on the day's discussions and laid out the path forward for implementing the strategies discussed, emphasising cooperation and collaboration between stakeholders.

Outcomes

- Economic Planning (EP) as a Framework: The workshop reinforced the importance of Economic Planning (EP) as a strategic framework for urban growth. Surat and Mumbai Metropolitan Region (MMR) showcased their EPs, emphasising integrated spatial, economic, and transportation planning. The initiative aims to scale from 4 pilot city regions (Mumbai, Surat, Varanasi, and Visakhapatnam) to cover more city regions across India, demonstrating the potential of city-regions as growth hubs.
- Need for Multi-sectoral and Cross-boundary Planning: Cities must be seen as more than their municipal boundaries; regional economic integration and multi-sectoral planning are crucial for sustainable development. Case studies from international cities like Singapore, Seoul, and Tokyo emphasised the benefits of coordinated economic, spatial, and infrastructure planning.
- Key Growth Sectors and Investment Opportunities: Mumbai's growth strategy identified seven key drivers, including global services, port-proximate manufacturing, urban recreation, and sustainability. Surat, recognised as the world's fastest-growing city by GDP, showcased plans for diversifying its economy beyond textiles and diamonds, expanding into sectors such as tourism, chemicals, education, healthcare, renewable energy etc.
- Challenges: The workshop highlighted governance and regulatory challenges, that do not sufficiently incorporate economic strategies.
- Sustainability and Inclusivity: Plans for achieving "near net zero" emissions by 2047 were presented, with strategies including waste-to-energy conversion, expanded green infrastructure, and water recycling. Surat's resilience planning, including flood management and clean air strategies, was highlighted as a best practice for climate adaptation.

MSMEs as a Driver of Export Growth: Strategies, Opportunities, and Challenges

Chandigarh

NITI Aayog, in collaboration with the Government of Punjab, organised a workshop titled "MSMEs as a Driver of Export Growth: Strategies, Opportunities, and Challenges" on October 23, 2024, in Chandigarh, with CII serving as the knowledge partner. The event convened industry leaders, policymakers, and experts to deliberate on strategies for promoting MSME exports from Punjab.

The Hon'ble Chief Minister of Punjab, Shri Bhagwant Singh Mann, inaugurated the workshop, emphasising the pivotal role of MSMEs in economic development and Punjab's potential to emerge as a global export hub. Other distinguished speakers included Shri Tarun Preet Singh Sondh, Minister of Industries and Commerce, Government of Punjab; Mr. Suman Bery, Vice Chairman, NITI Aayog; Prof. Ramesh Chand, Member, NITI Aayog; Mr. Abhishek Gupta, CII Punjab State Chairman; Mr. Vijoy Kumar Singh, Special Chief Secretary to the Chief Minister, Punjab; and Mr. Tejveer Singh, Additional Chief Secretary, Industry, Government of Punjab.



A booklet titled "MSMEs as a Driver of Export Growth: Punjab Strategies, Opportunities, and Challenges", jointly developed by CII and NITI Aayog, was officially launched during the event by the Chief Minister and NITI Aayog's Vice Chairman.

The workshop aimed to raise awareness about MSMEs as export hubs, address challenges faced by industries in global expansion, and explore strategies for internationalisation and industry collaboration. Discussions focused on four key sectors:

a. Hand/Machine Tools

b. Sports and Leather Goods

c. Textile Exports and Hosiery

d. Agri-Processed Exports

Experts provided insights into industry-specific challenges**,** strategies for international market expansion, and ways to enhance export competitiveness**.** The dialogue also emphasised the importance of collaboration between the Central and State Governments in supporting industry growth and bolstering Punjab's export potential.



Session I

The session was moderated by Sh. Sanjeet Singh, Senior Advisor, NITI Aayog, and featured the esteemed speakers- Mr. Gautam Kapoor, Chairman, Northern Exporters Forum; Mr. Ashwini Kumar, Chairman, FIEO; Sh. D.P.S. Kharbanda, Director, Industry, Government of Punjab; Mr. S.C. Ralhan, President, Ludhiana Hand Tools Association; Mr. Piyush Doshi, Foundation for Economic Development.

a. Industry collaboration with NITI Aayog is essential to align policy measures that drive growth and remove sectoral barriers. Stakeholder engagement with NITI Aayog was widely welcomed as a positive step.

b. Technological upgradation is crucial; however, it must be balanced with Punjab's skilled labour advantage. The adoption of modern manufacturing techniques will enhance global competitiveness and bridge the gap with leading exporters such as China.

c. Capital costs remain a challenge, with MSMEs facing high interest rates and difficulties in securing loans for technological advancements. Targeted policies or subsidies can reduce capital burdens, enabling small and medium-sized enterprises to modernise and expand operations.

d. Labour laws and power supply concerns were highlighted, with calls for more flexible regulations and reliable power at subsidised rates to maintain industry competitiveness.

e. Regulatory processes require reform—self-certification schemes for businesses above a certain turnover threshold could streamline compliance and reduce bureaucratic delays.

f. Infrastructure improvements, including enhanced connectivity to ports, are vital to mitigate freight disadvantages due to Punjab's landlocked geography.

g. A strategic roadmap is essential for positioning Punjab as a global leader in hand tools manufacturing and exports. A cohesive export promotion policy, jointly developed by the state government, industry associations, and stakeholders, is required to capitalise on Punjab's strengths.



Session II

The session was moderated by Dr. Meera Malhan, Professor of Delhi University, and included distinguished Panelists: Mr. Harkirat Singh, Managing Director, Woodland India; Mr. Kumar

Wasan, Partner, Wasan Exports; Mr. Mukul Verma, Savia International; Sh. Karan Gilhotra, Co-Chair, Punjab State Chapter, PHDCCI; Mr. Simarjit Singh Bawa, Managing Director, Bawa Shoes. The session focused on the sports and leather goods sector in Punjab, particularly in Jalandhar, highlighting its significance and the challenges hindering its competitiveness.

a. Recognition of Jalandhar's Strategic Importance: Jalandhar is a key centre for sports and leather manufacturing, yet it remains under-supported despite its rich legacy and craftsmanship. The session emphasised the need for targeted policy support to strengthen the sector.

b. Infrastructure Development to Enhance Global Visibility: To attract global buyers and host large-scale events, stakeholders advocated for the establishment of an international convention centre and a cricket stadium in Jalandhar. These developments would contribute to the local economy and allied industries.

c. Integration of the Sports Goods Sector in 'Make in India': Despite its prominence, the sports goods sector has not been sufficiently incorporated into the Make in India initiative. Participants called for policy inclusion, incentives, and greater visibility, which would help the industry scale and compete internationally.

d. Strengthened Collaboration Between State and Central Governments: Joint efforts between the state and central governments are essential to address infrastructure gaps and support industry expansion. Recommendations included establishing specialised industrial parks dedicated to sports and leather goods to enhance regional and export growth.

e. Vocational Training and Skill Development Initiatives: Enhancing workforce skills through vocational training programmes is critical for sustaining industry growth. Participants stressed the importance of inclusivity, advocating for greater participation from women in training programmes.

f. Improving Logistics and Market Access: Road infrastructure and supply chain inefficiencies remain barriers to attracting international buyers. Addressing logistical challenges would enhance the ease of doing business and facilitate market expansion.

g. Reduction of Duties on Raw Materials and Targeted Trade Policies: Industry leaders urged the government to lower import duties on raw materials to reduce production costs and enhance the global competitiveness of Indian-made sports goods. Competing effectively with countries such as China requires strategic branding and government-backed trade initiatives.

Session III

The textiles and hosiery sector plays a crucial role in Punjab's MSME landscape, contributing significantly to India's export potential.

a. MSMEs as Pillars of Resilience and Innovation: Despite geographical challenges, labour skill gaps, and infrastructural constraints, MSMEs in Punjab's textile sector have demonstrated remarkable resilience and innovation, enabling them to maintain global competitiveness.

b. Addressing Growth Hesitation Among MSMEs: Many MSMEs hesitate to scale up due to fears of losing government incentives, limiting long-term expansion, and innovation. A more sustainable growth framework that enables businesses to transition from micro to small and small to medium enterprises is essential.

c. Shifting Focus from Incentives to Sustainable Growth: While government incentives are valuable in the initial stages, they should not dictate long-term sustainability. MSMEs must transition towards enhancing efficiency, technological integration, and access to finance, reducing dependence on subsidies for survival.

d. Emphasis on Value-Added Production: Instead of mass-producing low-cost textiles, Punjab's textile industry should focus on high-value, specialised products such as technical textiles, performance garments, and value-added fabrics. This shift would allow the industry to compete in niche markets that prioritise quality, technology, and sustainability.

e. Strengthening Environmental Standards and Compliance: Current government regulations emphasise environmental sustainability, but the industry requires comprehensive measures that discourage the use of harmful substances in production. Implementing stringent standards at the procurement stage would encourage innovation and ethical practices.

f. Transitioning to High-Value Textile Products: Punjab's textile sector must move beyond low-margin goods, such as basic T-shirts, and focus on design-intensive, high-performance fabrics that meet global standards. Improving labour laws, worker safety regulations, and skill development will further enhance international competitiveness.

g. Establishment of Textile Parks and Plug-and-Play Facilities: Facilitating entry for young entrepreneurs, including NIFT graduates and fashion designers, through textile parks and plug-and-play infrastructure would stimulate industry growth. Providing affordable access to manufacturing facilities, without requiring land ownership, will encourage innovation and sustainability.



Session IV

The session focused on Agri-processing and related exports, emphasising sustainability, diversification, and infrastructure development to enhance Punjab's global competitiveness.

The panel discussion was moderated by Prof. Pravakar Sahoo, Senior Advisor, NITI Aayog, and featured the following esteemed speakers: Mr. Sukhjit Singh Bhatti, Bhatti Agritech Pvt. Ltd; Mr. H.S. Sangha, Sangha Group, Jalandhar; Mr. Pankaj Sardana, Senior Vice President, The Sukhjit Starch & Chemicals Ltd.; Sh. Ashok Sethi, Director, Basmati Exporter Association; and Mr. Upkar Ahuja, President, Chamber of Industrial and Commercial Undertakings, Punjab.

Outcomes

- Role of MSMEs in Industrial Growth and Internationalisation: MSMEs are fundamental to industrial expansion, and their integration into global markets is vital for maintaining productivity, quality assurance, and cost efficiency. Countries such as China and Vietnam have leveraged MSMEs for large-scale manufacturing dominance, and India must similarly capitalise on its demographic and industrial advantages to enhance competitiveness.
- Sustainability in Agriculture: Given Punjab's water-scarce regions, adopting micro-irrigation systems, as seen in Gujarat, can significantly conserve water while ensuring agricultural productivity. Government-led initiatives should promote sustainable irrigation technologies to address the over-exploitation of water resources.
- Need for Agricultural Diversification: The over-reliance on water-intensive crops such as rice and wheat necessitates a shift towards fruits, vegetables, and livestock. This transition will not only strengthen the agricultural economy but also enhance nutritional availability for urban and rural communities.
- Encouraging Sustainable Farming Practices: Farmers must be incentivised to adopt high-value, water-efficient crops, such as pulses, horticultural produce, and specialty crops, to improve soil health, boost income, and reduce water consumption.
- Policy Reforms to Promote Agro-Processing: Simplifying bureaucratic processes for food processing enterprises will facilitate entrepreneurial expansion. Government schemes must be streamlined and accessible to enable MSMEs to navigate regulatory hurdles efficiently.
- Investment in Water-Efficient Irrigation: Drip and sprinkler irrigation systems can drastically reduce water wastage, particularly in water-stressed areas. These methods will enhance crop yield while ensuring resource conservation.
- Establishment of Agro-Processing Units: Developing agro-processing plants, such as maize processing facilities, will create value-added products, increase farmers' revenues, and generate employment. The government should provide tax incentives, credit access, and infrastructure support to boost food processing and agricultural exports.
- Enhancing Infrastructure for Agricultural Exports: Improved transport logistics, cold storage chains, and better connectivity will reduce freight costs and enhance Punjab's competitiveness in global agricultural markets.
- Attracting Large-Scale Industries to Punjab: Drawing on models from Tamil Nadu and Maharashtra, Punjab must encourage large-scale industries to invest in Agro-processing, fostering economic growth and employment opportunities.

- Streamlining Export Processes and Driving Innovation: Simplifying export certification procedures, particularly for high-demand agricultural commodities, such as potatoes, will facilitate access to international markets. Furthermore, investment in Centres of Excellence, in collaboration with global research institutions, will drive agricultural innovation and sustainability.

The workshop provided insights into MSMEs' role as export hubs, examined challenges faced by industries in global expansion, and explored strategies for internationalisation and collaboration. Discussions focused on Hand/Machine Tools, Sports and Leather Goods, Textiles and Hosiery, and Agri-Processed Exports, offering actionable solutions to strengthen Punjab's export competitiveness and industry growth.

Symposium: Green Transition in the State

New Delhi

The workshop commenced with welcome remarks by Sh. Rajnath Ram, Adviser (Energy), NITI Aayog, set an inspiring tone by highlighting India's dual challenge of pursuing economic growth while addressing climate change. He emphasised the critical role of technology spanning solar, wind, hydrogen, electric mobility, biofuels, and energy storage and policy in driving this transition. Ram underscored the indispensable contribution of states in realising national energy goals, framing the symposium as a platform for cooperative action. The launch of the Asset Platform by key dignitaries, including Mr. BVR Subrahmanyam (CEO, NITI Aayog), Ms. Leena Nandan, (Secretary, Ministry of Environment, Forest and Climate Change), Mr. Pankaj Agarwal (Secretary, Ministry of Power), and Mr. Prashant Kumar Singh (Secretary, Ministry of New and Renewable Energy), symbolised a unified commitment to this cause. The workshop was designed to achieve the following key objectives:

a. Launch of ASSET Platform**:** Establish a cooperative framework for streamlined state-level energy transitions, ensuring coordination, effective strategies, and resource-sharing between the central and state governments.

b. Role of States: Discuss the pivotal role of states in achieving India's energy transition targets, identifying challenges and opportunities.

c. Scaling Renewable Energy**:** Explore strategies to accelerate renewable energy adoption and ensure grid stability through innovative technologies and best practices.

d. Capacity Building and Policy Development**:** To identify critical areas requiring capacity building and inform the development of robust and effective policies at both the national and state levels.



The symposium featured a series of sessions and discussions, each addressing critical facets of the energy transition:

This session served as the foundation for the workshop. Mr. Rajnath Ram, Adviser (Energy), NITI Aayog, delivered the welcome address, followed by Dr. Anshu Bharadwaj's presentation on India's distinct energy transition pathway. Mr. BVR Subrahmanyam, CEO, NITI Aayog, along with Secretaries from the MoEFCC, MoP, and MNRE, officially launched the ASSET platform. This session established the urgency of a balanced approach to economic growth and decarbonisation and highlighted the importance of state-level actions.

Session I

A Session on "Role of States in India's Energy Transition" presented by Sh. Shirish Sankhe, Director and Founding Partner, ISEG Foundation explored the scale of India's energy demand growth (projected to rise 6 to 8 times by 2070) and the state's role in meeting the 500 GW RE target. Sankhe highlighted challenges such as supply chain constraints, land acquisition, and the need for robust transmission infrastructure. He also noted the continued relevance of thermal power for grid stability and introduced emerging solutions like green hydrogen and wind farm repowering, positioning the ASSET Platform as a key enabler.



Panel Discussion on Enabling Energy Transition in India witnessed the participation from Mr. Shirish Sankhe, ISEG Foundation (Moderator), Mr. Prashant Kumar Singh (MNRE), Mr. R P Gupta (SECI), Mr. Pankaj Jain (MoPNG), and Dr. Pradeep Tharakan (ADB). This discussion covered diverse topics: the 500 GW RE target, SECI's evolving role, biofuels under MoPNG's vision, thermal power's interim role, transmission investments (estimated at ₹9 lakh crore), green

hydrogen initiatives, energy storage options, and discom financial health. Panelists emphasised collaboration, distributed RE generation, and the need for innovative financing and policy support.

Session II

A session on Generation and Storage - Scaling Up Renewable Energy and Ensuring Grid Stability was moderated by Sh. Rajnath Ram, Adviser (Energy), NITI Aayog. Other Members who attended the workshop are Ms. Abha Shukla (Maharashtra); Mr. Pankaj Kumar Pandey (KPTCL); Mr. Arun Mahesh Babu (GPCL); Mr. Vikram Kapoor (ReNew Power); Mr. Srinivas Krishnaswamy (Vasudha Foundation); and Mr. Ashok Ramachandra (JSW Global)



This session took a practical, implementation-focused approach. Different representatives have their viewpoints. Maharashtra's energy transition blueprint prioritises solarisation, especially in agriculture, alongside detailed transmission planning for seamless renewable grid integration. Karnataka targets 60 GW of renewable energy by 2030, leveraging pumped hydro and battery storage to stabilise grid fluctuations. Gujarat advances storage innovations with Battery Energy Storage Systems (BESS) best practices and the Modera solar village model, integrating co-located solar and storage with innovative tariff designs. Multi-state projects and financial mechanisms like blended finance support round-the-clock (RTC) renewable power while grassroots efforts drive climate-smart village action plans, aided by tools like the India Climate Energy Dashboard. Additionally, pumped hydro storage is promoted for its long lifespan and cost-effectiveness, though challenges such as land acquisition and environmental clearances persist. The challenges of land acquisition delays due to regulatory hurdles; supply chain constraints for RE components and shortages of skilled labor for project implementation were highlighted.

Session III

Technology and Innovations - Driving the Future of Energy and Infrastructure was the theme of the session moderated by S. Prabhav Sharma, Partner, McKinsey. Other members who attended the session are Mr. Manu Shrivastava (Madhya Pradesh); Mr. Sachin Shinde (Delhi); Mr. Sandeep Kumar Sultania (Telangana); Mr. KR Jyotiral (Kerala); Mr. Prashant Sinha (Sterlite Power), Mr. Saurabh Kumar (GEAPP); and Dr. Anshu Bharadwaj (NITI Aayog).

This session showcased the power of technology in driving the energy transition forward. Madhya Pradesh's Rewa Solar Project achieved tariffs below 3/kWh through innovative rooftop solar aggregation. Uttar Pradesh sets ambitious renewable targets while upgrading infrastructure for grid integration. Delhi advances e-mobility with electric buses, emphasising charging infrastructure. Telangana enhances energy efficiency with Cool Roof policies and net-zero buildings. Kerala's Green Hydrogen Accelerator leverages coastal resources for industrial applications. Rising national energy demand underscores the need for supply-demand balance, while Tariff-Based Competitive Bidding (TBCB) supports scalable transmission development. AI-driven tools optimise real-time grid monitoring and demand forecasting to improve energy distribution.



The workshop brought together a distinguished cohort of leaders and experts across key sectors. From the Central Government and NITI Aayog, notable attendees included Mr. B.V.R. Subrahmanyam (CEO), Shri Suman Bery (Vice Chairman), Shri Rajnath Ram (Adviser – Energy), and Dr. Anshu Bharadwaj (Programme Director – Green Transition, Energy & Climate Change). Senior officials from key ministries such as Mr. Pankaj Agarwal (Secretary, Ministry of Power), Mr. Prashant Kumar Singh (Secretary, Ministry of New and Renewable Energy), and Mr. Pankaj Jain (Secretary, Ministry of Petroleum and Natural Gas) participated actively in the dialogue.

Representatives from key government agencies and corporations included Mr. R.P. Gupta (CMD, SECI), Mr. Ghanshyam Prasad (Chairperson, CEA), Mr. Pankaj Kumar Pandey (MD, KPTCL), Mr. Arun Mahesh Babu (MD, GPCL), and Mr. Sachin Shinde (MD, DTC).

At the state level, senior representatives such as Ms. Abha Shukla (Additional Chief Secretary, Maharashtra), Mr. Manu Shrivastava (Additional Chief Secretary, Madhya Pradesh), Mr. Narendra Bhooshan (Principal Secretary, Uttar Pradesh), Mr. Sandeep Kumar Sultania (Principal Secretary, Telangana), and Mr. K.R. Jyothilal (Additional Chief Secretary, Kerala) brought rich state-level perspectives to the table.

The private sector and industry were represented by thought leaders including Sh. Shirish Sankhe (Director & Founding Partner, ISEG Foundation), Mr. Vikram Kapur (Group President, ReNew Power), Mr. Ashok Ramachandran (COO, JSW Energy), Mr. Prashant Sinha (COO, Sterlite Power), and Mr. Saurabh Kumar (Vice-President, GEAPP).

From the development and research ecosystem, participants included Dr. Pradeep Tharakan (Director – Energy Transition, Asian Development Bank) and Mr. Srinivas Krishnaswamy (CEO, Vasudha Foundation). The session was ably moderated by Mr. Prabhav Sharma, Partner at McKinsey. The workshop witnessed the collaboration with **ASSET Platform-** A flagship collaboration between NITI Aayog, central ministries (MoP, MNRE), and state governments to facilitate knowledge sharing and project implementation.

Outcomes

The workshop generated a wealth of insights and practical takeaways, which will inform policy decisions and accelerate implementation on the ground. Key learnings and outcomes included:

- The criticality of state-level action and ownership in driving the green energy transition.
- The need for customised state-specific transition plans, recognising the unique contexts and challenges of each state.
- The importance of strengthening the financial health of DISCOMs and exploring innovative financing mechanisms to attract private investment.
- The potential of emerging technologies to accelerate the transition and the need for policies that support their deployment.
- The importance of stakeholder engagement and public awareness campaigns to build consensus and foster broader support for the transition.
- Launch of the Asset Platform: A landmark moment, symbolising a coordinated approach to India's green energy future, officiated by top officials.
- Focus on Emerging Technologies: Discussions on green hydrogen, energy storage, and AI-driven solutions underscored innovation as a driver of change.
- State-Level Innovation: Presentations from states like Maharashtra, Gujarat, and Kerala showcased diverse, actionable strategies.

Future Ready Uttarakhand: Conclave-cum-Workshop on Skills & Employment

Dehradun, Uttarakhand

Hosted by NITI Aayog, in partnership with SETU Aayog and the Government of Uttarakhand, this workshop serves as a platform to explore strategies for youth empowerment through skill development, technology integration, and employment generation. It aims to address the challenges of urban-rural workforce dynamics while fostering innovation and sustainable livelihoods. Aligned with the vision of 'Sashakt Uttarakhand @ 25,' the initiative marks a significant step towards shaping the state's socio-economic future as it approaches its 25th anniversary.



The event brought together over 250 distinguished participants, including, Government Leadership. Hon'ble Chief Minister Shri Pushkar Singh Dhami (Government of Uttarakhand), Hon'ble Minister Shri Saurabh Bahuguna (Skill Development & Employment, Uttarakhand) and Smt. Radha Raturi, Chief Secretary, Government of Uttarakhand graced the event. Officers of NITI Aayog, SETU Aayog and other State Government Officials from the Government of Uttarakhand also participated. The representation from academia included scholars from Doon University and Graphic Era Hill University. The Industry Leaders from Tata Motors, Ashok Leyland, and Microsoft also participated with the Non-Profit Organisations (NPOs), i.e., Centre for Public Policy and Good Governance (CPPGG), Uttarakhand Foundation and Uttaranchal Association of North America (UANA).

Inaugurated by Hon'ble Chief Minister Shri Pushkar Singh Dhami and Hon'ble Minister Shri Saurabh Bahuguna, the workshop brought together key government officials, industry leaders, and academicians to discuss youth empowerment and employment strategies. The event featured three pivotal panel discussions and session.

Session I

The session was about Empowering Uttarakhand's Youth for the Future Workforce. It focused on leveraging the state's demographic advantage and natural resources to stimulate economic growth and employment. Discussions covered skill development in AYUSH-based wellness, agriculture, agri-tech, remote working hubs, forestry, and tourism. Principal Secretary Shri R.K. Sudhanshu emphasised the critical need for upskilling, cross-skilling, and reskilling to enhance employability and productivity.



Session II

The session was about Building a Knowledge Economy in Uttarakhand. It explored strategies to strengthen educational outcomes and align curricula with evolving industry requirements. Key topics included integrating AI, blockchain, robotics, and defence technology into higher education, fostering industry-academic partnerships, establishing state-funded innovation labs, and organising tech-focused events to cultivate a future-ready workforce.

Session III

The session was about Revitalising Uttarakhand's Rural Economy. It examined pathways to enhance entrepreneurship, introduce innovative farming techniques, and boost horticulture, food processing, and rural tourism. Key insights included promoting hydroponics, vertical farming, and polyhouse techniques, encouraging youth engagement in agriculture, and offering educational workshops to modernise farming practices.

Outcomes

The conclave focused on youth empowerment, technology-driven employment solutions, and

strategies for inclusive growth in Uttarakhand. Major priorities included:

- Creating 8-9 lakh jobs over the next five years.
- Promoting 27 Geographical Indications (GI) products, with 16 in agriculture.
- Leveraging 62,000+ Self-Help Group (SHG) members to drive rural entrepreneurship.

Skill Development & Employment Initiatives

- Reskilling and upskilling programmes to enhance job market competitiveness.
- Foreign placement policy, facilitating job opportunities in Japan, with future expansions to Germany and Britain.
- MoU signed between Generation India and the Government of Uttarakhand to strengthen skill development initiatives.
- Cybersecurity training programmes to equip youth with digital security expertise.
- Foreign language training integrated into nursing colleges and employment-focused institutions to support global job placements.
- Gig economy standards have been developed to ensure fair wages and social security for gig workers.
- Trainer development programmes, featuring skill-based rating systems for enhanced quality control.



Entrepreneurship & Industry-Academia Collaboration:

- Dual Degree Programmes introduced, enabling students to gain interdisciplinary expertise (e.g., GIS Technology alongside Geography).
- Innovation Labs established to drive cutting-edge research in entrepreneurship, blockchain, robotics, and deep tech.
- Global Capability Centres (GCCs) are set up to boost digital and technological efficiency across the IT, biotechnology, and pharma sectors.
- Remote Working Hubs have been developed to reduce migration pressures by enabling service sector workers to operate remotely.
- University incubators are designed to support student-led entrepreneurial ventures.
- Startup selection criteria streamlined to align with DPIIT, Government of India guidelines for easier funding access.

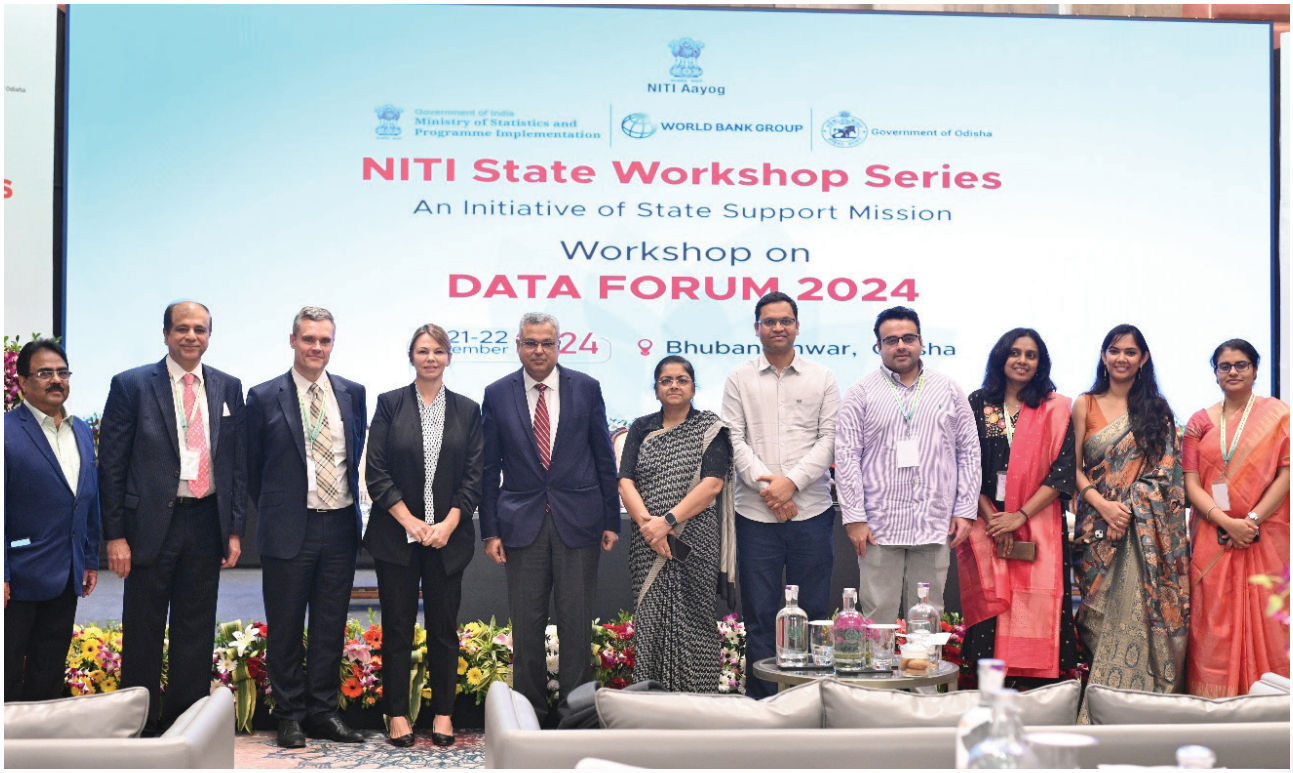
Sector-Specific Growth & Policy Enhancements:

- Annual Travel and Trade Shows are organised to showcase Uttarakhand's tourism potential at distinctive locations.
- Centres of Excellence (COEs) established in Adventure Tourism, Indian Traditional Knowledge Systems, and AYUSH to promote Uttarakhand's unique strengths internationally.
- Agri Stack Development was introduced to modernise agriculture, food technology, and food processing.
- Providing farmer inputs such as soft loans, high-yield seeds, fertilisers, scientific guidance, and market access.
- Developing and implementing farmer-centric schemes for sustainable agricultural growth.

Workshop on Data Forum

Bhubaneswar, Odisha

The Second Data Forum, held in Bhubaneswar in November 2024, was organised by NITI Aayog in collaboration with MoSPI, the World Bank, and the Government of Odisha. The event brought together over 100 participants from more than 20 states and UTs, including experts, academia, and research organisations, to discuss the evolving landscape of data-driven policymaking. Inaugurated by key dignitaries, including the Hon'ble Deputy Chief Minister of Odisha, the Forum emphasised the pivotal role of high-quality data in effective governance. Through thematic sessions and interactive polls, the discussions highlighted best practices, technological innovations, and critical challenges such as data literacy, privacy, infrastructure gaps, and data quality. The Forum underscored the importance of a citizen-centric, technology-enabled, and collaborative approach to building a robust data ecosystem for sustainable development and evidence-based decision-making.



The Data Forum 2024, held on November 21–22 in Bhubaneswar, Odisha, was a landmark event under NITI Aayog's State Support Mission, organised in collaboration with MoSPI, the World Bank, and the Government of Odisha. Bringing together over 100 participants from more than 20 States and Union Territories, including senior government officials, international organisations like the UN and World Bank, and experts from academia and policy domains, the forum served as a national platform to strengthen India's data systems and advance evidence-based policymaking. It focused on building enabling environments for data-driven governance, leveraging frontier technologies, and aligning state data ecosystems with national goals such as Viksit Bharat 2047 and the Sustainable Development Goals. Through high-level addresses, technical sessions, live polling, and the sharing of best practices, the forum emphasised the

need for democratised data access, improved data literacy, real-time granular data, and enhanced collaboration across levels of government to build a resilient, inclusive, and citizen-centric data ecosystem.

The primary focus of the workshop was deliberating on the efforts of WEP to build a robust entrepreneurial ecosystem for women and the drive to establish state chapters of WEP. Various initiatives under WEP that would support women-led development through entrepreneurship were also launched as part of the workshop.

a. Promoting Evidence-Based Policymaking: Enhance the use of high-quality, timely, and granular data at all levels of government for informed and responsive decision-making.

b. Strengthening State and Local Capacities: Equip states and districts with digital tools, frameworks, and practices, such as State Data Policies, Open Data Portals, and Chief Minister Dashboards to democratise data access and improve governance.

c. Leveraging Frontier Technologies: Encourage the adoption of emerging technologies like Artificial Intelligence, Machine Learning, Internet of Things, and Big Data analytics to transform data into actionable knowledge.

d. Accelerating SDG Monitoring: Improve the design and implementation of data systems to track and achieve the Sustainable Development Goals (SDGs), including the use of administrative and alternative data sources.

e. Fostering Cross-Sector Collaboration: Promote integration across ministries, states, academia, and the private sector to break data silos, enhance interoperability, and develop a unified national data strategy.

f. Encouraging Innovation and Inclusivity: Advocate for citizen-centric data systems that are transparent, privacy-conscious, and inclusive, especially through gender-disaggregated and localised datasets.



Session I

It emphasised towards creating an Enabling Environment for Data-Driven Development. This session examined how to create the right conditions for effective data use in governance. It identified key challenges such as data accessibility at sub-national levels, quality gaps, and limited analytical skills. Participants discussed best practices, such as the development of State Data Policies, open data portals, and CM Dashboards, which can empower states to make evidence-based decisions. The session emphasised that a well-established digital infrastructure, improved data collection methods, and capacity building are critical for transitioning to data-driven policymaking.

Session II

It was about Leveraging Frontier Technology for Transforming Data into Knowledge. The second session centred on integrating cutting-edge technologies such as Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT), and big data analytics into government data systems. It highlighted both the potential and the challenges of harnessing these technologies to convert vast, raw datasets into actionable insights. Participants assessed the current state of tech adoption among states, identified barriers like insufficient technical expertise and outdated infrastructure, and explored innovative approaches (such as using alternative data sources like satellite imagery and mobile data) to overcome these challenges. The discussion aimed to bridge the gap between digital governance and advanced data analytics.



Session III

The final session focused on Data Systems for Achieving Sustainable Development Goals (SDGs). It linked the importance of robust data systems with the achievement of the Sustainable Development Goals. It explored how integrated, high-quality, and transparent data systems can support the monitoring, planning, and implementation of SDG-related initiatives. Topics included creating and using dashboards, aligning data collection with SDG indicators, and addressing data gaps, particularly in areas like education, gender equality, and economic growth. The session underscored the necessity for inter-departmental collaboration, capacity building, and the adoption of innovative technologies to ensure that data systems contribute effectively toward the broader sustainable development agenda.

Outcomes

- Consensus on the Need for a Robust Data Ecosystem: The forum underscored the importance of high-quality, granular, real-time data for informed and timely policymaking. Participants agreed that data must be treated as a strategic asset and not just a by-product of governance.
- Strengthening of Federal Data Collaboration: The forum fostered strong inter-state dialogue, with states like Tamil Nadu, Karnataka, Kerala, and Odisha showcasing scalable best practices. This encouraged peer learning and highlighted the role of cooperative federalism in building a national data ecosystem.
- Mainstreaming Frontier Technologies: There was widespread recognition of the need to integrate AI, ML, IoT, and Big Data into public systems. Tools like NDAP 2.0, Sarvam AI, IUDX, and geospatial tech were identified as critical enablers for future-ready governance.
- Focus on Capacity Building and Data Literacy: States acknowledged the urgent need for building institutional capacity, particularly at the district level, through the deployment of trained data stewards and data-literate administrators.
- Granular and Localised Data for SDGs: The sessions emphasised the need for district-level and disaggregated data to effectively monitor SDG progress. Tools like the India Climate & Energy Dashboard and Odisha's SDG metadata booklet were recognised as models for replication.
- Push for Open, Interoperable Platforms: There was consensus on moving from siloed data systems ("data swamps") to integrated, interoperable "data lakes," with platforms that enable data sharing across departments and levels of government.
- Recognition of Alternative Data Sources: The use of mobile data, satellite imagery, drone data, and administrative records was discussed as vital for complementing traditional surveys and improving decision-making, especially in underserved or rapidly changing areas.
- Commitment to Citizen-Centric Governance: The workshop reinforced the idea that high-quality data should lead to improved service delivery, efficient targeting of welfare schemes, and greater transparency in governance.
- Announcement of the Next Data Forum: It was announced that Madhya Pradesh will host the Data Forum 2025, reinforcing the commitment to institutionalising this platform as a recurring engagement for knowledge exchange and collaboration.



The Data Forum 2024 marked a pivotal step in India's journey toward a digitally empowered, evidence-based governance model. Through collaborative deliberations, live engagement, and the showcasing of state innovations, the Forum laid down a clear path for transforming India from a fragmented data environment into a unified, resilient, and inclusive data ecosystem. With continued momentum, partnerships, and capacity building, these efforts will significantly contribute to achieving India's developmental aspirations under the vision of Viksit Bharat 2047.

Regional Workshop on Improving the Education KPIs in Aspirational Districts and Blocks of North Eastern States - A NeVolution Initiative

Itanagar, Arunachal Pradesh

The NeVolution Regional Workshop on Improving Education KPIs in Aspirational Districts and Blocks of North Eastern States was held on December 3, 2024, at the State Golden Jubilee Banquet Hall in Itanagar, Arunachal Pradesh. Jointly organised by NITI Aayog and the Government of Arunachal Pradesh, the workshop aimed to address educational challenges and enhance the quality of education in the North East region. Key issues were identified through consultations with District Magistrates, District Commissioners, and Block Officers, and centred around improving school infrastructure, teacher training, pedagogical practices, and reducing student dropout rates.



The thematic discussions revolved around:

a. Infrastructure Constraints: Addressing barriers to school access and retention in schools.

b. Teacher Rationalisation and Training: Enhancing teacher distribution, engagement and effectiveness.

c. Pedagogical Improvements: Strengthening teaching and learning practice

d. Student Dropout Rates: Implementing measures to reduce dropouts in aspirational blocks.

Each technical session featured district leaders highlighting the challenges faced in their respective areas. These presentations were followed by the sharing of best practices from other regions, contributions and insights from development partners, and reflections from relevant ministries on the topics under discussion. The workshop brought together over 200 participants, including central ministries; Ministry of Education (DoSEL), Ministry of Development of North Eastern Region (DoNER), North Eastern Council, NITI Aayog and others. Deputy Chief Minister of Arunachal Pradesh, Chief Secretary of Arunachal Pradesh, Departmental Secretaries of State Governments from the North Eastern States and District/Block-level officers from eight North Eastern states also graced the event.

The organisations like Piramal Foundation, EMBIBE, Bal Raksha Bharat, and Reach to Teach Foundation along with academic institutions also participated. Experts from educational and training institutions including CBSE, NCERT, SCERT, NIRD-NERC and others joined the workshops along with local community partners and NGOs.

Sessions

Inaugural session was led by Shri Chowna Mein, Deputy Chief Minister of Arunachal Pradesh, he emphasised the state's efforts under the Arun Shri Mission and the need for strengthened infrastructure. The highlight of the workshop was the inspiring address by Dr. Arvind Virmani, Hon'ble Member of NITI Aayog, wherein he stressed the importance of collaborative efforts in advancing education across India. He explained the need to balance access to education with achieving quality learning outcomes and highlighted the potential of integrating vocational training programmes with artificial intelligence (AI) tools to address critical gaps in foundational literacy and numeracy.



Dr. Virmani advocated for region-specific solutions to overcome the unique challenges of the North Eastern region, including the implementation of experiential learning models and digital platforms to act as equalisers in education. He acknowledged challenges such as inadequate digital infrastructure and the shortage of vocational trainers in rural areas. As an actionable

outcome, he proposed pilot projects in selected aspirational blocks, integrating AI tools to enhance educational practices. These initiatives aim to track and measure their impact on learning outcomes, providing insights for scaling successful strategies. His address underscored the critical role of innovative partnerships and robust policy frameworks in transforming education and fostering sustainable development in the country.



The technical sessions were conducted on Infrastructure Development emphasising ICT-enabled classrooms, climate-resilient designs, and solar-powered facilities. The session on Teacher Training talked about the tools like TIPPS, T-NAT, and Professional Learning Communities. The discussion around pedagogical improvements stressed on the importance competency-based learning, activity-based teaching, and gamified approaches. On the issue of addressing dropouts, the notions of community mobilisation, gender-sensitive facilities, and AI-driven re-enrolment initiatives were deliberated.

Outcomes

Key outcomes of the workshop included:

- Recognition of the need for context-specific solutions tailored to the unique geography and socio-cultural fabric of the North East.
- Emphasis on innovative strategies such as ICT-enabled classrooms and competency-based learning to improve outcomes.
- Support for collaborative approaches, including stronger community engagement and leveraging government schemes like Samagra Shiksha.
- Alignment with NEP 2020 goals of inclusive and quality education.
- Proposed pilot initiatives using AI for educational transformation.
- Acknowledgment of infrastructure, training, and digital challenges needing urgent redress.

Strengthening Sustainability Initiatives of the Indian Armed Forces

New Delhi

The meeting, chaired by Shri B.V.R. Subrahmanyam, CEO, NITI Aayog, was held on 03 December 2024 at 10:30 hrs at NITI Aayog, New Delhi, to discuss sustainability integration within the Indian Armed Forces. Dr. Vibha Dhawan, Director General, TERI, welcomed Serving Officers, NITI Aayog members, TERI officials, and other distinguished participants.

The discussion highlighted the critical need to embed sustainable practices into defence operations through structured training. Lt Gen N.S. Raja Subramani, VCOAS, emphasised the Armed Forces' commitment to achieving Net Zero by 2070, citing initiatives such as electric vehicles, renewable energy projects, rainwater harvesting, waste segregation, video conferencing, and 5 million geo-tagged tree plantations. Infrastructure developments include GRIHA-rated buildings like Sena Bhavan. Focus areas include hydrogen fuel use, operational sustainability, and achieving landfill-free status by 2030.

Shri B.V.R. Subrahmanyam addressed the geo-economic impact of climate change, urging the Armed Forces to adopt Green Initiatives aligned with the Prime Minister's vision. He stressed rooftop solar, solar thermal, e-waste management, and proposed an online platform for green training, with funding and technical support through NITI Aayog. Mr. Souvik Bhattacharjya, Associate Director, TERI, presented TERI's work on sustainable urban resource management and bio-based technologies.



Session I

The first session revolving around Renewable Energy, led by Mr. A.K. Saxena (TERI), focused on India's energy challenges and the role of renewables in defence. Key issues included fossil fuel dependency, battery storage, and global case studies. The panel discussion featured key insights on renewable energy integration and climate resilience within the Armed Forces. Mr. Alekhya Datta, Associate Director, TERI, emphasised the strategic importance of solar energy post-2040 and advancements in battery technology. Dr. Anshu Bhardwaj, Principal Director, Green Transition and Climate, highlighted zero-waste practices, circular economy approaches, and the development of solar-powered model villages. Lt Gen Vikas Rohelia, SM**, DG LW&E, outlined current renewable energy projects and the logistical challenges faced in high-altitude deployments. Col C.P. Muthanna, Founder, Nutrition and Health India, advocated for a National Policy to monitor renewable resource utilisation, urging defence-led innovation in climate resilience. Mr. Somnath Yogi, Head of Sales & Business Development, First Solar, proposed a partnership with the Indian Army for manufacturing fully integrated photovoltaic modules. Umang Maheshwari, Director, GEAPP, showcased battery technology as a viable solution for renewable energy adoption in defence applications. Mr. Abhinav Jain, Senior Energy Advisor, GIZ India, suggested collaborative partnerships and the deployment of dual-use solar systems and climate-resilient battery solutions for extreme environments. The identified Action Point was Climate Resilient Villages.

Session II

The second session focusing on Green Training, began with a presentation by Mr. Souvik Bhattacharjya (TERI) highlighting climate change as a threat multiplier and the potential of simulators to reduce training costs, ammunition use, and environmental impact. The panel discussion on Green Training highlighted critical perspectives and innovative solutions for sustainable defence practices. Lt Gen Vinod Khandare stressed the importance of raising awareness and adoption of simulators, advancing rooftop solar initiatives, and shifting the focus from disaster management to prevention. Zen Technologies presented data showing that a ₹15 crore investment in simulators could potentially save ₹380 crore over ten years, proposing a balanced hybrid model of real and simulator-based training. BEL shared progress towards green operations, including the development of solar-powered radars and hydrogen fuel cells. The Skill Council for Green Jobs discussed qualifications in green hydrogen and their alignment with GHG protocols. Maj Gen C.S. Mann emphasised the need for energy-efficient batteries in high-altitude areas and advocated for the integration of AI and AR/VR technologies into military training. Mr Arpit Sharma underlined the necessity of embedding sustainability across defence training and operations. Additional insights included Mr A.K. Saxena's note on CO savings from small-calibre simulator training, Gen Ajai Singh's suggestion to repurpose expired ammunition for training, and Gen Khandare's call for academic research into safe disposal methods. The identified Action Point was Green Training via Simulators.

Session III

The Session on Waste Management held by Dr. Suneel Pandey, Senior Fellow & Director, Circular Economy and Waste Management Division, The Energy and Resources Institute (TERI), opened with a presentation emphasising the need for integrated waste management in the Armed Forces, particularly in remote and high-altitude areas. Successful examples included Udaipur

STP and Ayodhya Bio-Methanation. Sustainable ammunition disposal methods such as pressure washing, shredding, and rotary kilns were recommended. The panel on waste management in the Armed Forces brought forth key insights and innovative approaches. Lieutenant General S. C. Tandi, VSM, Director General of Ordnance Services, Indian Army, detailed the current disposal practices, including the annual handling of 10,000 MT of ammunition and 8,000 to 10,000 vehicles, with waste auctions on MSTC generating ₹500 crore. He highlighted significant gaps in textile and e-waste recycling, along with limited industry accountability. Commodore Navneet Dhawan of the Indian Navy shared the Navy's systems for waste treatment and emphasised the reuse of metal from decommissioned ships, calling for a central policy to guide reuse practices. Dr. Abhinav Mathur of Attero Recycling proposed establishing a centralised recycling facility within the Armed Forces, underscoring the importance of critical mineral recovery and secure e-waste disposal to prevent data breaches. Mr. Anil Sharma introduced a compact wastewater treatment technology featuring a 50-year lifespan, remote monitoring capabilities, and high-water recovery efficiency. The discussion reinforced that ammunition and e-waste disposal must adopt environmentally safe and material recovery-focused methods, secure handling of e-waste is vital for national security, waste should be viewed as a resource with feasible recovery of critical materials like lithium, and that scalable, efficient wastewater solutions are available for defence applications. The identified Action Point was Pilot Model Cantonment using E-Mobility for Waste Disposal.



Session IV

Session on Impact of Climate Change presented by Ms. Suruchi Bhadwal, Director, Climate Change and Air Quality Programme, The Energy and Resources Institute (TERI), highlighted the operational risks climate change poses to the Armed Forces across India's diverse geographies. She discussed the Thane Action Plan's expansion to 300 cities, risks from

rising sea levels and shifting cyclone tracks, and potential disruption to Naval and Air Force infrastructure. The panel discussion on climate resilience in defence emphasised the pressing need to integrate climate considerations into national security strategies. Lieutenant General Ajai Singh underscored the disproportionate influence of developed nations on global climate policy, the heightened vulnerability of agrarian economies like India, and the risks posed to the Andaman & Nicobar Islands, urging a balanced approach between environmental sustainability and national priorities. Dr. Pushp Bajaj presented projections of sea level rise between 0.6m and 1m by 2100 and emphasised the importance of multi-level preparedness, particularly in coastal states such as Odisha, Tamil Nadu, and Maharashtra, while advocating for the expansion of resilience strategies across Indian cities. Mr. Saurabh Bhardwaj highlighted the increasing frequency and intensity of cyclones, advocating for resilient, nature-based infrastructure, university-level climate education, and greater investment in adaptive capacity. Commodore Manish Sinha addressed the rising sea levels in the Indian Ocean and their impact on critical naval infrastructure, such as underwater cables and SONAR systems. He called for climate-security risk modelling and deeper integration of resilience into defence planning. Colonel C.P. Muthanna focused on the environmental impact of black carbon emissions from Himalayan operations and proposed the establishment of ecological battalions to reduce soot and support climate mitigation efforts. The identified Action Point was Development of climate-integrated defence policy frameworks for long-term resilience.

Finally, the workshop concluded with appreciation for NITI Aayog, TERI, and all contributors. It emphasised the urgent need to integrate renewable energy in defence and border operations through sustainable, cost-effective strategies, aligning energy security with environmental goals.

Key outcomes included expanding hybrid and dual-use solar models, promoting LCAs and green training, reusing ammunition materials, advancing battery solutions for high-altitude areas, and addressing e-waste risks. Collaborative efforts will focus on integrating climate resilience into defence strategies, addressing coastal and Himalayan vulnerabilities, and supporting community-based environmental solutions.

Outcomes

- Technology Adaptations in Green Energy: To accelerate the adoption of renewable energy, the Armed Forces need to partner with the private sector for the development and deployment of next-generation energy solutions. Key areas of collaboration include:

    a. Manufacturing fully integrated photovoltaic modules and dual-use energy models tailored for military use in extreme environments.

    b. Battery technology advancements, ensuring long-term energy storage solutions for defence applications, given that they are cost-effective and can withstand extreme temperatures.

    c. Innovative energy contractual frameworks, reducing capital investment burdens through public-private partnerships

- Institutionalising Green Training in Defence Strategies: Sustainability is being embedded into military policies and training doctrines, ensuring that environmental conservation becomes a fundamental aspect of defence strategy like mandatory sustainability courses, green procurement policies etc.

- Public-Private Partnerships in Waste Management: Establishing centralised recycling facilities through public-private partnerships enables large-scale waste processing, ensuring efficient segregation, recycling and recovery of valuable materials.
- Disaster Resilience and Transition to Trans-Regional Readiness: As climate-related disasters become more frequent and intense, military forces must transition from regional to trans-regional readiness by: -

  a. Strengthening international collaboration to develop climate-resilient defence infrastructure.

  b. Investing in adaptive technologies for naval, air and ground operations.

  c. Enhancing early warning systems for climate-induced disruptions.

  d. Integrating climate risk assessment into strategic military planning and training.

  e. Implementing nature-based solutions for military sustainability, such as mangrove restoration and green construction practices.

Stakeholder Connect Workshop - Chhattisgarh's New Industrial Policy in Focus, Export Promotion and Rollout of 'Invitation to Invest' Letter

Raipur, Chhattisgarh

Chhattisgarh is rich in minerals and is among India's top Coal, Iron Ore, Dolomite, and Bauxite producers. The State's mineral revenue has a Compounded Annual Growth Rate (CAGR) of 13.80% from 2014 to 2023. Under the District Mineral Foundation Scheme, the State has established the District Mineral Foundation in all its districts, contributing to a national collection of ₹82,370.79 crore. In December 2023, the Government of India initiated the auction of 20 blocks of critical and strategic minerals, including Lithium and Rare Earth Elements (REEs) essential for sectors like Electric Vehicles and Renewable Energy.

The State's endowment with mineral wealth and growing industrial base strategically positions it for accelerated economic development. In line with this vision, NITI Aayog, in collaboration with the Government of Chhattisgarh, organised a Stakeholder Connect Workshop under its "State Support Mission". The initiative aims to foster inclusive Industrial Growth, promote Exports, and attract Investment into the state's emerging sectors.



The workshop was organised to facilitate meaningful dialogue among key stakeholders, including government representatives, industry leaders, policy experts, and development partners. This collaborative effort aimed to generate ideas for formulating Chhattisgarh's forthcoming Industrial Policy. Additionally, the forum served as a platform for introducing "Invitation to Invest" letters, emphasising the importance of establishing a robust ecosystem that supports job-intensive industries, exports, and downstream manufacturing units. The workshop aimed

to collect inputs for the Chhattisgarh Industrial Policy 2024 and to identify strategies aimed at enhancing the State's export competitiveness. Additionally, there is a strong emphasis on promoting collaboration between Government entities and private sector players, which is crucial for fostering a conducive business environment. The initiative also seeks to address key compliance and infrastructure development challenges, thereby facilitating smoother operations for industries. A significant focus will be placed on strengthening manufacturing capabilities in critical sectors, such as Iron, Steel, and Aluminum. Ultimately, the objective is to roll out investment invitations that will contribute to building investor confidence in the region.

The workshop began with a gracious welcome from Shri Vishwesh Kumar (IFS), Managing Director of the Chhattisgarh State Industrial Development Corporation, who articulated the state's vision for economic transformation. Following this introduction, Shri Rajat Kumar (IAS), Secretary of the Department of Commerce and Industries, delivered a comprehensive Policy Profile Presentation. He outlined the key components of the forthcoming Industrial Policy, emphasising the critical roles of infrastructure, Micro, Small, and Medium Enterprises (MSMEs), and incentives in driving sustainable growth.



Session I

The first session was a Panel Discussion on Job-Intensive Industrial Development, with the theme: "Promoting Job Intensive Industrial Development: Role of Industrial Infrastructure, Policy Support and Reducing Compliance Burden." This session was facilitated by Shri Prabhat Malik (IAS), Director Industries, Government of Chhattisgarh. The session featured insights from Shri Sanjay Agrawal, MD, N.R. Group of Industries, Shri Amar Parwani, President, Chhattisgarh Chamber of Commerce and Industry, Shri O.P. Singhania, President, Laghu Udyog Bharti, and Shri Easwaran Subramanian, Partner & Industries Leader, Deloitte South Asia. The session concentrated on the importance of streamlining regulatory frameworks

and enhancing infrastructure to facilitate job creation. Panelists underscored the necessity of reducing licensing bottlenecks, establishing plug-and-play industrial zones, and improving state capacities for single-window clearances. Additionally, there was a significant emphasis on the unique opportunity that Chhattisgarh possesses to become a central hub for MSME-led manufacturing.



Session II

The second session was a Panel Discussion on Export Competitiveness, with the theme: "Enhancing Export Competitiveness and Equipping Chhattisgarh Industries for Global Markets." Shri Sanjeet Singh (IRS), Senior Advisor, NITI Aayog, led the second session. The featured panel members were Ms. Shubhika Jain, Founder & CEO, RAS Luxury Skincare, Shri Ashish Saraf, President, Manorama Industries Ltd., Shri Mukesh Jain, President, The Rice Exporters Association of Chhattisgarh, Shri V.G.R. Kolluru, Assistant Manager, CONCOR, and Shri Piyush Doshi, Operating Partner, The Convergence Foundation. The session highlighted the significant, yet largely untapped, export potential of Chhattisgarh, especially within the value-added agricultural and fast-moving consumer goods (FMCG) sectors. Key challenges were identified, including logistical constraints, branding difficulties, and insufficient warehousing facilities. It was recommended that a comprehensive state export strategy be developed, emphasising capacity building, quality certification, and the integration of exporters into international supply chains. The formal launch of the state's 'Invitation to Invest' initiative served as a focal point during the workshop. Key addresses were delivered by distinguished guests, including Shri Sanjeet Singh (IRS), Senior Advisor at NITI Aayog; Shri Amitabh Jain, Chief Secretary of the

Government of Chhattisgarh; and Shri Vishnu Deo Sai, Hon'ble Chief Minister of Chhattisgarh. Each speaker reaffirmed the state's commitment to a pro-business environment, assuring potential investors of consistent policies, enhanced ease of doing business, and proactive governance. The Chief Minister emphasised that Chhattisgarh is now "open for business," highlighting the introduction of streamlined processes and designated special economic zones aimed at key sectors such as steel, aluminium, pharmaceuticals, and food processing.

Session III

The third session was a Panel Discussion on Iron, Steel, and Aluminium-based Industries having the **t**heme: "Iron, Steel, Aluminum, and Their Downstream Products-Based Manufacturing Industries." The panel discussion was moderated by Shri Pradeep Pal, Advisor at SISCOL, and industry leaders to explore the modernisation of the metals sector. The panel featured notable experts including Shri Raghavendra Singhania, CEO of Shivalik Group; Shri Ramesh Agrawal, Managing Director of G.R. Sponge and Power Ltd.; Shri Brajesh Nahar, Chief Operating Officer of APL Apollo; and Shri Naman Agrawal, Chief Executive Officer of Pragati Defence Systems Pvt. Ltd. The discourse centred on the infusion of technology, the importance of value addition, and the necessity of adhering to environmental compliance within the industry. Throughout the discussion, the panelists collectively advocated for several key initiatives, including the implementation of concessional power tariffs, improved rail connectivity, and the establishment of skill development centres specifically focused on metallurgy and engineering. These recommendations aim to drive the sector towards greater efficiency and sustainability.

Wrapping up, the workshop, organised by NITI Aayog under its State Support Mission in collaboration with the Government of Chhattisgarh, served as a platform for fostering cooperative federalism and multi-level policy dialogue. Shri Pravin Shukla, Additional Director, Department of Commerce & Industries, presented key insights and emphasised the need for collaborative governance and continuous feedback mechanisms aligned with stakeholder needs. Participants included representatives from NITI Aayog, state departments, industry bodies such as Laghu Udyog Bharti, and major companies including CONCOR, Deloitte, Apollo, and Shivalik Group, among others. The initiative highlighted a shared commitment to inclusive, impactful policy development for the state's economic growth.

Outcomes

- Ease of Doing Business: Industry leaders have underscored the necessity of reducing compliance burdens to enhance the ease of doing business.
- Export Growth: The development of a dedicated export facilitation policy has emerged as a pivotal recommendation for fostering growth in this sector.
- Infrastructure Gaps: Stakeholders have highlighted the importance of addressing logistics, connectivity, and land availability as critical areas for policy intervention.
- Downstream Manufacturing: There is a strong consensus on the need to promote value addition in key sectors, such as steel and aluminium, which is essential for job creation.
- Investor Sentiment: The implementation of 'Invitation to Invest' letters have significantly strengthened investor confidence. These insights can guide future initiatives and policy development to drive growth and improvement in the respective sectors.

- During the event, no formal Memoranda of Understanding (MoUs) were executed; however, numerous partnerships were initiated through informal discussions and networking opportunities.
- Participants conveyed significant appreciation for the workshop's structure, relevance, and its stakeholder-centric approach. Many attendees expressed a desire for deeper engagement in future rounds of policy consultations and events organised under NITI Aayog's State Support Mission.
- The workshop effectively laid the groundwork for the forthcoming Chhattisgarh Industrial Policy 2024, which is anticipated to incorporate many of the recommendations and themes articulated during the discussions. Both NITI Aayog and the state government are committed to conducting follow-up sessions and sector-specific consultations to further refine and finalise the policy.

Carbon Capture, Utilisation, and Storage (CCUS) in the Indian Cement Sector

New Delhi

A workshop was held on "Carbon Capture, Utilisation, and Storage (CCUS) in the Indian Cement Sector" on 16th January 2025 at Vigyan Bhawan, New Delhi. The workshop is part of India's ongoing efforts to achieve its net-zero target of 2070 and ensure a sustainable future. Decarbonising the cement sector is vital for meeting the country's long-term environmental goals, and to achieve that, CCUS needs to play a crucial role in reducing emissions in the cement sector. The workshop saw participation from the Principal Scientific Advisor to the Government of India, Prof. Ajay Kumar Sood, Dr. VK Saraswat, Member, NITI Aayog; Sh. Pankaj Agarwal, Secretary, Ministry of Power; Dr. N. Kalaiselvi, DG CSIR, and dignitaries from government, PSUs, industry, think tanks, and academia. The workshop began with a welcome address by Dr. Anshu Bhardwaj, Programme Director (GT, E&C), NITI Aayog, setting the context for discussions on India's cement sector and its decarbonisation journey. Shri Ishtiyaque Ahmed, Senior Adviser (Industry), NITI Aayog, provided key insights into India's emissions landscape and the role of CCUS in achieving sustainability goals. The Principal Scientific Adviser to the Prime Minister highlighted the challenges of decarbonising the cement industry and the need to balance economic growth with emissions reduction. Dr. V.K. Saraswat, Member, NITI Aayog, highlighted India's commitment to a net-zero economy, underscoring CCUS as a critical enabler for emissions reduction. Senior officials, including the Director-General, CSIR, Secretary, DST, and Secretary, Ministry of Power, reinforced the importance of CCUS in policy, research, and industrial applications. The session laid the groundwork for discussions on CCUS as an indispensable solution for deep decarbonisation in the cement sector, calling for technological innovation, financial incentives, and collaborative efforts to drive sustainable development. The workshop was designed to achieve the following key objectives:

a. To assess the role of Carbon Capture, Utilisation, and Storage (CCUS) in decarbonising India's cement sector.

b. To facilitate discussions among industry leaders, policymakers, and researchers on CCUS adoption.

c. To explore technological advancements and innovations required for scaling up CCUS.

d. To identify policy frameworks and financial mechanisms supporting CCUS implementation.

e. To align CCUS strategies with India's net-zero commitments and global climate goals.

f. To promote collaboration between government, industry, and research institutions for sustainable growth

The workshop on Carbon Capture, Utilisation, and Storage (CCUS) in India's cement sector opened with key speakers highlighting the importance of CCUS in reducing emissions. Dr. Anshu Bhardwaj (NITI Aayog) set the stage, while Shri Ishtiyaque Ahmed provided an overview of India's cement sector and its sustainability challenges. The Principal Scientific Adviser stressed

the need for balancing economic growth with decarbonisation. Dr. VK Saraswat highlighted India's commitment to net-zero by 2070 and the role of CCUS, carbon pricing, and climate finance. Other officials, including the Director-General of CSIR and the Secretary of DST, underscored CCUS's role in a circular economy, economic viability, and policy development. The Ministry of Power and Oil India Limited highlighted ongoing efforts in CCUS innovation, including geo-sequestration and multidisciplinary approaches, supported by DST's Centre of Excellence for CCUS.



Session I

The session about CCUS Technologies, Challenges, and Feasibility in the Cement Sector was moderated by Dr. VK Saraswat, Member (Energy), NITI Aayog. Other members present in the session were Sh. Atanu Mukherjee, President & CEO, M N Dastur & Company Ltd.; Sh. Shaswattam, Executive Director, NTPC-NETRA; Dr. L P Singh, DG, National Council for Cement and Building Materials; Ms. Aparna Dutt Sharma, Secretary General, Cement Manufacturers Association; Ms. Devika Wattal, Innovation Consultant, Global Cement and Concrete Association India; Sh. Nitin Shrivastava, Founder, Greengine Environmental Technologies Pvt Ltd. The session explored CCUS technologies, challenges, and feasibility in decarbonising the cement sector. With rising cement demand, CCUS and alternative fuels could achieve up to 90% emission reduction, though cost remains a barrier. Oxyfuel technology, electrified calciners, and mineralisation were identified as effective carbon capture methods. Efforts are underway to convert CO2 into liquid fuels, with large-scale methanol production projects in progress, alongside calls to classify methanol as a "green" fuel. The session highlighted the lack of commercially viable CCUS projects, highlighting the need for localised technology development, financial support, and a dedicated research institute. Scalability and investment de-risking were deemed essential for widespread adoption. A microalgae-based carbon capture system was also presented,

showcasing high efficiency in capturing CO2 and other pollutants. Overall, the discussion underscored the importance of technology selection, innovation, and economic viability in integrating CCUS into the cement industry.

Session II

This session about Carbon Capture Technologies, was moderated by Atanu Mukherjee, President & CEO, Dastur Energy & M N Dastur & Company Ltd. (Session Chair, Dastur Energy). Other members present in the session were Dr. Neelima Alam, Department of Science & Technology (DST); Dr. K K Pant, Professor, IIT Roorkee; Dr. Ravi Babu, Sr. Principal Scientist, CSIR-Central Electrochemical Research Institute, Karaikudi; Prof. Sebastian Chirambatte Peter, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore The session explored advancements in CCUS technologies, industry collaborations, and CO2 capture and utilisation challenges. It highlighted DST's R&D efforts (2019-2024) and the active role of industries in CCUS projects. Various CO2 utilisation pathways, including thermochemical, photochemical, electrochemical, and biochemical methods, were discussed, with a focus on CO2-to-methanol conversion and the need for efficient indigenous catalysts. Novel CO2 capture technologies, such as an ambient-condition adsorbent and Direct Air Capture (DAC) systems for air purification, were introduced. Research on converting CO2 into methanol, DME, and other valuable chemicals was showcased, with cost projections and industrial applications. The session highlighted the importance of scalable technologies, improved energy efficiency, and strong industry collaboration to advance CCUS in India.



Session III

The third session was about Financing CCUS in India**,** moderated by Sh. Rajnath Ram, Adviser (Energy), NITI Aayog. Other members present in the meeting were Sh. Darshak Mehta, Energy Sector Group Consultant, Asian Development Bank; Ms. Natalia Kulichenko, Programme Leader, World Bank; Sh. Vaibhav Rathi, Sr. Advisor, GIZ. This session was focused on strategies for financing CCUS projects in India. Presentations covered feasibility studies, funding mechanisms, and sustainable technologies. ADB discussed its assessment of CCUS options at the Ariyalur cement plant and feasibility studies in Northeast India, highlighting urea and mineralisation as viable CO2 utilisation methods. The World Bank outlined its efforts in 11 countries, highlighting risk mitigation, carbon credit monetisation, and mobilising long-term finance for CCUS projects in India. GIZ presented LC3 cement technology, which reduces CO2 emissions by 40%, highlighting its adoption in India and its integration into green infrastructure. Discussions also addressed financial models such as SPVs, market-based incentives, and the role of public-private partnerships.

Session IV

A session on CO2 Utilisation and Storage was moderated by Shri Ranjit Rath, CMD, Oil India Limited. Other members present in the session were Dr. Ravindra D Gudi, Professor, IIT Bombay; Shri Tshering Lama, CGM - Centre of Excellence of Energy Studies (CoEES), OIL; Dr. Nimisha Vedanti, Senior Principal Scientist, CSIR – NGRI; Dr. Kishor S. Kulkarni, Senior Scientist, CSIR - CBRI, Roorkee; Dr. Vikram Vishal, Professor, IIT Bombay; Ms. Sushma Rawat, Director (Exploration), ONGC.

This session focused on CO2 sequestration and utilisation strategies. Key discussions covered looping combustion for CO2 separation, subsurface storage in Enhanced Oil Recovery (EOR) and coal bed methane recovery, and accelerated mineral carbonation in building materials. IIT Bombay showcased a looping combustion technology that captures CO2 while generating byproducts like methanol and hydrogen. Oil India Limited presented its CO2 storage initiatives in Naharkatiya and Dikom, in collaboration with IIT Bombay and Texas A&M. CSIR-NGRI highlighted subsurface characterisation studies for CCUS feasibility. ONGC shared its efforts in geological storage and CO_2 transport logistics. The session also addressed cost-effectiveness, seismic risks, and regulatory challenges. Collaboration with academia and industry was highlighted as essential for CCUS scale-up.

Session V

A session revolving around the Vision and Plan for CCUS Implementation in the Cement Sector was moderated by Dr Anshu Bharadwaj, Programme Director (Energy, Green Transition & Climate Change). Other members: present in the session were Shri Sarvesh Gupta, Associate Partner, McKinsey; Dr Raju Goyal, Chief Technical and Sustainability Officer, Ultratech Cement; Shri Anupam Badola, Deputy Chief Sustainability Officer, JSW Cement; Shri Saurabh Palsania, Jt. President – Strategic Sourcing, Shree Cement; Shri Brajesh Sharma, Head Corporate Sustainability, JK Cement The session discussed strategies to integrate Carbon Capture, Utilisation, and Storage (CCUS) into the cement sector's decarbonisation efforts. Key points included the sector's growing emissions, the need for kiln electrification, alternative fuels, renewable energy, and advanced carbon capture technologies. Industry representatives highlighted ongoing initiatives such as blended cement, biofuels, process optimisation, and CO reduction technologies. Challenges like economic feasibility, regulatory barriers, and

the need for large-scale adoption of CCUS were also addressed. The session highlighted the urgency of implementing a roadmap to achieve net-zero emissions by 2070.



Session VI

This session was about the Support Required for CCUS Implementation in the Cement Sector moderated by Dr. V.K. Saraswat, Member, NITI Aayog. Other members present in the session were Dr Anshu Bhardwaj, Programme Director (GT, E&C), NITI Aayog; Dr. L.P. Singh, Director General, National Council for Cement and Building Materials; Ms Aparna Dutt Sharma, Secretary General, Cement Manufacturers Association; Sh Kaustubh Phadke, General Manager, Global Cement and Concrete Association India The panel discussion focused on the support needed for widespread CCUS adoption in cement manufacturing. Key topics included policy frameworks, financial incentives, research on new cement formulations, and scaling up pilot projects. Suggestions included forming dedicated committees, national research centers, and financial aid for small-scale manufacturers. The discussion also covered technology selection based on flue gas content, strategic placement of CCUS facilities, and carbon financing mechanisms. The session underscored the importance of collaboration between government, industry, and research institutions to accelerate CCUS implementation.

a. Government Support for CCUS: Plans to assist small-scale cement plants with financial aid for R&D in carbon capture, utilisation, and storage (CCUS).

b. Scaling Up CCUS: Need to expand carbon capture capacity from pilot projects (1 TPD) to industrial scale (200–300 TPD).

c. Technology & Infrastructure: Selection of CCUS technology based on flue gas composition and strategic placement of capture facilities near cement plants.

d. Methanol Production: Focus on enhancing value addition in methanol production, with India's annual demand at 4.2 million tons.

e. Advanced Technologies: Promotion of chemical looping technology for efficient carbon capture.

f. National R&D Centre: Proposal for a dedicated CCUS research hub through public-private collaboration.

g. Standardisation & Policy: Call for taxonomy to standardise the carbon capture industry and develop financing frameworks to attract investments.

h. Holistic Approach: Integrating technology, logistics, financial mechanisms, and policy support for effective CCUS deployment in the cement industry.

Participants included representatives from NITI Aayog, such as Dr. Ashok Sonkusare, Simarjot Kaur, Ms. Naba Suroor, and Sh. Sharavan Kumar, Sh. Sandal Agrawal, Sh. Ashutosh Kumar, Sh. Kanhaiya Lal, Sh. Rajnath Ram, Dr. Sunil Kumar, Sh. VK Saraswat and several other officials, reflecting strong institutional engagement. From IIT Roorkee, both Dr. K.K. Pant and Prof. Komal Tripathi contributed their academic insights, alongside Prof. Vikram Vishal and Dr. Ravindra Gudi from IIT Bombay. Key voices from the private sector included representatives from M.N. Dastur & Co.—Mr. Atanu Mukherjee, Dr. Supritam Ganguly, and Sh. Rajshekhar Saha (also from Dastur Energy), as well as stakeholders from Shree Cement, Adani Cement, Ultratech Cement, and Dalmia Cement.



Industry experts from Oil India Ltd, BPCL, ONGC, Greengine, Nav Prakriti Green Energies, Chakr Innovation, Thermax, and Jindal Steel offered perspectives from across the energy and innovation spectrum. Representatives from knowledge and regulatory bodies included BEE,

PSA to PM, World Bank, McKinsey, GCCA India, GIZ, NTPC, CCI, CMA, CRISIL, WRI, CSIR-NGRI, ICGEB, BIS, and DGH. Notable participation came from academic institutions like JNCASR and CSIR-CBRI Roorkee, along with officials from the Ministry of Mines, Department of Chemicals and Petrochemicals, and MOES.The session also saw contributions from strategic partners like BHEL, Suvian Foundation, Vision India 2032, Anchor, ADB, and various experts and consultants, underlining the interdisciplinary and multi-sectoral approach of the workshop.

Outcomes

The workshop generated a wealth of insights and practical takeaways, which will inform policy decisions and accelerate implementation on the ground. Key takeaways included the need to scale up carbon capture capacity from pilot to industrial levels, selecting technology based on flue gas composition and strategically locating CCUS facilities. The discussion focused on methanol production, adopting chemical looping technology, and establishing a national R&D centre through public-private partnerships. Standardisation and carbon financing mechanisms were also discussed as essential for industry-wide adoption. The address stressed a holistic approach integrating technology, logistics, funding, and research for effective CCUS implementation. Other significant learnings included:

- CCUS as a Necessity**:** Carbon Capture, Utilisation, and Storage (CCUS) are essential for deep decarbonisation in the cement sector beyond energy efficiency improvements.
- Scaling Up Carbon Capture**:** The industry must transition from pilot-scale (1 ton/day) to industrial-scale (200–300 tons/day) carbon capture systems.
- Policy and Financial Support**:** Clear regulatory frameworks and financial incentives are required to drive CCUS adoption and overcome economic barriers.
- Technology and Innovation**:** Advancements in CCUS technologies, such as chemical looping, are crucial for cost reduction and efficiency improvement.
- Strategic Implementation**:** Carbon capture facilities should be located near cement plants to optimise logistics and reduce transportation costs.
- Carbon Pricing and Finance**:** A well-defined carbon financing framework is necessary to attract investment and support CCUS projects.
- Collaboration for Impact**:** Strong partnerships between government bodies, industry stakeholders, and research institutions are needed to accelerate CCUS deployment.
- Methanol Production Opportunity**:** Integrating CCUS with methanol production can enhance value addition and support India's growing demand.
- India's Leadership Potential**:** The country has an opportunity to become a global leader in CCUS deployment, contributing significantly to global emissions reduction.
- National R&D Centre Proposal**:** Establishing a dedicated research and development centre for CCUS will drive innovation and technological breakthroughs

The feedback received from participants was overwhelmingly positive. Attendees appreciated the platform provided by the workshop for knowledge sharing, networking, and collaborative problem-solving.

Workshop on Re-imagining ICDS for 2030

New Delhi

The National Workshop on Re-imagining ICDS for 2030 was convened by NITI Aayog under the State Support Mission (SSM) initiative on 28th January 2025 at the Dr. Ambedkar International Centre, New Delhi. This high-level workshop served as a collaborative platform for diverse stakeholders, including representatives from States and Union Territories, international organisations, policy think tanks, and civil society organisations (CSOs). The objective was to co-create visionary strategies to transform the Integrated Child Development Services (ICDS) programme, aligning it with the evolving needs and aspirations of a dynamic 21st-century India. The National Workshop was jointly organised by NITI Aayog and the Ministry of Women and Child Development under the aegis of the State Support Mission (SSM).



Outcomes

The National Workshop on *Re-imagining ICDS for 2030* yielded several forward-looking recommendations to strengthen early childhood care and development across India:

a. Seamless Child Tracking and School Enrolment: Integration of the *Poshan Tracker* with *UDISE+* to ensure every child is accurately accounted for and enrolled in school. Additionally, mapping Anganwadi Centres (AWCs) with nearby primary schools will facilitate smooth transitions and minimise dropouts due to geographic discontinuities during enrolment.

b. Diversified and Inclusive Childcare Models: Promotion of multiple creche models tailored to different sectors, such as workplace-based facilities, community-managed centres, income-linked models, and MSME-aggregated setups. An *Urban Child Care Coalition*

will be established to foster inter-ministerial coordination and expand childcare access, thereby enhancing women's workforce participation.

c. Upskilling and Professionalisation of Anganwadi Workers (AWWs): Expansion of blended training approaches that combine in-person learning with tech-enabled modules for greater flexibility. Training will be linked to career progression through structured recognition frameworks, elevating AWWs as early childhood educators. Outdated training norms will be overhauled to ensure government-mandated centres are equipped with modern content and methods.

d. Tech-Enabled Nutrition Monitoring and Reporting: Deployment of AI tools to predict child growth patterns and detect early malnutrition based on health indicators and meal composition. Voice-enabled data entry will be introduced into the Poshan Tracker to ease reporting burdens and streamline data collection for frontline workers.

e. Enhanced Community Engagement and Behaviour Change: Greater parental involvement—especially by fathers—will be encouraged to reinforce early childhood development at home. A set of *priority Social and Behaviour Change Communication (SBCC) behaviours* will be identified at central, state, and household levels to support targeted interventions.



Workshop on Urban Management

New Delhi

India's urbanisation is accelerating at an unprecedented rate, with Tier II and Tier III cities emerging as key drivers of economic growth and development. These cities are witnessing rapid population expansion, presenting both opportunities and challenges in urban governance. However, despite their growing economic importance, significant capacity gaps among city officials hinder effective urban management and service delivery.

Recognising this urgent need, NITI Aayog, in collaboration with Artha Global India, organised a workshop to assess the existing gaps in capacity-building programmes and explore strategies to empower urban managers with the skills and knowledge required to navigate the complexities of urban planning, infrastructure, and governance. The workshop was designed to identify and address the challenges faced by urban managers, particularly in Tier II and Tier III cities, where rapid urbanisation presents unique governance hurdles. Its primary objective was to gather critical feedback from city officials to ensure that the capacity-building programme is aligned with practical, on-ground needs. Additionally, the workshop sought to curate case studies and examples of innovative urban management practices, allowing successful strategies to be integrated into the programme's curriculum. By doing so, the initiative aims to make urban governance training more practical, solution-oriented, and applicable in real-world scenarios. The objectives of the workshops:

a. Assess Capacity Gaps & Training Needs – Identify and evaluate the specific challenges faced by urban managers in Tier II and Tier III cities, ensuring targeted interventions in capacity-building efforts.

b. Curate Real-World Insights & Best Practices – Gather expert perspectives, case studies, and proven urban management models, integrating successful strategies into the training curriculum for practical applicability.

c. Develop a Practical, Impact-Driven Training Programme – Design an effective and solution-oriented capacity-building initiative that directly addresses the urban governance challenges in these rapidly growing cities, equipping officials with skills, tools, and frameworks for sustainable urban development.



The workshop witnessed active participation from a diverse group of stakeholders, including representatives from central ministries, state governments, multilateral organisations, knowledge partners, urban development experts, and city officials. It was jointly organised by NITI Aayog under its State Support Mission, in collaboration with Artha Global, as part of a broader initiative to strengthen urban governance and capacity-building across India's rapidly urbanising regions.

Sessions

The workshop began with opening remarks that underscored the crucial role of urban managers in ensuring the efficient functioning and sustainable growth of Tier II and Tier III cities. The information within this session was disseminated by Shri B.V.R. Subrahmanyam, CEO, NITI Aayog and Ms. Anna Roy, Principal Director (MU), NITI Aayog. Shri Subrahmanyam highlighted the need to strengthen urban governance capacity to realise the national vision of a Viksit Bharat.



The presentation about the Initial Concepts for the Capacity-Building Programme, about which was spoken by Dr. O.P. Agarwal, Distinguished Fellow, NITI Aayog; Ms. Pritika Hingorani and Ms. Mayura Gadkari, Artha Global The session introduced the preliminary framework and guiding principles for the upcoming capacity-building programme. The speakers outlined core focus areas, including institutional governance, service delivery, leadership, and adaptability, ensuring alignment with the practical realities faced by city officials in emerging urban centres.

A panel discussion conducted for 'Identifying Capacity Gaps and Training Needs' had all invited speakers and stakeholders as participants. This interactive session served as the workshop's core engagement, bringing together experts, practitioners, and urban leaders to deliberate on the capacity constraints and training gaps among urban managers. The discussion yielded valuable on-the-ground insights to guide the design and content of the training curriculum.



Outcomes

- Addressing Capacity Gaps in Urban Management: Discussions highlighted a significant shortage of structured capacity-building initiatives for urban managers, especially in Tier II and Tier III cities. Many municipal officials face limited training opportunities, resulting in challenges in policy execution and service delivery.
- Recognising the Role of Tier II & III Cities: These cities are emerging as critical engines of economic growth, particularly in manufacturing and employment generation. With urbanisation accelerating in these centres, there is a clear need for tailored training programmes that reflect their unique governance and infrastructure needs.
- Designing a Practical Capacity-Building Programme: The workshop contributed to refining the framework of the proposed training initiative by Artha Global and NITI Aayog. Experts recommended a modular, adaptive, and field-oriented curriculum that emphasises:
    a. Real-world case studies
    b. Peer learning platforms
    c. Hands-on project implementation experience
- Integration of Innovative Urban Practices: Participants shared successful models from Indian and global cities, including examples of Smart city governance frameworks, Digital service delivery innovations and Community-centred urban planning. The need for integrated planning and inter-departmental coordination was emphasised to enhance implementation outcomes.

The Closing Remarks and Summary were given by Ms. Anna Roy, Principal Director (MU), NITI Aayog. The closing session summarised the day's key takeaways and reiterated the importance of collaborative engagement across levels of government, academia, and practitioners. The remarks emphasised the next steps in co-developing a targeted, practical, and action-oriented capacity-building programme for India's next-generation urban leaders.

Spring Shed Management and Climate Adaptation: Strategies for Sustainable Development in the Indian Himalayan Region

Dehradun, Uttarakhand

NITI Aayog, under the State Support Mission, in collaboration with the G.B. Pant National Institute of Himalayan Environment (NIHE) and the International Centre for Integrated Mountain Development (ICIMOD), organised a National Workshop titled "Spring Shed Management and Climate Adaptation: Strategies for Sustainable Development in the Indian Himalayan Region." The workshop aimed to highlight the deliberation on various perspectives, including challenges and opportunities, of spring shed management at the national and state levels. It also explored ways to make spring revival part of the policy-science-practice interface agenda for long-term sustainability. The workshop had more than 100 participants, representing ministries, state governments, NGOs, research institutions, and communities.

In India, springs are a vital source of water for many hill and mountain communities, fulfilling their drinking, domestic, agricultural, and cultural needs. Approximately 200 million people depend on spring water across the Himalayas, Western Ghats, Eastern Ghats, Aravalli, and other such mountain ranges. Of the estimated five million springs in India, nearly three million are in the Indian Himalayan Region (IHR). However, half of the perennial springs in the IHR have either dried up or have become seasonal (NITI Aayog report, 2018), affecting local water security, base flows in rivers, and biodiversity.



The combined impacts of climate change – rising temperatures, increased rainfall intensity, and reduced winter precipitation – along with ecological degradation, socio-economic shifts, rapid urbanisation, and seismic activity, are causing springs to dry up across mountain regions like the IHR. This is leading to acute water shortages in villages and urban centres that rely on natural springs, adversely affecting mountain ecosystems and livelihoods, and adding to the drudgery of women. This highlights the urgent need for a science-based, collaborative, and ecosystem-based approach to spring shed management for water security, climate adaptation, and biodiversity co-benefits. Spring shed management in India has gained significant momentum following the release of NITI Aayog's 2018 report on "Inventory and Revival of Springs in the Himalayas for Water Security". Across India, a wide range of stakeholders, including state governments, civil society organisations, academia, the private sector, and the media, are actively working to raise awareness about the importance of springs and to build capacities for the protection, development, and inclusive management of spring sheds. As spring revival and spring shed management advance in the Indian Himalayan Region, it is essential to review ongoing projects, current knowledge, and progress in spring mapping and rejuvenation. This will help assess efforts by Himalayan States, identify key enablers for scaling, and co-develop a roadmap for rapid and widespread implementation.

With this background, the workshop was conceptualised and successfully convened on 17th February, 2025 in Uttarakhand- one of the Himalayan States. The workshop served as a platform to foster dialogue on spring shed management strategies for sustainable water security, climate adaptation, and biodiversity co-benefits in the Indian Himalayan Region (IHR).

The objectives of the session included:

a. Sharing status/latest knowledge on spring shed management initiatives, challenges, and opportunities in the Indian Himalayan Region.

b. Discussing innovative, science-based spring shed development and management approaches and sharing best practices from India and internationally.

c. Exploring collaboration opportunities among stakeholders and identifying policy support for scaling spring shed management.

The workshop was divided into various sessions, each addressing different aspects of Spring shed management in the Indian Himalayan Region (IHR).

The workshop was inaugurated by distinguished dignitaries, including Shri Pushkar Singh Dhami, Hon'ble Chief Minister of Uttarakhand as the Chief Guest, and Shri Satpal Maharaj, Hon'ble Minister of Watershed, Govt. of Uttarakhand. Other esteemed guests of the workshop included Shri Suman K. Bery, Hon'ble Vice Chairperson, NITI Aayog; Dr. V.K. Saraswat, Hon'ble Member, NITI Aayog; Smt. Radha Raturi, Chief Secretary, Government of Uttarakhand; Shri RK Sudhanshu, Principal Secretary of Forest and Environment, Govt. of Uttarakhand; Ms. Izabella Koziell, Deputy Director General, ICIMOD; Shri Surender Mehra, Adviser (GTC), NITI Aayog, and Prof. Sunil Nautiyal, Director, NIHE.

The session commenced with a welcome address by Shri Surender Mehra, Adviser (GTC), NITI Aayog, highlighting the importance of the workshop in water conservation efforts given the

dependency of approximately. 20 crore people (~ 15% of India's total population) on the springs in the Indian Himalayan Region (IHR). Ms. Izabella Koziell, Deputy Director General, ICIMOD, also highlighted the workshop's significance as a valuable initiative, noting that the presence of practitioners, decision-makers, and policymakers created an ideal platform to discuss effective approaches to spring shed management.



A documentary film on the Heval River rejuvenation titled 'A Success Story of River Landscape Rejuvenation through Spring shed Management Technique' was screened, highlighting the successful rejuvenation of the Heval River in Uttarakhand. Dr. V.K. Saraswat emphasised addressing policy gaps, strengthening governance frameworks, and fostering community participation for effective implementation, while also underscoring the need for investment in training and education to enhance spring shed management. Shri Satpal Maharaj addressed climate-induced water shortages in Uttarakhand, emphasising the revival of seasonal rivers through scientific recharge. Shri Suman K. Bery linked watershed management to economic growth and national security, calling for advanced digital infrastructure and AI-based interventions. Shri Pushkar Singh Dhami, in his address, called Uttarakhand 'India's Water Tower', emphasising its 1,000 glaciers and major rivers. He noted the drying of small rivers due to climate change and outlined key state initiatives, including the Spring & River Rejuvenation Authority (SARRA), Jalagam Vibhag, and the Amrit Sarovar project, which has revived over 1,000 water bodies.

Session I

The first session about the Perspectives on Spring Shed Management – Climate Change Impact and Adaptive Strategies was moderated by Prof. Sunil Nautiyal, Director, NIHE, this session explored the impacts of climate change on Himalayan springs and potential adaptive strategies through various case studies. Shri Nand Kishore Agrawal, Country Coordinator, ICIMOD, highlighted that 50%

of Himalayan springs have dried up due to climate change and land degradation, threatening water security, biodiversity, and local livelihoods. Dr. Rajesh Joshi, Scientist, NIHE, emphasised the importance of hydrogeological mapping, groundwater recharge, and Ecosystem-Based Adaptation (EbA) to enhance spring shed conservation.

Prof. Pradip Kumar Bora, from NERIWALM, Assam, presented case studies from Northeast India, detailing water quality challenges, acidic soil impact on springs, and conservation solutions. He emphasised the importance of community-led recharge ponds and staggered trenches in Nagaland for groundwater recharge. Smt. Neena Grewal (IFS), Additional Chief Executive Officer of Spring and River Rejuvenation Authority (SARRA), Government of Uttarakhand, highlighted the mapping of 6,350 springs and the need for scientific intervention in recharge practices. She elaborated on how policy coordination among various departments is crucial for effective implementation. The session focused on interdepartmental collaboration, policy frameworks, and financing mechanisms. Smt. Grewal discussed how SARRA ensures streamlined execution, while Dr. Saraswat stressed the importance of pooling financial resources from different ministries to ensure long-term success.



Session II

The second session discusses the best practices in spring shed management – Science-Policy Interface. It was moderated by Shri Brij Mohan Singh Rathore, Senior Fellow (Policy Advisor), ICIMOD, this session focused on successful case studies and policy-driven approaches to spring shed management. Dr. Debashish Sen, Executive Director, People's Science Institute (PSI), Dehradun, presented a community-based six-step methodology for spring shed conservation, emphasising hydrogeological mapping, recharge area treatment, and long-term monitoring. He highlighted successful interventions in Uttarakhand and Himachal Pradesh, where community-led efforts have significantly increased spring discharge and improved

irrigation access. Dr. Sanjeev Bhuchar, Intervention Manager–Springs, ICIMOD, discussed various national and international best practices, emphasising the integration of digital tools and citizen science for effective spring mapping and governance. This session also highlighted successful models such as the "Dhara Vikas" initiative in Sikkim and the "Heval River Rejuvenation Project." Emphasis was placed on GIS-based mapping tools for decision support and Developing community-led governance frameworks. And Implementing recharge interventions like staggered trenches and afforestation.

The session concluded with a consensus on strengthening policy frameworks, increasing financial investments, and fostering collaboration between scientific institutions and policymakers. Recommendations included integrating spring shed conservation into national water policies, promoting cross-border knowledge exchange, and developing scalable, community-led conservation models. An animation video on spring shed management was launched, providing a visual overview of conservation techniques, community engagement strategies, and scientific interventions to enhance public understanding and advocacy.

Session III

Thirdly, Stocktake of Spring shed Management – Scalable and Replicable Solutions was discussed. It was moderated by Ms. Bandana Shakya, ICIMOD, this session focused on assessing existing conservation models and identifying scalable, replicable solutions for spring shed management. Shri Dharam Singh Meena, IFS, Uttarakhand Forest Dept, presented the Heval River Rejuvenation Project, which restored 126 springs, leading to a 60% increase in water discharge and improved community water access.

Shri Braj Kumar Singh from the Directorate of Environment, Manipur Government, shared insights from climate-resilient spring shed management projects, which integrated flood and drought mitigation measures into conservation efforts. Dr. Subash Dhakal, Dy Director, Rural Development Department, Govt. of Sikkim, discussed the Dhara Vikas initiative, which successfully revived over 500 springs and restored hilltop lakes, improving water availability and ecosystem resilience.

The session finally highlighted the voices of local spring champions in India. Shri Sachidanand Bharati from Dudhatoli Lok Vikas Sansthan (DLVS), Uttarakhand, introduced the Pani Rakho Movement, a grassroots initiative leveraging traditional percolation ponds and check dams for sustainable water conservation. Ms. Maya Verma from Kasturba Mahila Uthan Mandal (KMUM), Almora, Uttarakhand, highlighted a community-led initiative that improved water accessibility and tackled social inequities related to water distribution. The discussion emphasised financial sustainability, community engagement, and technology integration as key enablers for scaling springshed management. Panelists of the session stressed the importance of multi-sectoral partnerships, decentralised governance models, and scientific monitoring systems to ensure long-term impact.

Concluding Session

The session concluded with the release of the book "Indian Himalayan Region: Towards a Sustainable Future" by Prof. Annapurna Nautiyal, former Vice-Chancellor of Hemwati Nandan Bahuguna Garhwal University, followed by a vote of thanks by Prof. Sunil Nautiyal.

Finally, the last session on Summary and recommendations based on workshop activities was moderated by Dr. I.D. Bhatt, a Scientist, NIHE, summarised key takeaways from the workshop. Shri Surendra Mehra emphasised the importance of establishing a national institutional framework for spring shed management, integrating science and technology to develop sustainable conservation solutions. Dr. V.K. Saraswat highlighted the need for multi-disciplinary approaches, stressing community involvement, financial integration, and policy coordination. He cautioned against working in silos and advocated for empowered institutions with decision-making authority. Reflecting on past initiatives like the Himalayan State Regional Council (2018), he acknowledged setbacks due to COVID-19 and recommended restarting efforts through dedicated task forces, focusing on technology and financial mechanisms, with state-level collaboration for effective spring rejuvenation. The day-long workshop concluded with a vote of thanks by Dr. Priyanka Sarkar, Consultant, NITI Aayog, Govt. of India.



Outcomes

Key major outcomes and recommendations of the workshop are as follows:

- Establish a National Springs Mission**:** A key recommendation was the creation of a National Springs Mission to coordinate efforts across Himalayan states, ensuring a structured and science-driven approach to spring shed management.
- Develop a Unified Funding Mechanism**:** The workshop stressed the importance of a comprehensive funding framework, integrating financial resources from multiple government departments, international agencies, and private sector stakeholders to ensure sustainable long-term support.

- Strengthen GIS-Based Data Platforms**:** Participants highlighted the need for advanced GIS-based monitoring systems, which would enable real-time data collection, hydrological assessments, and better planning for effective spring shed restoration.
- Promote Payment for Ecosystem Services (PES)**:** Encouraging PES mechanisms was recognised as a crucial strategy to provide economic incentives for upstream communities to engage in conservation efforts, ensuring financial sustainability for spring restoration projects.
- Integrate Spring shed Management into NAPCC**:** The inclusion of spring shed management within the National Adaptation Plan for Climate Change (NAPCC) was strongly advocated to enhance policy coordination and prioritised water security under national climate adaptation strategies.
- Workshop Discussions to be Published as a Policy Brief**:** The key discussions, findings, and recommendations from the workshop are being compiled into a policy brief to guide future decision-making and policy formulation on spring shed management.

Overall, the workshop emphasised the urgent need for large-scale catchment management interventions to address the depleting water sources in the Indian Himalayan Region. Stakeholders highlighted the significance of integrating scientific approaches with traditional knowledge, ensuring active community participation, and fostering multi-sectoral collaborations to enhance climate resilience and long-term water security.

The session concluded with the release of the book “Indian Himalayan Region: Towards a Sustainable Future” by Prof. Annapurna Nautiyal, former Vice-Chancellor of Hemwati Nandan Bahuguna Garhwal University, followed by a vote of thanks by Prof. Sunil Nautiyal

National Workshop on Fast-tracking and Reporting of Progress on Sustainable Development

Bhubaneshwar, Odisha

NITI Aayog, in collaboration with the Government of Odisha, organised the National Workshop on Fast-Tracking and Reporting of Progress on Sustainable Development Goals (SDGs) under the State Support Mission (SSM) initiative at Mayfair Convention Hall, Bhubaneswar, Odisha, on 20th February 2025. This high-level workshop aimed to foster active engagement among various stakeholders, including States and Union Territories, International Organisation, Policy Think-Tanks, and Civil Society Organisations (CSOs), to accelerate the progress and reporting on the SDGs. In his address, Shri Rajib Kumar Sen emphasised key points:



a. Progress on SDGs in India: While India has made significant strides toward achieving multiple SDGs, the pace of progress needs to be accelerated to meet the targets set under Agenda 2030. Alignment of central and state-level schemes is crucial to achieve synergetic outcomes and fast-track SDG implementation.

b. Localisation of SDGs: Localisation goes beyond adopting state-specific indicators—it involves identifying challenges, breaking silos, and implementing targeted action at the grassroots level. States must play a leadership role in defining priorities, shaping strategies, and ensuring accountability at the District, Block, and Panchayat levels, where policies are transformed into action and impact is realised.

c. Introduction of the SDG Coordination and Acceleration Centre (SDGCAC): Building on the success of the SDG Coordination Centre (SDGCC) model developed in partnership with UNDP across nine States, NITI Aayog has now introduced a renewed and action-oriented framework—the SDG Coordination and Acceleration Centre (SDGCAC). Efforts are underway to bridge data gaps, strengthen coordination mechanisms, and establish an outcome-driven framework to overcome challenges collectively.

d. India's Third Voluntary National Review (VNR) Presentation: India is set to present its third Voluntary National Review (VNR) at the High-Level Political Forum (HLPF) in New York, USA, in July 2025. A National-Level SDG Task Force for VNR has been reconstituted, and a recent meeting showcased how States and UTs have contributed to India's progress through policy innovation, institutional reforms, and high-impact programmes.

Ms. Anu Garg, Development Commissioner cum Additional Chief Secretary, Government of Odisha, highlighted the accelerated progress of SDGs in Odisha. She provided insights into the state's approach, including the monitoring framework, institutional mechanisms, SDG budgeting, and localisation efforts with Panchayati Raj Institutions (PRIs). She further elaborated on the development of Odisha's SDG portal and dashboard for data analysis, which facilitates real-time tracking of progress.

Shri Manoj Ahuja, Chief Secretary, Government of Odisha have an inaugural address by emphasising the importance of robust data management systems at the sub-national, district, and block levels. He noted that while data generated under national programmes is credible, India must strengthen its data governance framework, including collection, visualisation, and utilisation mechanisms. He also underscored the need for a conducive working environment for frontline workers and measures to enhance the ease of doing business. Addressing the complex issues hindering national progress, he urged the design of appropriate institutional structures to resolve them effectively. Recognising the challenges India faces in achieving Viksit Bharat 2047, Shri Ahuja reiterated the urgency of addressing critical concerns, requesting NITI Aayog's continued partnership with the Government of Odisha for sustained progress.

Dr. Angela Lusigi , Resident Representative, UNDP India, specially addressed by emphasising the need for accelerated SDG implementation, particularly as only five years remain until Agenda 2030. She reiterated that the fast-tracking of SDGs hinges on localisation, with sub-national and local governments playing a pivotal role in driving progress. She highlighted that strong political will, innovative approaches, and sustained partnerships are instrumental in achieving SDG localisation.

Dr. Ulrike Reviere, Country Director, GIZ India made a special address by referencing the 2024 Sustainable Development Goals (SDG) Report by the United Nations, which projects that only 17% of SDG targets are on track to be achieved globally. Addressing this shortfall requires enhanced governance mechanisms and stronger partnerships between the central and state governments, the private sector, and civil society organisations. He underscored that India faces significant challenges in adapting to climate change impacts. Highlighting the Green and Sustainable Development Partnership signed between India and Germany in 2022, he reaffirmed the commitment to achieving the 2030 Agenda and the Paris Agreement goals. On behalf of the German Government, GIZ is supporting India in fast-tracking SDGs through environmental sustainability, biodiversity conservation, natural resource management, sustainable urban and industrial development, energy efficiency, and social and private sector growth. He also noted GIZ's role in supporting three states in SDG localisation efforts.

Shri B.V.R. Subrahmanyam, CEO, NITI Aayog also made a special address by reiterating concerns regarding global SDG progress, citing reports that only 17% of the targets are on track for achievement by 2030. He highlighted the adverse impact of the COVID-19 pandemic, geopolitical tensions, and economic slowdowns, which have further complicated the path toward SDG attainment. Recognising the contributions of international organisations such as UNDP and GIZ India, he acknowledged their consistent support in advancing India's SDG agenda.

He also highlighted the operational success of 29 SDG Coordination and Acceleration Centres (SDGCACs) across India, which are playing an integral role in streamlining multi-sectoral SDG efforts. Given the complexity of SDG implementation, he noted that progress is challenged by global disruptions, including pandemics, inflation, climate change, and geopolitical conflicts affecting food, fuel, and fertiliser supply chains. Further, Shri Subrahmanyam provided updates on poverty reduction in India, citing improvements in Multidimensional Poverty Index (MDPI) scores. He informed that over 25 crore people have been lifted out of poverty, bringing India's poverty rate to single digits. He also noted India's remarkable progress in life expectancy, which has increased from low levels at independence to 69 years today. Shri B.V.R. Subrahmanyam, CEO, NITI Aayog, acknowledged and congratulated the State of Odisha for its active role in advancing SDG implementation, emphasising that its model could be replicated across India. He highlighted India's improvement in the SDG India Index, from 50 to 71, attributing it to the government's targeted programmes and schemes. He reiterated the motto of "Sabka Sath Sabka Vikas" and emphasised the next stage of development as "Viksit Bharat Viksit State", underscoring the Hon'ble Prime Minister's call for States to prepare focused vision documents. The SDG Coordination and Acceleration Centres (SDGCACs) would play a key role in enhancing implementation, promoting innovation, and facilitating best practice sharing. He reaffirmed India's commitment to SDGs, with a strong focus on localisation, financing, and data-driven policymaking, ensuring inclusive and sustainable development through collaborative efforts.



Shri Suman K. Bery, Hon'ble Vice Chairman, NITI Aayog made a Keynote Address by underscoring the global significance of SDGs, emphasising the transition from "Goals to Governance" and advocating for a systematic, data-driven, and multi-stakeholder approach to bridge gaps and overcome challenges. He acknowledged persistent global issues such as poverty, inequality, climate change, infrastructure deficits, and weak institutional frameworks, which hinder SDG progress, calling for urgent corrective measures and stronger international cooperation. Highlighting Odisha's leadership in policy reforms, from electricity sector advancements to its strong Fiscal Health Index ranking, he commended its consistent contributions to national development. For Viksit Bharat 2047, Shri Bery emphasised the need for high-quality jobs, faster growth, broadband connectivity, and skill development, advocating public-private partnerships to achieve a developed economy and society. He reiterated NITI Aayog's role in supporting States and UTs, reinforcing the Voluntary National Review (VNR) as a crucial assessment tool rather than a mere reporting mechanism. He emphasised that India's presentation of its third VNR in 2025 would attract global attention. Expressing urgency over the 2030 SDG deadline, he called for a more aggressive, action-oriented approach, strengthening grassroots participation, fostering innovation, and mobilising public and private investments to accelerate inclusive and sustainable development. He urged participants to actively contribute to the SDG mission, ensuring India's leadership in global sustainable development efforts.

Session I

This session being about Strengthening SDG Localisation was moderated by Dr. Angela Lusigi, Resident Representative, UNDP. The distinguished panel members were Dr. Manoj Pant, Additional CEO, CPGG & Director, SETU, Government of Uttarakhand; Dr. N.K. Santoshi, Director General, MoSPI; Ms. Sudha S., Member Secretary, Tamil Nadu State Planning Commission, Government of Tamil Nadu; Smt. Selva Kumari J., Secretary, Planning Department, Government of Uttar Pradesh; and Mr. Gerald Guskowski, Cluster Coordinator, GIZ India. The session underscored the critical role of localisation in effective SDG implementation, emphasising stronger coordination, data-driven policymaking, and innovative local interventions. Various states have introduced mechanisms such as SDG Coordination Centres, District SDG Indices, and integrated monitoring dashboards to enhance tracking and execution.

States including Uttarakhand, Uttar Pradesh, Tripura, and Tamil Nadu shared their experiences in empowering local governance structures, leveraging technology, and embedding SDG targets into state planning and budgeting processes. Dr. N.K. Santoshi highlighted the challenges in coordinating across multiple ministries and 64 departments, citing the lack of data for certain SDG indicators as a major hurdle. He outlined MoSPI's role in producing key datasets, including NSSO reports, Economic Census, and socio-economic surveys, and emphasised the importance of the National and State Indicator Frameworks (NIF & SIF) for tracking SDG progress. MoSPI's initiatives in conducting workshops for state officials were also noted as an effort to improve coordination.

Dr. Manoj Pant provided an overview of Uttarakhand's SDG implementation since 2015-16, highlighting the introduction of the SDG Index and a 120-district Indicator Framework for effective monitoring. The District SDG Index was cited as a valuable tool for identifying gaps, driving local competition, and informing planning decisions. He emphasised the importance of transparency, short- and long-term target setting, and budget alignment in achieving sustainable development outcomes.

Smt. Selva Kumari J. highlighted Uttar Pradesh's significant progress in SDG rankings, moving from 15th to 5th place. She introduced the Zero-Poverty Mission, under which 5.94 crore

people have been lifted out of poverty, emphasising field-level monitoring and strengthening the Panchayati Raj system to enhance grassroots SDG implementation.

Ms. Sudha S. provided insights into Tamil Nadu's focused SDG strategy, particularly in climate action, energy efficiency, and environmental conservation. She outlined initiatives such as district-level climate volunteers for grassroots engagement and Tamil Nadu's Task Force for Electric Vehicles (EVs) to promote sustainable transportation. She further highlighted women's development as a key factor in achieving SDG targets and discussed the State Indicator Framework 2.0, integrated with the CM Dashboard, ensuring evidence-based decision-making.

Mr. Gerald Guskowski emphasised India-Germany collaboration on SDGs through the Green and Sustainable Partnership (2022), strengthening bilateral cooperation in sustainable development. He highlighted state-specific implementation challenges and the need for private sector participation in SDG financing, as public resources alone are insufficient to meet ambitious targets.

Session II

This session focusing on Financing SDGs was moderated by Ms. Anu Garg, Development Commissioner cum Additional Chief Secretary, Government of Odisha. The panel members include Sh. Sudarshan Kasturirangan, Regional Specialist, T4SDG, UNDP, Regional Bureau; Sh. Rishi Garg, CEO, Madhya Pradesh Rajya NITI Aayog; Dr. R. Kavita Rao, National Institute of Public Finance and Policy (NIPFP); Sh. Pawan Kadyan, Special Secretary, Department of Finance, Government of West Bengal; Dr. Satyapriya Rath, Director (Budget), Odisha Achieving the Sustainable Development Goals (SDGs) requires more than just financial mobilisation; it demands strategic allocation, accountability, and innovative financing mechanisms. The session emphasised the importance of integrated financial frameworks, innovative fiscal policies, and private sector engagement to accelerate SDG implementation.

Dr. R. Kavita Rao (NIPFP) stressed the need for scaling up regulatory frameworks and leveraging Green and Social Investment instruments, including sovereign green bonds and social impact funds. She highlighted the role of voluntary compliance mechanisms and the necessity of integrating CSR and philanthropy into SDG financing using tax and non-tax avenues. Sh. Sudarshan Kasturirangan (UNDP) discussed taxation as a tool for behavioral change, emphasising Integrated Local Financial Frameworks (ILFFs) for diagnostics, financial planning, monitoring, and governance. He advocated for strengthening ecosystems for private philanthropy and policy incentives for SDG-aligned investments.

Sh. Rishi Garg (Madhya Pradesh Rajya NITI Aayog) outlined state-level financing strategies, focusing on credibility, branding, and private sector partnerships to attract capital investments.

Sh. Pawan Kadyan (West Bengal Finance Department) presented West Bengal's blended finance approach, integrating CSR and climate finance to address vulnerabilities and design last-mile policy interventions tailored to the state's challenges.

Dr. Satyapriya Rath (Odisha Budget Directorate) shared Odisha's fiscal innovations, detailing its SDG budget mapping initiatives, multi-year budgeting strategies, and fiscal risk management frameworks to ensure sustainable resource allocation.

The session reinforced the urgent need for diversified financing solutions, enhanced public-private partnerships, and data-driven fiscal planning to ensure sustainable and inclusive development.

Session III

The third session discussed India's Voluntary National Review (VNR) 2025 and was moderated by Ms. Radhika Kaul Batra, Chief of Staff, UN Resident Coordinator's Office. The panel members include Ms. Sanyukta Samaddar, Principal Secretary, Government of Uttar Pradesh; Ms. Annie Namala, Director, Centre for Social Equity and Inclusion; Dr. P. K. Anand, Visiting Fellow, Research and Information System; Ms. Parul Agarwala, Country Head, UN-Habitat, India; Mr. Shikhar Jain, Executive Director, Confederation of Indian Industry (CII). The session highlighted India's upcoming third Voluntary National Review (VNR) at the UN High-Level Political Forum in July 2025, providing a platform to showcase SDG achievements, share best practices, and set the vision for Viksit Bharat 2047. Emphasising cooperative federalism, participatory governance, and inclusivity, the discussions underscored India's whole-of-society approach in SDG implementation. Civil Society Organisations (CSOs), urban local bodies, and the private sector were recognised as key stakeholders in shaping the VNR.



Ms. Radhika Kaul Batra reinforced India's global leadership role in SDG achievement, citing Prime Minister Narendra Modi's vision: "Sustainable development of one-sixth of humanity will be of great consequence to the world and our beautiful planet." She highlighted the 13 'Leave No One Behind' (LNOB) community consultations, reflecting India's commitment to inclusivity and equity. Ms. Sanyukta Samaddar outlined India's SDG localisation framework, stressing the importance of cooperative federalism, robust monitoring systems, and data-driven policymaking. She discussed India's SDG Index (introduced in 2018), which fosters healthy competition among states, as well as district and block-level monitoring dashboards for budgeting and policy planning.

Ms. Annie Namala emphasised the role of CSOs in previous VNRs, citing the *"We the People"* report (2021-2030), which advocates for institutionalised engagement between CSOs and NITI Aayog. She stressed the importance of localised data collection in ensuring inclusivity.

Dr. P. K. Anand reflected on India's ongoing participation in the VNR process since 2017, underscoring South-South cooperation and cross-learning opportunities. He reiterated Prime Minister Modi's statement: *"If our intentions are right, then our policies will be right."* He emphasised resource allocation, leveraging AI, and policy innovation to accelerate SDG implementation.

Ms. Parul Agarwala emphasised VNR as a tool for collaboration between governments and society, advocating a grassroots-driven development approach. She highlighted Voluntary Local Reviews (VLRs), particularly Bhopal's initiative, which demonstrates how cities can lead SDG implementation through strengthened urban governance and sustainability-focused municipal planning. Mr. Shikhar Jain highlighted the private sector's growing engagement with SDGs, emphasising that businesses are actively tracking SDGs through corporate responsibility reports. He stressed the need to align private sector data with national SDG indices to create a cohesive strategy for sustainable development.



Outcomes

As India stands five years away from the 2030 deadline, the deliberations in this workshop reaffirmed the need to move beyond frameworks and strategies to a tangible, measurable impact.

- Strengthening State-Level SDG Ecosystems: Enhancing data-driven policymaking and local governance capacity building to ensure effective implementation at the state, district, and grassroots levels.
- Innovating Financing Models: Attracting private sector investments, leveraging blended finance, and ensuring efficient public spending to accelerate SDG progress.

- Positioning India as a Global Leader in SDG Implementation: Aligning national, state, and district efforts under a unified vision to reinforce India's commitment to sustainable development.
- Encouraging Actionable Commitments: Participants were urged to translate key learnings into concrete initiatives, ensuring collaboration, innovation, and urgency in achieving India's SDG targets.
- Strengthening Data Governance: Establishing robust data collection, monitoring, and analysis systems at the state, district, block, and gram panchayat levels to improve decision-making and policy implementation.
- Speedy Operationalisation of SDGCACs: Accelerating the establishment and activation of SDG Coordination and Acceleration Centres (SDGCACs) in remaining States and UTs.
- Institutionalised Engagement with Vulnerable Communities: Ensuring consistent collaboration with marginalised groups beyond Voluntary National Review (VNR) reporting, reinforcing inclusivity in SDG implementation.
- Adoption of Voluntary State and Local Reviews (VSR/VLR): Encouraging state governments and urban local bodies to adopt VSRs/VLRs for better tracking and alignment with national priorities.
- Private Sector Sensitisation: Strengthening awareness among industries and businesses regarding SDG alignment and sustainable corporate practices.
- Implementation of SDG-Informed Budgeting: Institutionalising SDG-integrated budgeting processes at the state level to align financial planning with development priorities.
- Capacity Building for Integrated Local Financial Frameworks (ILFFs): Enhancing financial planning, monitoring, and governance through structured ILFF training for state governments.
- Encouraging Private Philanthropy: Developing policy incentives to attract private investments, ensuring alignment with SDG priorities.
- Compilation of Best Practices: Preparing a comprehensive booklet highlighting successful community-driven initiatives in SDG implementation.
- Comprehensive SDG Financing Analysis: Conducting a detailed assessment of SDG-related government expenditure, identifying funding gaps, and optimising resource allocation for effective implementation.

By implementing these strategic measures, India can strengthen its commitment to sustainable development, ensuring that it not only meets but exceeds its SDG ambitions. The road to 2030 is challenging, but with collaboration, innovation, and a renewed sense of urgency, India can emerge as a global leader in SDG acceleration.

Enabling Women-led Development through Entrepreneurship

Aizawl, Mizoram

Enabling women-led development is a key national priority, and entrepreneurship serves as a powerful catalyst in realising this objective. To support this vision, the Women Entrepreneurship Platform (WEP) was launched by NITI Aayog in 2018. In 2022, WEP transitioned into a public-private partnership model to scale its impact and outreach. The platform is designed to empower women entrepreneurs by addressing information asymmetry and offering integrated support across various critical pillars of entrepreneurship. WEP is fundamentally aligned with the broader goal of fostering women-led development through inclusive and sustained entrepreneurial growth.

The inaugural session of the WEP-NITI Aayog State Workshop series on "Enabling Women-led Development through Entrepreneurship" was organised in Goa in 2023. This was followed by the second workshop in Arunachal Pradesh. The third series of the workshop was held in Mizoram in February 2025 to promote entrepreneurship among women by creating a cordial environment in the country. The workshop primarily focused on strengthening WEP's initiatives to cultivate a robust entrepreneurial ecosystem for women. A key area of discussion was the development of a hub-and-spoke model designed to extend women-led development to the grassroots, ensuring last-mile coverage in North-Eastern States. As part of the event, several initiatives under WEP were launched to further support and accelerate women-led entrepreneurship.

The workshop featured an inspiring session with Ms. Ralte, Founder of Label Lelen, who shared her journey as a woman entrepreneur in Mizoram. Her narrative offered deep insights into the challenges, lessons, and resilience that shaped her path, serving as a powerful source of motivation for aspiring women entrepreneurs in the region.

The event witnessed substantial participation, with around 500 attendees, reflecting the strong interest and recognition of the importance of women-led development through entrepreneurship. The event brought together a diverse range of stakeholders, including- Representatives from the North Eastern States, Officials from the Government of India Ministries, NITI Aayog dignitaries, Private sector leaders engaged in entrepreneurship, WEP partners, Women entrepreneurs, Members of local Self-Help Groups (SHGs) This broad participation fostered rich discussions and collaborative dialogue, reinforcing the commitment to advancing women-led entrepreneurship at multiple levels.

Session I

The opening session featured an insightful presentation on the Women Entrepreneurship Platform (WEP), the launch of key initiatives, and the recognition of winners from the Award to Reward (ATR) programme. The key highlights of the session included, Women Entrepreneurship Platform (WEP) – A Catalyst for Women-Led Development showcased WEP's role as a transformative force, fostering collaboration among the government, private sector, and civil society to build a thriving entrepreneurial ecosystem for women. It explored WEP's journey over the past seven years, its impact, and the marquee assets it offers to support women entrepreneurs.

WEP in States: Expanding the Model Through Hub & Spoke Approach's discussions centred on the strategic expansion of WEP to the states using a hub-and-spoke model, ensuring deeper reach at the grassroots level. The session highlighted key considerations for establishing State Chapters, along with the benefits they bring to local ecosystems.

The session concluded with insightful speeches from Dr. Vinod K. Paul, Hon'ble Member, NITI Aayog, and Shri Pu Lalduhoma, Hon'ble Chief Minister of Mizoram. Their remarks reaffirmed the government's commitment to enabling women-led development and strengthening entrepreneurial initiatives across the North Eastern region. Several impactful initiatives were introduced during the workshop, aimed at empowering women entrepreneurs:

A. New Shop ATR Launch for Mizoram: As part of WEP's flagship Award to Reward (ATR) programme, a special initiative by New Shop was launched to support women entrepreneurs in the retail sector in Mizoram. This programme equips participants with mentorship, networking opportunities, investor pitching platforms, and financial incentives such as seed funding to accelerate their success.

B. Launch of WEP App (Beta Version): A digital tool was introduced to enhance accessibility and convenience for women entrepreneurs across urban and rural areas. The app provides valuable resources, information on events and workshops, and a structured support system.



C. Establishment of WEP State Chapter in Mizoram: A major milestone was announced—Mizoram became the first state in Northeast India to establish a dedicated WEP State Chapter, strengthening regional entrepreneurial support.

D. Recognition of Women Homestay Owners Under Project Maitri: Under the ATR initiative, and with the support of Project Maitri (anchored by MakeMyTrip), three women homestay

owners from the North East were recognised and felicitated with cash rewards, celebrating their contributions to sustainable tourism and entrepreneurship.

Session II

Following the inaugural session, a series of technical discussions were held, addressing key aspects of women entrepreneurship and strategies to strengthen policy frameworks, financial access, and ecosystem support. The sessions covered the following topics:



The Government Support for Promoting Women Entrepreneurship**:** The session brought together key policy experts to discuss the role of government initiatives in fostering women-led enterprises. The conversation focused on enabling policy frameworks, existing schemes, and strategic measures to create an inclusive, supportive entrepreneurial landscape for women in India.

In Harnessing Government Policies and Programmes to Support Women: The speakers highlighted targeted policies and regional initiatives, including the Yashasvini Programme, which supports Women MSMEs in the Northeast. The session underscored the importance of convergence between central and state-level efforts, ensuring accelerated growth and impact for women entrepreneurs in the region.

Access to Finance for Neighbourhood Districts & Blocks: A critical discussion on financial inclusion explored capital access in underserved districts, with a focus on women entrepreneurs in the Nevolution Districts and Blocks. Experts shared key insights on credit linkage strategies and alternative financing mechanisms, addressing structural barriers to financial accessibility.

Fostering Entrepreneurial Spirit in Young Women Across India: It emphasised the importance of nurturing entrepreneurship among young women, offering early-stage support, capacity-building initiatives, and mentorship. The launch of the Swavalambini programme at Mizoram University was announced, with a call for active engagement to further its success.

Community Capital & Leveraging the WEP Ecosystem for Growth and Innovation (WEP Demo): The speakers explored the power of community engagement in supporting women-led businesses and demonstrated the capabilities of the WEP platform through a live demo. Discussions highlighted network-building, peer learning, and technology-driven innovation as critical components for scalability and sustained success.

Role of Mizoram Start-Up Mission in Enabling an Entrepreneurial Ecosystem for Women: It featured insights from the Start-Up Mission, outlining strategies to build a supportive entrepreneurial ecosystem tailored for women founders. Experts discussed regional challenges, proposed solutions, and identified collaborative pathways for long-term sustainability.



Outcomes

The workshop centred on strengthening WEP's efforts to build a robust entrepreneurial ecosystem for women across India. Discussions emphasised:

- The critical role of states in fostering women entrepreneurship, ensuring last-mile connectivity, and creating a sustainable support ecosystem.
- The transformative impact of women entrepreneurs in driving economic growth, healthcare innovation, and social well-being.
- The launch of new initiatives, including the ATR programmes, aimed at providing financial and structural support for women-led enterprises.

Mining Methodologies & Techniques with special reference to the Hilly Terrain in the North Eastern States

Dimapur, Nagaland

The NITI-State Workshop Series aims to catalyse a transformative shift among States as they chart a path toward realising the vision of *Viksit Bharat @ 2047*. A key focus area is revitalising the mineral sector, which in many regions remains underleveraged, constraining its potential to drive GDP growth, enhance value chains, and generate employment at scale. Particularly in the North Eastern states, systemic challenges have hindered the development of the industrial mineral sector. Addressing these issues calls for a comprehensive, inclusive, and coordinated approach that can position these States more prominently on India's Mineral Production Map.

Nagaland, with no major operational mineral mines, exemplifies both the challenge and the opportunity. This workshop seeks to identify bottlenecks, foster dialogue across stakeholders, and co-create actionable pathways to unlock the sector's latent potential, contributing meaningfully to national growth and inclusive regional development. Stakeholders and Participants of the Workshop were**,** Department of Geology and Mining, Government of Nagaland, Indian Bureau of Mines; Ministry of Mines, Government of India; and, The Geological Survey of India to assess the mineral potential of the region through the application of context-relevant mining methodologies, best practices, and technologies proven effective across diverse Indian terrains. The Project Director (Industry) showcased the State's mining potential alongside key growth sectors, offering participants a comprehensive overview of opportunities for sustainable economic development.



National Workshop on Quality Education

New Delhi

India's evolving education landscape calls for a learner-centric, equity-driven, and holistic approach to school education. Anchored in the vision of the National Education Policy (NEP) 2020, this roadmap prioritised foundational learning, inclusive and joyful pedagogy, technology integration, community participation, and the creation of a seamless educational continuum from Early Childhood Care and Education (ECCE) to Senior Secondary Schooling. The policy underscores the need for systemic transformation aligned with global development goals, contributing to the broader aspiration of realising *Viksit Bharat@2047,* a fully developed India by its centenary of independence. In this spirit, NITI Aayog convened the *National Workshop on Quality Education* on 28th February 2025 at the Dr. Ambedkar International Centre, New Delhi. The workshop served as a platform for collaborative reflection, evidence-informed dialogue, and strategy co-creation among key education stakeholders. Its objective was to accelerate the implementation of NEP 2020 by identifying persistent systemic challenges and surfacing scalable innovations capable of transforming the quality of school education across the country.

The workshop served as a vital platform, bringing together over 150 participants, including senior policymakers, State Education Secretaries, SCERT and DIET leadership, education experts, academicians, and representatives from civil society organisations.



Designed to catalyse cross-sectoral collaboration, the workshop was structured around four thematic panels, each addressing a foundational pillar of education reform:

1. Getting the Basics Right - Early Childhood Care & Education (ECCE) and Foundational Literacy & Numeracy (FLN)
2. Teachers as Instructional Leaders
3. Nurturing School Leadership
4. Technology for Education

Through a rich mix of state-led presentations, expert dialogues, and civil society insights, the convening facilitated a nuanced exploration of what works, identified persistent challenges, and spotlighted scalable innovations for quality improvement in school education systems. The event was inaugurated by Dr. Sonia Pant, Programme Director (Education), NITI Aayog, who stressed the importance of multi-stakeholder coordination and context-responsive implementation. Special remarks by Ms. Joyce Poan, Programme Specialist, UNESCO South Asia, underscored the need for education systems that are resilient, equity-centred, and guided by data-driven decision-making, particularly in the face of global disruptions and climate vulnerabilities.



The primary objectives of the workshop were centred on fostering multi-level dialogue and collaboration among national and state stakeholders, researchers, practitioners, and civil society, with the aim of co-creating contextual solutions for systemic educational reform. A key focus was on showcasing and scaling best practices from leading states and non-governmental actors that could be adapted across diverse geographies and learner profiles.

The workshop also aimed to advance data-driven policymaking by enhancing the use of robust tools such as NAS, ASER, and UDISE+ to identify systemic gaps, monitor progress, and guide targeted interventions. Emphasis was placed on promoting teacher leadership and instructional autonomy, recognising teachers as pivotal agents of change within schools and communities. Additionally, the integration of technology-enabled delivery models that are pedagogically sound and improve both teaching effectiveness and learner engagement was encouraged. Finally, the workshop sought to foster cross-sectoral partnerships to address deep-rooted inequities, reduce dropout rates, and enhance learning outcomes for all children, with a particular focus on those in underserved contexts.

The inaugural session of the workshop was about Anchoring Education Reform within the *Viksit Bharat@2047* Vision, opened with a call to align India's education transformation with the broader national vision of *Viksit Bharat@2047*, emphasising the need for systemic coherence and grassroots-led implementation. In her opening remarks, Ms. Joyce Poan, Programme Specialist, UNESCO South Asia, underscored the critical role of equity, community engagement, and localised responses in strengthening foundational learning. Both speakers reaffirmed the National Education Policy (NEP) 2020 as a blueprint for bold, context-sensitive reforms capable of delivering inclusive and future-ready education.

The Keynote Address on Building Integrated and Resilient School Ecosystems was delivered by Dr. V.K. Paul, Member (Education), NITI Aayog. It emphasised the urgent need to transition toward integrated, cylindrical school models that ensure learning continuity and optimise infrastructure and resource utilisation. Highlighting the inefficiencies of fragmented, single-grade schools, he advocated for rationalised infrastructure planning, district-level governance reforms, and technology adoption to address deep-rooted learning gaps and improve system-wide efficiency.

In his Special Keynote Address, Shri Sanjay Kumar, Secretary, Department of School Education & Literacy (DoSE&L), elaborated on the cylindrical model as a strategic response to steep student attrition in higher grades. By fostering grade-wise retention from foundational to secondary education, this model aims to reduce dropouts at key transition points, promote equity in access, improve teacher deployment, and enable integrated governance through school complexes. The approach supports the delivery of continuous, high-quality education from Early Childhood Care and Education (ECCE) through Grade 12.

The workshop brought together over 150 participants from government, academia, and civil society, fostering a rich, multi-stakeholder dialogue. It facilitated cross-state learning through the exchange of innovative practices from Gujarat, Nagaland, Chhattisgarh, and Uttar Pradesh. Panel discussions were grounded in robust evidence, drawing on data from ASER, NAS, and other large-scale assessments to guide thoughtful deliberations. Key thematic priorities that emerged during the workshop included strengthening Early Childhood Care and Education (ECCE) and Foundational Literacy and Numeracy (FLN), empowering teacher agency, promoting digital equity, and examining school consolidation models to improve learning continuity and optimise resource utilisation.

The workshop brought together a broad spectrum of institutional stakeholders, including the Ministry of Education (Department of School Education & Literacy), key national bodies such as NCERT, CBSE, NIEPA, and NCTE, and State Education Departments from Gujarat,

Nagaland, Chhattisgarh, and Uttar Pradesh. Over 20 SCERTs were represented, reflecting strong participation across the federal landscape. The dialogue was further enriched by global and national partners including UNESCO, Central Square Foundation (CSF), Pratham, Peepul Foundation, IGNUS, Reach to Teach, Boston Consulting Group, Khan Academy, EkStep, eVidyaloka, NavGurukul, American India Foundation (AIF), Deloitte, Dream a Dream, El Shiksha, Anil Aggarwal Foundation, Bharti Airtel Foundation, Magic Bus, and Room to Read, among others underscoring a collective commitment to education reform through cross-sectoral collaboration.

Session I

The panel discussion was about Getting the Basics Right – ECCE & Foundational Literacy and Numeracy (FLN). It reinforced Foundational Literacy and Numeracy (FLN) and Early Childhood Care and Education (ECCE) as the bedrock of school education reform. Key challenges identified included weak coordination between ICDS and primary schools, early learning deficits by Grade 3, and low enrolment in early grades. States like Uttar Pradesh and Bihar presented promising innovations such as *Jadui Pitara*, *Vidya Pravesh*, and transitional bridge programmes. Experts advocated for curricular alignment between Anganwadis and primary schools, capacity-building of Anganwadi workers, and community mobilisation to achieve universal FLN by 2026–27.



Session II

The discussion emphasised Teachers as Instructional Leaders by reimagining teachers as facilitators

of learning, mentors, and instructional leaders. The panel called for mentoring-based teacher training, continuous feedback mechanisms, and emotionally safe, inclusive classrooms. Consensus emerged around the importance of teacher agency, reflective pedagogy, and collaborative professional development as pillars for elevating instructional quality and student learning.

Session III

The session highlighted Nurturing School Leadership. It focused on school leadership as a critical driver of transformation. Libraries were showcased as symbols of leadership-led change. The panel emphasised the role of school clusters, performance-linked autonomy, and decentralised leadership networks. Key recommendations included activating School Management Committees (SMCs), creating District Leadership Cadres, and integrating leadership training into broader school governance frameworks.



Session IV

Talking about Technology for Education, this session focused on the intersection of technology, pedagogy, and equity. The panel featured insights from Khan Academy, eVidyaloka, EkStep, and NavGurukul. Speakers shared experiences using AI, remote learning tools, and multilingual content to bridge regional learning gaps. Discussions stressed the need for pedagogically aligned tech solutions, robust digital public infrastructure, and contextualised content delivery. The panel advocated for interoperable platforms and layered digital strategies that complement and enhance in-person learning, particularly in underserved regions.

Outcomes

The workshop brought forward key insights from four thematic panel discussions, showcasing innovative state practices and expert reflections. These takeaways provide strategic direction for building a more inclusive, equitable, and high-performing school education system, in alignment with the objectives of the National Education Policy (NEP) 2020.

One of the most urgent messages that emerged was the need to institutionalise seamless transitions between Early Childhood Care and Education (ECCE) and formal primary schooling. Significant learning and developmental losses occur due to disconnects in curriculum, pedagogy, and institutional structures between Anganwadis or Bal Vatikas and Grade 1 classrooms. To address this, solutions such as integrated school complexes, unified teacher training modules, and shared foundational resources like *Jadui Pitara* and *Vidya Pravesh* were recommended. These measures aim to ensure that every child enters Grade 1 "ready to learn," thereby reducing dropouts and grade repetition in the early years.

The panel also emphasised that instructional leadership must be supported by systemic and embedded structures rather than isolated training interventions. Effective teaching leadership should be nurtured through continuous feedback, recognition, and professional autonomy. Institutional mechanisms like Cluster Resource Centres (CRCs), Block Resource Centres (BRCs), peer coaching groups, and school-level pedagogical teams can play a pivotal role in enabling this transformation. A culture built on trust, professional respect, and reflective practice is essential to strengthen teacher agency and sustain instructional quality.

Another critical insight focused on school rationalisation, which is necessary to address the issue of fragmented and under-resourced educational institutions across India. Rather than closing schools, the rationalisation process involves strategic clustering or co-location of schools, as successfully demonstrated in Gujarat and Nagaland. This approach enables more effective teacher deployment, better infrastructure use, and smoother learning transitions from foundational to secondary levels. It also facilitates improved learning outcomes, targeted strategies to prevent dropouts, and equitable access to subject-specific instruction.

Lastly, the integration of technology into education must be context-sensitive and pedagogically aligned to be truly impactful. While platforms such as DIKSHA, Khan Academy, and eVidyaloka offer promising scalable solutions, their effectiveness is dependent on factors such as language appropriateness, cultural relevance, and local infrastructure capacity. The panel underscored that blended learning models—combining in-person teaching with digital tools—are especially effective in underserved regions. Such models can enhance both teacher capability and student engagement, provided they are thoughtfully implemented to meet local educational needs.

The workshop enabled knowledge-sharing among states and non-government partners, paving the way for future joint initiatives on assessment systems, teacher training, and integrated school models. A comprehensive consolidated report, featuring session-wise insights, key discussions, and actionable recommendations**,** will be published by NITI Aayog to inform ongoing policy development and support effective implementation of NEP 2020.

Empowering State S&T Councils: Towards a Collaborative Approach for Improving India's R&D Ecosystem

New Delhi

Science and Technology (S&T) play a crucial role in economic growth, societal development, and innovation. State S&T Councils act as key institutions implementing policies, fostering R&D, and promoting localised innovation. Despite their contributions, they face challenges that limit their effectiveness. To address these issues, NITI Aayog, through the State Support Mission, organised a one-day workshop on March 18, 2025, titled Empowering State S&T Councils: Towards a Collaborative Approach for Improving India's R&D Ecosystem. The workshop brought together government officials, policymakers, and experts to assess the current S&T landscape, explore best practices, and enhance governance, funding, and industry linkages. A key highlight of the workshop was the release of the Discussion Paper: "Towards a Roadmap for Strengthening State S&T Councils," which is to be followed by a roadmap document outlining strategic recommendations for improving council efficiency, institutional sustainability, research infrastructure, and policy support. This initiative aims to equip State S&T Councils with the necessary tools to drive innovation and scientific progress at the state level.

For the inaugural session, Ms. Naba Suroor and Ms. Simarjot Kaur, Consultant-I, Science and Technology division, invited Prof. Vivek Kumar Singh, Senior Adviser, NITI Aayog, to deliver the welcome address and set the theme for the workshop discussions. He was followed by Dr. Rajesh Gokhale, Secretary, DBT, GOI, Prof. Ajay Kumar Sood, PSA to the Government of India, and Dr. V.K. Saraswat, Member, NITI Aayog, to share their visionary insights and shed light on the path forward for India's S&T ecosystem.



Session I

The first session talks about STEM at the Core: Cultivating Statewide Research and Innovation. STEM forms the foundation of innovation-driven economies. To drive meaningful research, foster a culture of inquiry, and promote technological advancements at the state level, it is imperative to strengthen the role of State S&T Councils in shaping STEM policies and programmes. This session explored how states can cultivate research ecosystems, enhance STEM education, and build stronger linkages between academia, industry, and governance. The session was chaired by Prof. T.G. Sitharam, Chairman, AICTE who shared his insights on how we can cultivate a robust research and innovation ecosystem across states.



He also highlighted the role of policy-driven STEM initiatives in shaping the future. Dr. Anita Aggarwal, Head, SEED and State S&T Programme, DST, was the keynote speaker who shared her perspective on how DST's State S&T Programme is facilitating statewide research initiatives and promoting grassroots-level innovation.

The council speakers for this session included- Dr. Narendra Shah, Member Secretary, Rajiv Gandhi S&T Commission, Maharashtra, Shri Radhey Lal, JD, CST, UP, and, Dr. Biman Chandra Barua, ED, ASTEC. The first thematic session provided us with valuable perspectives on the role of State S&T Councils in fostering research and innovation. The discussion provided a strong insight that a strong STEM foundation, backed by effective policies, funding mechanisms, and inter-state collaborations, is critical to enhancing India's research capabilities.

Session II

The second session has discussions about Science for All: Engaging Minds Through Science Centres, Planetariums, and Remote Sensing. This session focused on exploring how science centres, planetariums, and remote sensing are enhancing scientific curiosity and data-driven decision-making for sustainable development. It highlighted innovative outreach strategies to make science more interactive, inclusive, and impactful.

This session was chaired by Dr. U.N. Mishra, Additional Surveyor General of India. He set the tone for this session by highlighting the role of remote sensing and technology in making science more accessible. Shri Pramod Grover, Director, National Science Centre, Delhi was the keynote speaker and shared his perspective on the intersection of culture and science and how museums and planetariums can be used as powerful tools for science education. The council speakers for this session included Dr. Narottam Sahoo, Advisor & Member Secretary, GUJCOST; Shri Tasneem Habib, Advisor, Former Chief Scientist, ED, MPCST; Prof. A Sabu, Member Secretary, KSCSTE

This session highlighted the critical role of interactive learning, science outreach, and technology in making science accessible. From planetariums to remote sensing, it showcased how science can engage and empower society.

Session III

This session, revolving around Advancing Innovation: The Role of Patent Information Centres and Other Structures, explored how structured mechanisms drive innovation and safeguard intellectual property. By providing access to patent data and supporting technology transfer, these institutions empower inventors, researchers, and industries to succeed in a competitive global landscape.

The session was chaired by Prof. Manoj Singh Gaur, Director, IIT Jammu. Professor Gaur brought with him a wealth of academic and administrative expertise, setting the stage for an insightful discussion on innovation and intellectual property. He was followed by Shri Unnat Pandit, Controller General of Patents, Designs and Trade Marks, and Cmdr. Amit Rastogi (Retd), Chairman & MD, NRDC, was the keynote speaker for our session. They shared their perspective on how patent information can be leveraged to foster innovation and support economic growth, and delved into the strategic role of technology transfer and patent information in catalysing innovation.

The council speakers for this session included- Prof. Dr. S. Vincent, Member Secretary, TNSCST, Shri Samuel Lalmalsawma, PSO, MISTIC, Dr. U.T. Vijay, Executive Secretary, KSCST. The session underscored the transformative potential of well-organised patent information centres and related structures in advancing our nation's innovation landscape.

Session IV

This session talks about Connecting the Dots: Linkages and Best Practices for Inclusive Development. It examined how strong academia-industry-government-civil society linkages drive inclusive scientific and technological advancements. It highlighted successful models, collaborative frameworks, and best practices to ensure equitable regional development and

broad societal impact.

The session was chaired by Dr. Parvinder Maini, Scientific Secretary, O/ o the PSA to the Govt of India, who brought deep insights into national-level science policy and its role in fostering inclusive development. She was followed by Dr. Rashmi Sharma, Head, NCSTC & SHRI Cell, DST, who was the keynote speaker. Dr. Sharma shared her perspectives on how linkages between research institutions and communities enhanced public engagement with science.

The council speakers for this session included Prof. Durgesh Pant, DG, UCOST, Shri Pritpal Singh, Executive Director, PSCST, and Dr. Deepak Gupta, Chief Scientific Engineer, HSCST.

This session offered valuable insights on enhancing state-level S&T ecosystems through collaboration, strategic linkages, and best practices for inclusive development.

Widening the Horizon: Expanding the Activities and Linkages for Sustained Growth

As science and technology evolve, cross-disciplinary collaboration, industry-academia partnerships, and emerging technologies are vital. This dynamic session explored how State S&T Councils can expand their scope, enhance linkages, and drive innovation for long-term growth. It was an honour to host esteemed experts from government, industry, and academia, offering insights on strengthening their role in India's scientific and economic progress. The session was chaired by Prof. Vivek Kumar Singh, Senior Adviser, NITI Aayog, who has played a pivotal role in shaping national S&T strategies and strengthening institutional frameworks.



The speakers for this session included- Prof. Vd. Rabinarayana Acharya, Director General, CCRAS, Ministry of AYUSH, Ms. Khushboo Mirza, Scientist, Regional Remote Sensing Centre, Department of Space, Dr. R.S. Maheskumar, Scientist G, Ministry of Earth Sciences (MoES),

Shri Siva Prasad Polimetla, Head, ER&D Initiative, NASSCOM, Shri Ashish Mohan, Executive Director, Confederation of Indian Industry (CII)

This discussion brought forward valuable perspectives on broadening the scope of activities, strengthening multi-sectoral collaborations, and positioning State S&T Councils as dynamic drivers of innovation and sustainable growth. This session was followed by the Closing session, which included a distinguished panel of dignitaries who have been instrumental in shaping India's scientific and technological policies. Shri S. Krishnan, Secretary, Ministry of Electronics and Information Technology (MeitY), a visionary leader in India's digital transformation, started the discussion. He highlighted the immense potential of digital technologies and the role of state councils in fostering a technology-driven future. He was followed by Dr. V.K. Saraswat, Member (S&T), NITI Aayog, to deliver the Valedictory Address. As a thought leader in India's scientific policy landscape, his perspectives provided valuable direction on how State S&T Councils have aligned with national priorities and emerging global trends. Dr. Saraswat provided a visionary address, reinforcing the need for a structured and forward-looking approach to strengthening the S&T ecosystem. Dr. Thyagaraju B.M., Deputy Adviser, NITI Aayog, formally concluded the workshop and delivered the Vote of Thanks.



Outcomes

The workshop provided a valuable platform for fostering collaboration, exchanging insights, and driving transformative action within India's scientific and technological ecosystem. It brought together key stakeholders, including representatives from State Science and Technology (S&T) Councils, policymakers, researchers, and industry leaders, to reflect on achievements, address challenges, and explore opportunities for enhancing the impact of State S&T Councils.

While the workshop celebrated the significant contributions of these councils in advancing

regional innovation, supporting research, and promoting technology diffusion, it also identified critical gaps. Challenges such as limited funding, inadequate capacity building, difficulties in technology transfer, and fragmented coordination mechanisms were highlighted as key barriers to maximising their potential. Addressing these challenges requires a more strategic and collaborative approach to strengthen the councils' institutional capacities.

In recognition of this need, the session concluded with the announcement of a roadmap document to be released by the S&T Division of NITI Aayog. This roadmap will present a set of actionable recommendations aimed at addressing the identified challenges and reinforcing the role of State S&T Councils in India's scientific ecosystem.

The document will emphasise enhancing financial and technical support, facilitating knowledge exchange, and promoting innovation through cross-sectoral partnerships. It will also propose mechanisms for better coordination between state and national-level institutions, encouraging the adoption of best practices, and fostering regional research initiatives aligned with national priorities.

Furthermore, the roadmap will advocate for capacity-building programmes to strengthen the council's workforce and leadership. By promoting collaborative networks and leveraging emerging technologies, the document aims to unlock new opportunities for scientific advancement and inclusive growth.

Through this strategic initiative, the S&T division at NITI Aayog envisions a more resilient and innovation-driven S&T ecosystem, where State S&T Councils play a central role in driving scientific progress and contributing to India's broader development goals.

Empowering MSMEs for Export-led Growth and Innovation in Andhra Pradesh

Visakhapatnam, Andhra Pradesh

On March 19, 2025, the NITI Aayog State Workshop Series convened at Hotel Novotel, Visakhapatnam, with a clear mission: to empower Micro, Small, and Medium Enterprises (MSMEs) as engines of innovation and export-led development in Andhra Pradesh. Aligned with the state's MSME & Entrepreneur Development Policy (MEDP) 4.0, the workshop focused on unlocking entrepreneurship, attracting strategic investments, and positioning Andhra Pradesh as a national hub for defence, aerospace, and food processing industries.

The policy outlines ambitious targets aimed at driving significant economic growth and entrepreneurship. It seeks to double MSME exports to $12 billion by 2029 and create 500,000 new jobs. Additionally, it envisions achieving the bold goal of fostering "one entrepreneur per household" by 2030, highlighting a strong commitment to empowering individuals and expanding entrepreneurial opportunities nationwide.

The workshop underscored the state's strategic advantages, including its coastline, industrial corridors, and proactive governance, while addressing persistent barriers such as infrastructure deficits, workforce skill gaps, and the pace of technology adoption. It served as a dynamic platform for stakeholders to align policies, resources, and innovation to elevate Andhra Pradesh's role in India's next wave of industrial transformation.



The workshop reaffirmed the pivotal role of MSMEs in powering India's economic engine, particularly through export-driven growth. With over 20 lakh MSMEs in Andhra Pradesh,

largely concentrated in the micro-enterprise sector, the state has become a key contributor to industries like agriculture, handicrafts, textiles, and aerospace.

Yet, Micro, Small, and Medium Enterprises (MSMEs) continue to face persistent hurdles. Logistics costs in the country remain among the highest in the world, accounting for a staggering 30–42% of GDP, significantly impacting operational efficiency. Additionally, limited access to formal credit constrains the ability of these enterprises to scale and grow sustainably. Compounding these challenges is the slow pace of digital adoption, which hampers their competitiveness in increasingly technology-driven global markets.

The event served as a collaborative forum, bringing together policymakers, industry leaders, and grassroots entrepreneurs to address these pressing challenges directly. Discussions focused on implementing targeted policy reforms aimed at easing operational barriers, advancing logistics and digital infrastructure to enhance efficiency, and deepening integration with global value chains to boost the global competitiveness of MSMEs.

This dialogue laid a strong foundation for transforming MSMEs from survival enterprises into innovation-driven, globally connected engines of growth, crucial for realising Andhra Pradesh's ambitious development vision. Details of the Collaboration- Andhra Pradesh MSME Development Corporation**,** NITI Aayog**,** CII.

The session aimed to discuss infrastructure development strategies to boost the export competitiveness of MSMEs. It focused on addressing key challenges such as skill gaps, funding constraints, and the slow adoption of digital tools. The discussion also highlighted government initiatives, including the Logistics Policy, Mudra loans, and cluster-based industrial parks, designed to support MSMEs. Participants explored growth opportunities in sectors like defence, aerospace, food processing, and e-commerce for global expansion. Additionally, the session emphasised strengthening collaborations between government, industry, and academia to better align workforce training with evolving industry demands.

In FY 2023-24, Andhra Pradesh exported goods worth Rs. 1,63,000 crores, with strong contributions from the agriculture, marine, and mineral sectors. The state's Agro-MSME potential is highlighted by banana-based products, which generate $110 million annually. Strategic manufacturing growth for Andhra Pradesh is set to benefit from leveraging defence and aerospace corridors in Uttar Pradesh and Tamil Nadu. To simplify export procedures, initiatives such as the Niryat Bandhu Scheme and the Trade Connect E-platform have been launched. Emphasis was placed on quality certification and cluster-based approaches to boost global competitiveness. The government also announced investment incentives ranging from 25 to 35 percent, along with land conversion policies to support MSME parks. Additionally, MSMEs were encouraged to adopt artificial intelligence, digital tools, and collaborative strategies to effectively transition from local markets to the global stage.

The event brought together a distinguished line-up of dignitaries, policymakers, industry leaders, and entrepreneurs representing the dynamic MSME ecosystem of Andhra Pradesh. Key participants included Shri Kondapalli Srinivas, Hon'ble Minister for MSME, SERP, and NRI Empowerment & Relations, Government of Andhra Pradesh; Shri Sanjeet Singh, IRS,

Senior Advisor, NITI Aayog; Shri K S Viswanathan, IAS, Metropolitan Commissioner, VMRDA, Visakhapatnam; and Shri Vishwa M, CEO of the Andhra Pradesh MSME Development Corporation. The discussion was enriched by insights from Shri M Ponnuswami, Chairman of the CII Southern Region Taskforce on MSME & Ease of Doing Business; young entrepreneur Shri Bhargav Das Damuluri of Eesavyasa Technologies Pvt. Ltd.; Shri Manish Kukreti, Managing Director of Vyom Space & Drone Vayu Pvt. Ltd.; and Shri JSRK Prasad, Former Chairman of CII Andhra Pradesh and CEO of Better Castings. Also contributing were Shri Siva Sankara Rao Tammireddy, Chairman of the AP MSME Development Corporation; Dr. Sekhar Babu Geddam, IFS, CEO of the AP Food Processing Society; and Shri S Sudhakar, Co-Chair of the CII SR Taskforce on MSME & EODB. Ground-level experiences were shared by Mr. Devi Reddy from Gocoop Livelihoods, while administrative and export policy perspectives came from Shri K Mayur Ashok, IAS, Joint Collector, Visakhapatnam, and Shri Akshay S C, ITS, Joint Director, Directorate General of Foreign Trade, Government of India. Further industrial insights were offered by Shri Ramnath Velamati, Executive Chairman, GFST; Shri Mullapudi Srinivas, Whole Time Director, Lokesh Machines Ltd.; and Mr. P. M. Balaji, Vice President of Toshiba. The session benefited from the expert facilitation of Dr. M Shankara Prasad, Principal Technical Adviser to the Hon'ble Minister for MSME, SERP & NRI Empowerment, Government of Andhra Pradesh, along with participation from other relevant stakeholders from the Andhra Pradesh MSME industry.

Session I

The workshop focuses on Building a Strong Foundation - Infrastructure Development for MSME Growth and Export Competitiveness. It featured a distinguished panel of speakers and thought leaders committed to advancing the MSME landscape in Andhra Pradesh. Shri Kondapalli Srinivas, Hon'ble Minister of MSME, SERP, and NRI Empowerment & Relations, Government of Andhra Pradesh, shared the state's strategic vision for empowering grassroots enterprises. Shri K.S. Viswanathan, IAS, Metropolitan Commissioner of VMRDA, Visakhapatnam, spoke on urban infrastructure's role in enabling industrial growth. Shri Vishwa M, CEO of the Andhra Pradesh MSME Development Corporation, highlighted the state's policy roadmap and institutional support. Shri M Ponnuswami, Chairman of the CII Southern Region Taskforce on MSME & Ease of Doing Business, emphasised collaborative reforms to streamline regulations and foster competitiveness. Entrepreneurial perspectives were brought forward by Shri Bhargav Das Damuluri, founder of Eesavyasa Technologies Pvt. Ltd., and Shri Manish Kukreti, Managing Director of Vyom Space & Drone Vayu Pvt. Ltd., who showcased innovation-driven MSME success stories. The session was moderated by Shri JSRK Prasad, Former Chairman of CII Andhra Pradesh and CEO of Better Castings, who steered the dialogue toward actionable insights and regional synergies.

The session focused on Andhra Pradesh's MEDP Policy 4.0, which presents a transformative vision of achieving "one entrepreneur per household" by 2030. Discussions underscored the urgent need for enhanced logistics, shared laboratory facilities, reliable energy access, and more robust funding mechanisms to effectively support MSMEs. Participants examined the state's promising potential in sectors such as defence, aerospace, and civil aviation, highlighting its readiness for growth in these areas. Additionally, there was a strong emphasis on adopting digital tools and artificial intelligence, alongside strengthening supply chains, to significantly boost MSME competitiveness.

Session II

The session featured insightful contributions about Shri Siva Sankara Rao Tammireddy, Chairman, AP MSME Development Corporation, from key stakeholders in the MSME and livelihoods ecosystem. Dr. Sekhar Babu Geddam, IFS, CEO of the Andhra Pradesh Food Processing Society, emphasised the sector's role in driving rural entrepreneurship and value addition. Shri S. Sudhakar, Co-Chair of the CII Southern Region Taskforce on MSME & Ease of Doing Business, highlighted policy priorities for enabling MSME competitiveness. Mr. Devi Reddy of Gocoop Livelihoods shared practical perspectives from the field, focusing on inclusive market access and cooperative-based enterprise models. The discussion was moderated by Shri Sanjeet Singh, IRS, Senior Advisor at NITI Aayog Strong Foundation, who steered the dialogue toward actionable policy alignment and ecosystem collaboration.



Andhra Pradesh is home to over 2 million MSMEs, with particular strengths in handicrafts, food processing, and textiles. Despite this, elevated logistics costs and limited branding visibility have constrained their export performance. To enhance global competitiveness, MSMEs require greater access to e-commerce platforms, quality certification mechanisms, and expertise in design and packaging. In response, the government is providing vital support through schemes such as Mudra loans, the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), and investment incentives ranging from 25 to 35 percent.

Session III

The session talks about the topic- From Local to Global- Innovating for Scale and International Market Entry. It brought together a distinguished panel of government officials and industry leaders who shared valuable perspectives on MSME advancement and global trade integration.

Shri K Mayur Ashok, IAS, Joint Collector of Visakhapatnam, highlighted district-level strategies to support enterprise development. Shri Akshay S C, ITS, Joint Director at the Directorate General of Foreign Trade, Government of India, emphasised policy frameworks that facilitate MSME participation in international markets. Shri Ramnath Velamati, Executive Chairman of GFST, provided insights on market linkages and export preparedness. Shri Mullapudi Srinivas, Whole Time Director at Lokesh Machines Ltd., showcased manufacturing excellence and innovation in the MSME sector. Mr. P. M. Balaji, Vice President of Toshiba, underscored the importance of technology adoption and strategic partnerships. The session was skilfully moderated by Dr. M Shankara Prasad, Principal Technical Adviser to the hon'ble minister for MSME, SERP & NRI Empowerment, Government of Andhra Pradesh, who steered the dialogue toward actionable policy recommendations and collaborative models.

The session emphasised key sectors such as food processing and e-commerce, along with the strategic use of Free Trade Agreements (FTAs) to boost exports. Andhra Pradesh achieved a notable export value of ₹1.63 lakh crore in the fiscal year 2023-24. Discussions highlighted the importance of Original Equipment Manufacturer (OEM) partnerships and quality certifications as critical factors for successful entry into global markets. Additionally, the session suggested adopting cultural adaptation strategies and collaborative models to support sustainable global scaling efforts.



Outcomes

The outcomes of Session I highlighted a comprehensive roadmap for MSME development in Andhra Pradesh, anchored by the MEDP Policy 4.0. This policy aims to foster entrepreneurship and inclusive economic growth, with the ambitious vision of nurturing one entrepreneur per household by 2030. It targets doubling MSME exports to $12 billion by 2029, attracting

₹50,000 crores in new investments, and creating over 500,000 jobs. Andhra Pradesh is poised to become a key player in the defence, aerospace, and civil aviation sectors, with a strategic aerospace park envisioned for next-generation helicopter manufacturing. The state is well-positioned to contribute to the Make in India initiative by leveraging defence corridors in Uttar Pradesh and Tamil Nadu to enhance its role in defence and aerospace production.

The long-term vision for MSME growth, extending to 2030 and 2047, emphasises robust infrastructure, technological advancement, export promotion, and skill development. Strengthening supply chains, particularly in defence and aerospace, alongside better inventory and logistics management, is critical for sustainable growth. Addressing funding constraints—especially the need for 10–15% government-backed support for infrastructure—remains a priority.

To support these efforts, government initiatives such as single-window clearances, Public-Private Partnership-based industrial park models (P3 and P4), and the development of 175 subsidised MSME parks are expected to provide crucial support. A Hub-and-Spoke model is also proposed to better align educational institutions with industry needs, ensuring that workforce development meets evolving market demands. Enhancing digital infrastructure and integrating AI are recognised as essential steps to improve MSME productivity. Additionally, initiatives like "Wealth from Waste" present promising pathways for sustainable and innovative business opportunities.

The outcomes of Session II emphasised the critical role MSMEs play as the backbone of India's export sector, while also shedding light on the persistent challenges they face, including limited market knowledge, weak financial linkages, and slow adoption of new technologies. Andhra Pradesh is home to approximately 20 lakh MSMEs, predominantly in the micro sector, which contribute significantly to the state's economy. Traditional sectors such as handicrafts, textiles, and Indian toys present a substantial export opportunity, with global demand valued at $750 billion. Additionally, agriculture and horticulture-based MSMEs account for 35% of the state's GDP, producing over 100 lakh metric tons of food annually, positioning food processing as a high-potential industry.

Financial access remains a significant bottleneck. MSMEs require low-interest loans, greater financial literacy, and simplified banking processes to thrive. While government schemes such as Mudra loans (which do not require collateral), CGTMSE, and 25–35% investment incentives are steps in the right direction, rural MSMEs still face challenges due to limitations under the SARFAESI Act, which prevents banks from accepting rural land as collateral. To address these gaps, the Andhra Pradesh MSME & Entrepreneur Development Policy 4.0—alongside the state's Food Policy and Industrial Policy—seeks to accelerate export growth, supported by a forthcoming Logistics Policy aimed at improving supply chain efficiencies and reducing costs.

Quality certification, including residue-based standards for Agri-MSMEs, is also essential for expanding into new international markets. Land conversion reforms now permit even 1-acre plots to be transformed into MSME parks, encouraging broader industrial participation. A collective, cluster-based approach was recommended to improve production efficiency, strengthen brand value, and boost competitiveness globally. Finally, MSMEs were urged to focus on selecting niche product areas and identifying the right export markets to fully realise their growth and export potential.



The outcomes of Session III emphasised the strategic importance of food processing within the MSME sector, positioning it as a key driver of India's future economic growth. To unlock this potential, focused support, innovation, and a robust, data-driven MSME census are essential to understand production capabilities, market trends, and export potential. The role of e-commerce platforms is critical in enabling global market access, enhancing visibility for local products, and improving export competitiveness. Leveraging Free Trade Agreements (FTAs) can also give MSMEs a distinct edge in international markets, especially when combined with product differentiation, innovation, and effective product positioning. Indian MSMEs are encouraged to adopt global practices, particularly from European markets, which prioritise process efficiency and strategic product placement.

India's exports have surpassed $7 million, with 62 districts contributing to 80% of this total, highlighting the need to stimulate export activity in underrepresented regions. Andhra Pradesh alone exported goods worth ₹1,63,000 crores in FY 2023–24, largely from agriculture, marine, and mineral resources. Notably, the state plays a key role in banana-based product exports, contributing $110 million annually. The export potential of MSME clusters in the state remains strong, but requires improvements in production planning and cost efficiency. Outreach initiatives like the Niryat Bandhu Scheme play an important role in educating MSMEs on trade opportunities, government schemes, and export facilitation. In addition, platforms such as Trade Connect and enhanced departmental integration are expected to improve the ease of doing business for exporters.

Trade facilitation policies from the Directorate General of Foreign Trade (DGFT) are streamlining export processes and reducing bottlenecks, particularly in logistics. However, maintaining high product quality remains crucial, as poor quality can result in higher long-term costs and

loss of trust. Collaboration, rather than competition, is advised when entering international markets, with strategic partnerships helping MSMEs scale effectively. The Japanese business philosophy—emphasising time management and quality—offers valuable lessons, particularly in adopting Total Quality Management (TQM) and operational efficiency. To succeed globally, MSMEs must understand customer cultures and align their operations with the TASK framework: Time, Attitude, Skill, and Knowledge. Learning from global best practices and previous crises can also help MSMEs discover new growth opportunities. Partnering with Original Equipment Manufacturers (OEMs) can facilitate entry into international markets, and as businesses shift from local to global, maintaining efficiency and consistent quality is key to building credibility and sustaining success.

Scaling up Electric Mobility & Charging Infra: Role of States/ UTs

New Delhi

Transitioning to electric mobility is essential for India's sustainable future and its target of net-zero emissions by 2070. NITI Aayog held a National Workshop on March 20, 2025, in New Delhi, focusing on "Scaling Up Electric Mobility & Charging Infrastructure: Role of States/UTs." The workshop saw strong participation from States and Union Territories, marking a crucial step in promoting electric vehicle (EV) adoption and expanding charging infrastructure. The event aimed to enhance collaboration between the Centre and States, address policy and infrastructure challenges, and foster investment and capacity-building in electric mobility. Insights from the workshop will guide States and UTs in implementing effective EV strategies and replicating successful practices.

Led by Shri Sudhendu J. Sinha, the Electric Mobility Division organised the workshop with meticulous planning and teamwork. The contributions of all stakeholders were vital, and support from the NITI Aayog leadership was key to advancing India's electric mobility efforts. The Coordinators of the Workshop were Sh. Sudhendu J. Sinha, Programme Director**;** Sh. Shadab M. Khan, Joint Director**;** Shikha Juyal, Research Officer**;** Amarjeet Singh, Consultant**;** Amit Kumar Yadav, Consultant**;** Arnold Fermi, Consultant**;** Ghanshyam Thakur, Consultant**;** Gaurav Nemade, Young Professional**;** Govind Vashishtha, E-Mobility Division**.** Authors of the Report**-** E-Mobility Division, NITI Aayog were Sh. Sudhendu J. Sinha, Programme Director**;** Amarjeet Singh, Consultant**;** Amit Kumar Yadav, Consultant**;** Gaurav Nemade, Young Professional



India is undergoing a significant shift towards sustainable mobility, with Electric Vehicles (EVs) playing a crucial role in reducing carbon emissions and enhancing energy security. To support its commitment to achieving Net-Zero emissions by 2070, the government has implemented the PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) scheme.

With a budget of ₹10,900 crore for two years (until March 31, 2026), the scheme aims to subsidise the purchase of electric two-wheelers (e-2Ws), three-wheelers (e-3Ws), e-ambulances, e-trucks, and e-buses. It plans to procure approximately 2.48 million e-2Ws, 316,000 e-3Ws, and 14,028 e-buses while installing 22,100 fast chargers for electric four-wheelers, 1,800 for e-buses, and 48,400 for e-2Ws and e-3Ws. Additionally, ₹500 crore is allocated for e-ambulances and e-trucks. The focus of PM E-DRIVE includes enhancing public transport with e-buses, developing charging infrastructure, and improving testing and certification resources.



The National workshop witnessed strong interest and active participation from States, Union Territories (UTs), and key stakeholders. The primary objective of the workshop was to strengthen the adoption of electric vehicles (EVs) and accelerate the development of charging infrastructure by addressing existing policy, financing, and regulatory challenges. The discussions also included showcasing best practices from various States and UTs to encourage knowledge sharing and replication of successful models.

Another key goal was to foster greater collaboration between the Centre and States, promote capacity building, and establish international partnerships that can support effective policy implementation and investment in sustainable e-mobility solutions. By facilitating dialogue and knowledge exchange, the workshop aimed to create a unified and strategic approach to scaling up electric mobility across the country.

Inaugural Session

During the inaugural event, Shri Sudhendu J. Sinha, Programme Director of the E-Mobility Division at NITI Aayog, extended a warm welcome to all esteemed dignitaries, industry experts, policymakers, and stakeholders in attendance. He acknowledged the significant role each individual plays in shaping the future of electric mobility in India, highlighting the collective responsibility in driving the transition towards sustainable transportation solutions.

Shri Suman K. Bery, Hon'ble Vice Chairman of NITI Aayog, encouraged state governments to advance their initiatives in electric mobility. Professor Ramesh Chand, Member for Agriculture, urged original equipment manufacturers (OEMs) to introduce e-tractors to benefit the agricultural sector. Dr. V. K. Saraswat, Member of NITI Aayog, emphasised the importance of developing charging infrastructure and enhancing local value addition to position India as a manufacturing hub for electric vehicles. Furthermore, Dr. Anshu Bharadwaj, Programme Director for Green Transition and Climate at NITI Aayog, stressed how the transition to electric vehicles is steering India towards a cleaner and more sustainable future. Finally, Shri Shoyabahmed Kalal, Director at NITI Aayog, provided insights into the State Support Mission (SSM) initiative, which aims to promote competitive and cooperative federalism by assisting states and union territories in enhancing governance, policy implementation, and developmental outcomes.

Thematic Panel Discussions

During the National Workshop, three informative panel discussions were conducted, each focusing on critical aspects of electric mobility.

Achievements and Best Practices in Electric Mobility featured Dr. Hanif Qureshi, Additional Secretary from the Ministry of Heavy Industries, and Shri Mahmood Ahmed, Additional Secretary from the Ministry of Road Transport and Highways. Representatives from Telangana, Uttar Pradesh, IIT Roorkee, and the Association of State Road Transport Undertakings highlighted significant achievements and best practices in the field of electric mobility.

Building the EV Backbone: Strengthening Charging Infrastructure for Mass Adoption included insights from Dr. Hanif Qureshi and Sh. Shashank Mishra, Joint Secretary from the Ministry of Power. They were joined by representatives from Madhya Pradesh, Dadra and Nagar Haveli, Daman and Diu, and IIT Jammu. The discussion emphasised the imperative of strengthening charging infrastructure to facilitate widespread adoption of electric vehicles throughout the country.

Capacity Building in Electric Mobility for States and Union Territories was led by Ms. Nidhi Khare, Secretary of the Ministry of New and Renewable Energy, alongside Dr. Anita Gupta from the Department of Science and Technology. Participants from Tamil Nadu, Odisha, Assam, and IIT Delhi explored key sub-national interventions aimed at enhancing capacity building and policy implementation, ensuring these efforts align with national goals for sustainable mobility.

Panel Theme: Achievements and Best Practices in Electric Mobility

The National Workshop featured key insights from senior officials and stakeholders committed to advancing electric mobility in India. The Additional Secretary of the Ministry of Heavy Industries (MHI) presented an overview of major e-mobility schemes. The PM e-DRIVE Scheme, with a budget allocation of ₹10,900 crore, supports a range of electric vehicles, including dedicated funds of ₹500

crore each for e-trucks and e-ambulances. Under the Production-Linked Incentive (PLI) Scheme for Advanced Chemistry Cells (ACC), efforts are being made to reduce the 40% cost associated with imported EV battery packaging by fostering domestic manufacturing. Additionally, the Payment Security Mechanism is being implemented to ensure financial viability for electric bus deployment, providing payment assurance to service providers.

The Additional Secretary of the Ministry of Road Transport and Highways (MoRTH) outlined regulatory measures designed to create a conducive environment for e-mobility. Since 2016, MoRTH has established EV safety, range, and power standards through inclusive stakeholder consultations. National incentives include waivers of registration fees, adoption of green number plates, permit exemptions, and road tax benefits—80–90% of states have adopted these measures. Future policy developments include regulations for EV retrofitting and standards for alternative fuels such as CNG, LNG, Green Hydrogen, and ethanol. Trials involving 37 hydrogen vehicles over 12 routes are ongoing to assess long-haul potential. Additionally, a transition to BS7 emission standards and updated CAFÉ 3 fuel-efficiency norms is planned in the coming years.



B.N. Singh, Transport Commissioner of Uttar Pradesh, shared the state's EV progress. Uttar Pradesh offers a 100% exemption on road tax for EVs and has recorded strong adoption figures—51,071 electric two-wheelers (e2W) and 5,400 electric four-wheelers (e4W) in FY 2023–24, with a projected increase to 81,700 e2W and 15,228 e4W in FY 2024–25, indicating a 60% growth in e2W adoption. Despite these gains, subsidy utilisation remains low due to a lack of public awareness, highlighting the need for education campaigns. The cost differential between diesel and electric buses—₹40 lakh versus ₹1.5 crore—also underlines the critical need for financial support to accelerate the transition.

Gopalkrishnan V.C., Automotive and EV Director, Government of Telangana, detailed the state's robust EV ecosystem. Telangana launched its EV Policy in September 2020, and within two years, saw significant implementation success. The state offers a 60% transport subsidy to ease the logistics of moving EVs from ports to distribution points. With an investment of ₹10,000 crore, Telangana is establishing a 16 GWh Energy Park along the Bangalore highway. Additionally, the Telangana Mobility Valley aims to scale the electric four-wheeler segment through research, manufacturing, and collaboration with academic institutions. Workforce development is a priority, with partnerships formed between the government and educational institutions to enhance skilling in the EV sector.

Prof. Akshay Dvivedi of IIT Roorkee highlighted academia's role in EV development. As one of India's oldest institutions, IIT Roorkee faces the challenge of adapting to rapidly evolving EV technologies. Nonetheless, it is addressing this through short postgraduate courses (2–3 months) focused on EV standards, supported by the Ministry of Heavy Industries under the Capital Goods Phase 2 scheme. The institute also nurtures innovation, with four affiliated startups developing advanced EV technologies, including a prototype showcased at Bharat Mandapam.

Dr. Surya Kiran, representing the Association of State Road Transport Undertakings (ASTRU), provided insights into the expansion of electric buses. States like Karnataka and Himachal Pradesh are rolling out intercity electric buses, while initiatives such as PM e-Bus Seva and PM e-DRIVE provide subsidies for intracity services. Emerging technologies like battery swapping and retrofitting are being promoted to convert conventional buses and accelerate EV adoption. However, challenges remain, particularly in capacity building and the shortage of trained drivers. Cities are now implementing targeted training programmes to address this gap. Enhancing public transport—especially bus services—remains a central focus in line with the Prime Minister's broader mobility vision.

Way forward

to explore solutions to the challenges identified by various stakeholders in advancing electric mobility. It underscored the importance of peer-to-peer learning among States and Union Territories (UTs) and led to the following key outcomes and recommended next steps: First, enhancing public awareness was identified as a priority. Launching targeted campaigns to educate citizens about the benefits and subsidies associated with electric vehicles (EVs) is essential, particularly in addressing low subsidy utilisation, as seen in states like Uttar Pradesh.

To accelerate infrastructure development, participants stressed the need to expand EV charging networks, hydrogen refueling stations, and battery-swapping facilities to support the large-scale deployment of e-buses and long-haul hydrogen vehicles. At the same time, strengthening state-level implementation is critical. This includes ensuring uniform adoption of the Ministry of Road Transport and Highways (MoRTH) policies—such as registration fee waivers—across all states, backed by effective monitoring mechanisms.

Scaling up skilling initiatives was also highlighted, with models like those in Telangana and IIT Roorkee serving as examples for training drivers, technicians, and engineers to meet the growing workforce demands of the EV ecosystem. The promotion of retrofitting and emerging technologies was another area of focus. Finalising MoRTH regulations for vehicle retrofitting and expanding pilot projects in battery swapping can significantly boost the transition from conventional fleets to cleaner alternatives.

Additionally, the panel advocated for transitioning to advanced standards by fast-tracking the implementation of BS7 and CAFÉ 3 norms. These regulatory updates are vital to align with India's emission reduction goals and must be accompanied by clearly defined timelines. Supporting startups and research & development (R&D) initiatives was also discussed. Government schemes like Capital Goods Phase 2 can be leveraged to fund innovative startups and showcase their technologies on national platforms such as Bharat Mandapam.

Lastly, the discussion underscored the importance of prioritising public transport development. Deploying 3,000 electric buses in rural areas, as targeted by the Ministry of Heavy Industries, and expanding intercity e-bus networks in states like Karnataka and Himachal Pradesh will be essential steps in realising the Prime Minister's vision for inclusive and sustainable mass transit.

Panel Theme: Building the EV Backbone

The panel discussion, moderated by Shri Farhad Vania, Senior Portfolio Manager at GIZ India, brought together key stakeholders from central ministries, state governments, academic institutions, and technical experts to address the challenges and opportunities in scaling India's electric vehicle (EV) charging infrastructure. The session explored five key focus areas: the current implementation status of EV charging deployment across India; the readiness of the national power grid to support large-scale EV adoption; successful state-level experiences and policy frameworks; the urgent need for standardisation of technical regulations; and strategies to strengthen public-private collaboration for sustainable infrastructure development.

Representing the Ministry of Heavy Industries (MHI), the Additional Secretary outlined the PM e-Drive Scheme, which earmarks ₹2,000 crore for the deployment of 10,000 public charging stations, with a priority on high-utilisation zones such as transport hubs and bus depots. To incentivise infrastructure development, the scheme provides up to 80% subsidy for upstream (behind-the-meter) infrastructure, and in critical cases, 100% support for essential components such as transformers, cabling, and metering. This deployment will follow a data-driven, demand-based model, focusing exclusively on public-access charging (excluding home and captive setups). States were encouraged to adopt standardised tendering processes and submit pilot proposals that integrate battery storage and renewable energy compatibility in line with their EV policies.

The Joint Secretary of the Ministry of Power (MoP) highlighted that EV load demand is projected to reach 12 GW by 2030, necessitating integration into national power infrastructure roadmaps. States were advised to utilise funding from the Revamped Distribution Sector Scheme (RDSS) for upgrading distribution networks and conducting EV readiness mapping. The Ministry recommended implementing Time-of-Day (ToD) tariffs to manage peak load and support grid efficiency. E-mobility zones have been incorporated into the national 10-year grid augmentation strategy, and the Ministry is actively working with the Central Electricity Authority (CEA) and Central Electricity Regulatory Commission (CERC) to streamline connectivity norms. It was also proposed that DISCOMs and Transport Departments engage in joint planning to align infrastructure investments.

Shri S.K. Bauddha noted that urban master plans and development control regulations are being revised to integrate EV charging as a core utility. The Ministry of Housing and Urban Affairs (MoHUA) has recognised charging infrastructure as a public utility, facilitating faster

land allocation and permit approvals. Updated national model building byelaws, now featuring EV readiness clauses, have been circulated to Urban Local Bodies (ULBs). A national EV infrastructure monitoring dashboard is in development to support coordinated planning, and MoHUA is encouraging the adoption of standardised design guidelines and capacity-building modules for EV infrastructure planning.

Shri Rishi Garg, Executive Director of the Industrial Development Corporation, Madhya Pradesh, discussed the state's EV Policy 2025, which prioritises affordability, accessibility, and a robust post-sale ecosystem. Initiatives include developing public land banks, creating green tariff categories, and implementing battery recycling regulations. Madhya Pradesh is also mapping underutilised parking spaces for retrofitting EV charging stations and is developing a state-wide EV readiness index in collaboration with the planning and transport departments. The state is advocating for greater central-state alignment in financial frameworks and urban planning and exploring technological partnerships for EV deployment in semi-urban and rural areas.

Shri Nikhil U. Desai, Secretary (Transport) for Dadra & Nagar Haveli and Daman & Diu, presented the Union Territory's goal to fully electrify government fleets and public transport by 2030. Diu's solar-powered charging stations were highlighted as replicable models for coastal regions. Plans are underway to integrate EVs into tourism services to promote sustainable travel. Local skilling programmes in EV diagnostics and battery repair have been initiated, and central guidance has been requested on cost estimation, DPR preparation, and vendor engagement. The UT also expressed interest in piloting battery-swapping models for intra-island transportation and called for a unified scheme architecture to streamline access to central funding.

Dr. Arun Kumar Verma, Professor at IIT Jammu, emphasised the technical dimensions of EV infrastructure development. He called for open communication protocols to ensure interoperability among chargers and highlighted ongoing research in smart load balancing to avoid grid congestion. Dr. Verma also addressed lithium-ion battery limitations and advocated for the development of indigenous Battery Management Systems (BMS). Modular charger designs were recommended to optimise space use in urban areas, and he proposed that engineering colleges provide technical support services for charger operations and maintenance (O&M). Additionally, he suggested the creation of specialised certification programmes for EV infrastructure technicians, in partnership with the National Skill Development Corporation (NSDC).

Way forward

As a key outcome of the discussion, ministries agreed to collaborate more closely to achieve convergence of central schemes. By aligning the guidelines and timelines of various initiatives across the power and mobility sectors, states will be empowered to draw upon multiple funding sources, enabling more efficient and integrated infrastructure development.

To support this coordinated effort, NITI Aayog, in consultation with relevant ministries and national think tanks, will take the lead in formulating model state guidelines. These standardised frameworks will help state governments plan and implement EV infrastructure more effectively, ensuring policy coherence and adoption of best practices nationwide.

Recognising the need to strengthen institutional capacity, a comprehensive capacity-building programme for state officials will be launched. Through targeted technical training

and knowledge-sharing sessions, transport department staff and DISCOM personnel will be equipped with the necessary skills and expertise to manage EV deployment and operations.

To track progress and enhance accountability, a quarterly monitoring mechanism will be established. This review system will assess the status of EV charging infrastructure under centrally supported schemes, allowing for timely interventions and evidence-based policy adjustments.

Lastly, the discussion emphasised the importance of collaborating with academia and startups. Active engagement with research institutions and innovators will facilitate the development of cost-effective, India-specific EV charging solutions. These partnerships are expected to accelerate the creation of scalable, technology-driven infrastructure tailored to diverse regional needs.

Panel Theme: Capacity Building in Electric Mobility for States and Union Territories

The panel discussion, moderated by Ms. Akshima Ghate, Managing Director at Rocky Mountain Institute (RMI), focused on sub-national interventions that are crucial for enhancing capacity-building and advancing effective policy implementation in the electric mobility sector. The session highlighted practical strategies for aligning state-level efforts with national goals for sustainable transportation and mobility.



Shri Amitabh Thakur, IPS, Transport Commissioner, Government of Odisha, shared Odisha's remarkable progress in EV adoption, noting a surge in EV sales from just 1,000 to over 61,000 within four years. The state has set an ambitious target of achieving 40% EV penetration by 2030. A financial outlay of 150 crore has already been disbursed as subsidies in the current fiscal year. Odisha has streamlined its incentive process to ensure disbursement within one week, offering up to 1.5 lakh in subsidies for private car buyers. Plans are also in place to introduce subsidy schemes for EV deployment in mining and port operations. Additionally, 540 electric buses are set to be rolled out in 2025, supported by the installation of 100 solar-powered public charging stations and the development of green corridors along National Highway 16.

Shri Aneesh Shekar, IAS, Managing Director of Tamil Nadu Green Energy Corporation Ltd., highlighted Tamil Nadu's pivotal role as India's EV manufacturing hub, producing 50% of the country's electric vehicles. He projected that electric two-wheelers would reach cost parity with internal combustion engine (ICE) counterparts by 2027. To accelerate adoption, the state is working to expand charging infrastructure through public-private partnerships (PPPs) and by integrating charging points into existing buildings. Strengthening the PPP model was emphasised as a key approach to scaling up infrastructure deployment effectively.

Dr. Anita Gupta, Head of the Climate, Energy & Sustainable Technology Division at the Department of Science and Technology (DST), emphasised the central government's support for state-led EV initiatives. DST is actively working in partnership with the Ministry of Heavy Industries (MHI) to align with global EV technology trends. The recently launched EVolutions programme supports startups through organisations such as ACMA and ARAI. Dr. Gupta also stressed the urgent need for capacity-building in the sector, particularly through the development of specialised academic courses in battery technologies.

Dr. B. K. Panigrahi, Professor at IIT Delhi, advocated for early-stage skill development in electric mobility, starting at the school level. IIT Delhi has led in academic innovation by offering India's first M.Tech. program in Electric Mobility. Dr. Panigrahi underscored the importance of skill certification initiatives supported by SIAM, while also calling for the reskilling of automotive service professionals to build consumer confidence in EV technology.

Shri Chinmoy Prakash Phookan, Managing Director of the Assam State Transport Corporation, detailed Assam's transition from diesel to electric buses. The state has expanded its e-bus fleet from 15 in 2019 to 271 in 2025, with 200 buses delivered in 2024 alone, placing Assam sixth in India for EV adoption. Under the PM e-Bus SEWA scheme, 100 additional electric buses are planned for Guwahati in 2025. The state is also scaling up its network of charging stations under various national initiatives to support the growing electric fleet.

Way forward

The panel discussion served as a constructive forum for brainstorming actionable solutions to the key challenges identified by the panelists in advancing electric mobility across India. It underscored the importance of peer-to-peer learning among States and Union Territories (UTs), recognising that knowledge sharing is instrumental in accelerating the adoption of EVs. A key outcome of the session was the collective agreement on the need for a collaborative and forward-looking roadmap for skilling and reskilling the workforce, essential to support the growing demands of the EV ecosystem.

One of the primary recommendations was leveraging cross-state expertise. States can benefit from one another's successful interventions—for example, Assam's approach to public transport electrification, Tamil Nadu's experience in developing charging infrastructure, and Odisha's efficient subsidy disbursement mechanisms. These can serve as reference models for other regions seeking to replicate success.

In parallel, educational institutions like IIT Delhi were identified as critical actors in shaping the future EV workforce. The panel called for these institutions to take the lead in designing specialised curricula on EV technology, renewable energy, and climate awareness, thereby

embedding sustainability into technical education.

Further, student-led awareness campaigns, such as those under the Shoonya Campaign, were seen as vital to cultivating early interest in sustainable mobility. Introducing EV awareness programmes in schools could foster generational mindset shifts, nurturing future consumers and advocates for clean transportation.

To support the expansion of charging networks, particularly along highways, the panel emphasised the need for a national-level highway electrification roadmap. This would involve coordinated collaboration among states to share best practices and align pilot projects under a unified vision for public charging deployment.

Finally, the panel stressed the importance of strengthening research and development (R&D) to keep pace with technological innovation. Agencies such as ARAI, ACMA, and ICAT were encouraged to work closely with national and state governments. The Department of Science and Technology (DST) was specifically identified to lead the development of a startup-friendly innovation ecosystem in collaboration with the Ministry of Heavy Industries (MHI) and other stakeholders.



Special Sessions

During the special sessions of the National Workshop, Dr. V.K. Paul, Member (Health) of NITI Aayog, delivered a keynote address articulating the government's strategic vision for integrating electric mobility into the healthcare sector. He outlined key initiatives such as the planned rollout of electric ambulances, the establishment of Low and Ultralow Emission Zones around healthcare facilities, and the broader advancement of Green Healthcare Systems through the adoption of clean transportation solutions.

Ms. Nidhi Khare, Secretary of the Ministry of New and Renewable Energy (MNRE), emphasised the critical role of capacity building in scaling up e-mobility across India. Speaking at the workshop, she highlighted the need for institutional strengthening and skill development to support the effective implementation of electric mobility initiatives at both national and sub-national levels.

In addition, international partners such as the Asian Development Bank (ADB) and the British High Commission presented reflections on their ongoing and past engagements with various States and Union Territories. They also proposed future areas for collaboration, with a focus on strengthening partnerships, mobilising investment, and supporting policy implementation to enhance the overall e-mobility ecosystem in India.

The workshop successfully addressed key policy and infrastructure challenges in the adoption of electric mobility, providing a platform for investment opportunities, capacity-building initiatives, and knowledge exchange. It enabled stakeholders to formulate and implement effective EV strategies while documenting best practices for replication, ensuring scalable, financially viable, and sustainable EV infrastructure development.

Enabling Women-led Development through Entrepreneurship

New Delhi

Enabling women-led development is a top priority for the government, and entrepreneurship plays a pivotal role in achieving this objective. The Women Entrepreneurship Platform (WEP), incubated in NITI Aayog in 2018 and transitioned into a public-private partnership in 2022, aims to empower women entrepreneurs by overcoming information asymmetry and providing a continuum of support across different pillars. WEP is premised on achieving the overall goal of women-led development through entrepreneurship. The inaugural edition of the WEP– NITI Aayog State Workshop Series on Enabling Women-led Development through Entrepreneurship was organised in Goa in 2023, followed by the second workshop in Arunachal Pradesh. The workshop organised in Delhi in March 2025 was the fourth workshop in the series. The primary focus of the workshop was deliberating on the efforts of WEP to build a robust entrepreneurial ecosystem for women and the drive to establish state chapters of WEP. Various initiatives under WEP that would support women-led development through entrepreneurship were also launched as part of the workshop.



A Statement of Intent (SoI) was exchanged between WEP and UPICON (Uttar Pradesh Industrial Consultants Ltd, a Company promoted by Department of MSME & Export Promotion, Government of Uttar Pradesh) to empower women entrepreneurs in Uttar Pradesh by fostering the creation and growth of sustainable, profitable enterprises, enabling them to scale their existing livelihoods through Award to Reward Programmes. Ministries, States, Govt. Department, Multi-lateral organisations, Development partners, etc collaborated and participated in the workshop. The workshop also witnessed participation from various States, the Government

of India Ministries, NITI officials, private sector stakeholders working in the entrepreneurial ecosystem, WEP Steering Committee members, WEP partners, women entrepreneurs, etc.

The primary focus of the workshop was deliberating on the efforts of WEP to build a robust entrepreneurial ecosystem for women in the country. The role of states in fostering women entrepreneurship, ensuring last-mile connectivity, and creating a sustainable support ecosystem is critical. The transformative power of women's entrepreneurship is pivotal in advancing economic growth, healthcare innovation, and societal well-being. A series of new initiatives were announced to support women entrepreneurs, including the launch of ATR programmes.

Session I

The session talked about Women Entrepreneurship Platform (WEP) – A Catalyst for Women-Led Development. It highlighted the model of WEP- a catalyst for change, bringing together government, private sector, and civil society to build a robust entrepreneurial ecosystem for women; the impact and growth of WEP in seven years; and the marquee assets offered under WEP.

Session II

The session focused on expanding the Women Entrepreneurship Platform (WEP) to the state level, emphasising the need for adopting a hub-and-spoke model to effectively reach and support women entrepreneurs across the country. Discussions revolved around key considerations for setting up WEP State Chapters, outlining how such localised structures could offer tailored support while driving inclusive growth. States stand to benefit from improved coordination, access to national resources, and stronger public-private partnerships through this model.A key theme of the session was the importance of mobilising private stakeholders to strengthen WEP through public-private partnerships. Engaging industry players, investors, and ecosystem enablers is critical for sustaining and scaling the platform's impact across states.

The session also spotlighted the Award-To-Reward (ATR) programme, a flagship initiative under WEP. This programme aims to empower women entrepreneurs by providing targeted mentorship, investor connect platforms, networking opportunities, and seed funding to catalyse their entrepreneurial journeys. Two impactful ATR programmes were presented as case studies: the *Faral Sakhi initiative* in Maharashtra, which supported women engaged in home-based snack businesses, and *Agri ATR* by Meero Labs in Madhya Pradesh, focused on empowering smallholder women farmers.

Several new initiatives were launched under the ATR umbrella during the session. The New Shop ATR programme was introduced for the state of Uttar Pradesh, targeting the retail sector with an aim to support 3,000 women entrepreneurs aged 21–35 by 2030. In Madhya Pradesh, the Reliance Foundation ATR programme was launched to empower 100 rural women kirana (grocery) entrepreneurs through a structured, four-month capacity-building initiative, offering mentorship and access to financial linkages.

Further, the Goa Institute of Management launched an ATR cohort in the sustainability sector, which will support women entrepreneurs innovating in clean energy, circular economy, eco-products, sustainable agriculture, and waste management. Additionally, TransUnion CIBIL

introduced the Access to Finance Microsite, a comprehensive digital platform designed to enhance credit awareness and financial empowerment among women. As part of the ATR initiative, the session also celebrated the achievements of outstanding women entrepreneurs from previous cohorts, recognising their contributions and success. The event coincided with the seventh anniversary of WEP, offering a moment to reflect on its journey, growth, and the partnerships that have sustained and expanded its reach over the years.



Outcomes

The workshop witnessed significant engagement from a broad spectrum of stakeholders, with the participation of around 200 participants, which underscores the widespread interest and recognition of the importance of women-led development through entrepreneurship. The workshop successfully provided a crucial platform for dialogue and interaction among different stakeholders. After the workshop, various State Governments and private stakeholders have expressed interest in collaborating with WEP to further the agenda of women-led development through entrepreneurship.

Sustaining the Groundwater sources for the drinking water supply

Bhubaneswar, Odisha

The Workshop on Sustaining the Groundwater sources for the Drinking water supply. This Workshop brought together policymakers, water experts, academicians, and NGOs to address key groundwater-related challenges and a way forward for sustaining the source of drinking water security. The Workshop was inaugurated in the presence of Hon'ble Minister, Panchayati Raj and Drinking Water Department, Govt of Odisha, and other distinguished dignitaries, including the State Drinking Water Dept. Secretary, Engineer-in-Chief, Water dept. and officials from NITI Aayog.



The agenda focused on identifying key challenges in groundwater as a source in water-stressed states, understanding the role of technological solutions such as GIS, IoT, and AI, and exploring policy prescriptions for the most water-stressed regions. Key presentations and panel discussions provided actionable insights to ensure groundwater sustainability in water-stressed regions of India. Through various presentations from States, the workshop highlighted State-specific approaches to managing groundwater sources, specifically in water-stressed regions. The Workshop also provided a platform for NGOs/civil societies to understand a community-centric approach to groundwater management and establish synergy between traditional and modern technological practices.

The workshop underscored developing a robust groundwater policy aligning with the SDGs and national schemes, in turn ensuring groundwater as a sustainable drinking water source in India. Major stakeholders and Participants (Ministries, States, Government Department partners, etc.)

were Department of Panchayati Raj and Drinking Water; Departments of Water Resources of 35 states and UTs; State PHE Departments; Central Groundwater Board, Bhubaneswar, Odisha; Groundwater Departments of Maharashtra, Karnataka, Rajasthan, and Uttar Pradesh; National Institute of Hydrology, IIT Roorkee; Dr. C V Raman University, Bihar; Rajiv Gandhi National Groundwater Training & Research Institute, Chhattisgarh; IIT Bhubaneswar; Sehgal Foundation; ACWADAM; and NEHIR Himalayan Sanstha



Plenary Session

The plenary session opened with addresses from Hon'ble Minister Shri Rabi Narayan Naik (Panchayati Raj and Drinking Water Dept., Govt. of Odisha), Shri Yugal Joshi (Programme Director, Water and Land Resources Division, NITI Aayog), and Shri Vineet Bharadwaj (Director cum Additional Secretary, Drinking Water and Sanitation Dept., Govt. of Odisha). The opening session set the premise for the workshop by highlighting India's critical reliance on groundwater for drinking water, especially in rural areas. The Speakers emphasised a pressing need to reduce over-extraction, shift towards sustainable alternatives like surface water, and build robust regulatory mechanisms. Odisha's approach of using surface water despite higher capital costs was highlighted. The importance of community involvement, inter-departmental convergence, and data-driven decision-making was reiterated as foundational to groundwater management and ensuring water security.

Session I: Technical Insights on Groundwater Management

The session began with an overview of the scientific and technical challenges in groundwater management, particularly in coastal and inland areas. Issues such as over-extraction, salinity intrusion, contamination, and inefficient aquifer recharge were discussed. Suggestions were

made for enhancing real-time monitoring and adapting recharge techniques based on local geology. Innovative policy concepts like water credit systems were proposed to incentivise conservation. The need for integrating traditional knowledge with modern science and using technologies like AI, IoT, and machine learning to monitor and manage resources more effectively was highlighted. Emphasis was placed on tailoring solutions to local aquifer characteristics and ensuring contaminants are treated in situ to avoid transferring pollution.

Session II: State Presentations and Field-Level Realities

States presented their groundwater status, challenges, and innovations. Odisha shared its success in real-time monitoring and terrain-specific recharge strategies, while Maharashtra showcased community-based groundwater governance and engineering interventions like fracture sealing. Karnataka highlighted legislative reforms, real-time telemetry, and improved irrigation efficiency. Rajasthan's session painted a concerning picture of over-extraction and quality degradation, emphasising the need for aquifer-based planning and rainwater harvesting. Uttar Pradesh presented encouraging trends in reducing over-exploited blocks through policy support and expanded micro-irrigation. Emphasis was given to themes of hydrogeological mapping, water budgeting, community involvement, and convergence with schemes like Atal Bhujal Yojana, across all states.

Session III: Stories from the Ground

The field-based innovations implemented by civil society organisations and NGOs were brought forward through the session. They showcased the creation of freshwater pockets in saline zones using low-cost recharge wells, offering a replicable model for similar regions; emphasised participatory groundwater management; advocated aquifer-level planning and local capacity building to ensure water security; and demonstrated how integrating watershed science with community action can help tackle water insecurity. Household-level innovations like Bio-sand and clay pot filters were also shared, addressing rural water quality concerns through simple, cost-effective technologies with high adoption and sustainability rates.

Outcomes

- Addressing Groundwater-Related Challenges: India's groundwater extraction exceeds that of China and the United States combined, posing serious sustainability concerns. The Jal Jeevan Mission reveals that nearly 60% of water consumption depends on groundwater, exacerbating the problem. This challenge is particularly severe in North Indian states and Union Territories such as Punjab, Haryana, Delhi, and Dadra & Nagar Haveli & Daman Diu, where depletion rates are alarming. Issues such as waterlogging, increased salinity, seawater intrusion, overextraction, pollution, and deteriorating water quality threaten the long-term viability of groundwater resources.
- Technological and Innovative Solutions**:** To tackle these groundwater challenges, innovative approaches like Managed Aquifer Recharge (MAR) are being promoted, which involve constructing recharge structures based on groundwater demand and encouraging rainwater harvesting. Identification of emerging contaminants and their sources is underway. Advanced technologies—including tracer methods, hydrological modeling, machine learning, artificial intelligence, remote sensing, and GIS—are being leveraged to detect contaminants and analyse groundwater systems. Remediation

techniques such as pump-and-treat, permeable reactive barriers, ion exchange, and redox transformation are also employed to restore groundwater quality.

- Best Practices and Case Studies**:** Effective groundwater management practices have been demonstrated through various successful interventions. MAR has been implemented in Uttar Pradesh, and recharge pits have been installed at the Jhinda Power Plant in Chhattisgarh. Groundwater flow monitoring continues in Rajasthan's Sikar and Jharkhand's Dhanbad. Riverbank filtration projects operate in the Agra and Mathura Basins of Uttar Pradesh, while remediation methods have been applied in Kanpur. Presentations from multiple states showcased diverse, replicable approaches aimed at groundwater sustainability.
- Policy Prescriptions**:** Key recommendations include establishing a uniform and robust regulatory framework for groundwater management, supported by improved monitoring at the national and state levels. Incentives such as water credits for conservation and crop diversification near vulnerable sources are encouraged to foster sustainable use. Public participation is essential, with communities being informed and involved in decision-making. Shifting to surface water use where feasible, as demonstrated by Odisha's approach, alongside water budgeting and auditing to monitor consumption, is advised. Strengthening policy reforms and building grassroots capacity remain critical for effective governance.
- Engaging Civil Societies and NGOs: The session highlighted the crucial role of community engagement through capacity building, mobilisation, and participatory groundwater management. Traditional water management practices and community-led initiatives were recognised as vital for sustaining groundwater resources, emphasising the importance of civil society and NGOs in driving grassroots action and promoting collective stewardship.

National Workshop on Building Synergies in the Indian Innovation Ecosystem

Gandhinagar, Gujarat

Innovation serves as a catalyst for industrial transformation, boosts productivity, and reinforces leadership in global markets, thereby acting as a fundamental engine of economic Growth. India's approach to innovation is intricately linked with the United Nations Sustainable Development Goals (SDGs), emphas emphasising emphasising ising solutions in areas such as renewable energy, healthcare, digital transformation, and agriculture to address urgent issues like climate change, food security, and public health. A well-integrated innovation-driven strategy ensures economic resilience, enhanced quality of life, and a future-ready society, making inclusive and sustainable development a global priority.

To synergise science, technology, and innovation, India's decade of innovation has been marked by policy-driven progress, industry-academia collaboration, and a thriving entrepreneurial ecosystem. Since 2014, India has achieved significant advancements in establishing a robust Science and Technology Innovation Ecosystem through the creation of extensive support frameworks, strategic policy measures, and focused initiatives. These endeavours have notably improved India's position in global innovation, led to an increase in patent applications, and bolstered its technological prowess. India is strategically positioned to become a global leader in science, technology, and innovation, through robust policy frameworks, rising investments in research and development, and a vibrant entrepreneurial ecosystem. This combination is set to foster a future characterised by inclusive and technology-driven growth.



Innovation flourishes in an environment where diverse stakeholders—industries, startups, academia, research institutions, and policymakers—collaborate seamlessly. Over the past decade, India has made remarkable strides in fostering innovation, reflected in its significant improvement in the Global Innovation Index (GII) ranking, moving from 81st position in 2015 to 39th in 2024. This progress is the result of sustained efforts at both the national and state levels, encompassing policy interventions, infrastructure development, and the promotion of a thriving startup ecosystem. Recognising the importance of innovation as a key driver of economic growth and societal progress, the Government of India has implemented multiple initiatives to strengthen the ecosystem. Several state governments have also taken proactive measures to create localised innovation hubs, further boosting India's capacity to develop and commercialise cutting-edge solutions.



However, despite these achievements, the innovation landscape in India remains fragmented, with multiple agencies and institutions often working in silos. The lack of synergy between various stakeholders sometimes results in duplication of efforts, inefficiencies in resource utilisation, and missed opportunities for impactful collaborations. To unlock India's full potential, it is imperative to integrate these diverse efforts and foster a more cohesive, synergistic, and outcome-driven innovation ecosystem. To address these challenges, NITI Aayog organised a National-level Workshop on "Building Synergies in the Indian Innovation Ecosystem" on March 22nd, 2025, in GIFT City, Gandhinagar, Gujarat, hosted by Gujarat Council of Science & Technology (GUJCOST). The workshop served as a crucial platform for the exchange of ideas, peer-to-peer learning, and strategy development, enabling stakeholders to work collectively toward a shared vision of innovation-led growth. It was a landmark event, catalysing India's journey toward becoming a leading global innovation powerhouse. By breaking silos, fostering synergies, and encouraging collaboration, the workshop will drive actionable solutions, inspire future innovators, and solidify India's position on the global innovation map. Details of collaboration- The National Workshop was organised jointly by NITI Aayog and the Gujarat Council of Science & Technology, Government of Gujarat. This has provided a platform for the State Govt, Central Govt, Academia,

Industries, R&D organisations, and Startups/Incubators to collaborate and build synergies among them.

The workshop's primary objective was to celebrate the successes of India's innovation ecosystem while critically identifying key challenges and gaps hindering growth. This would enable a collaborative approach among stakeholders and strengthen grassroots capabilities, ensuring innovation flourishes at all levels. Another important goal was to explore state-level best practices to gather insights for replication and to support advocacy for innovation policymaking nationally and at state levels, thereby creating a more cohesive environment. Finally, the workshop sought to develop a comprehensive roadmap and actionable strategies to accelerate innovation across sectors and governance layers. The focus was on enhancing stakeholder coordination, improving financing mechanisms, and nurturing a self-sufficient innovation ecosystem that underpins India's sustainable growth and global competitiveness.

Sessions

The workshop commenced with an inaugural address by Dr. V.K. Saraswat, Member (S&T), NITI Aayog, who emphasised the critical role of synergy among government agencies, academia, and industry to advance India's innovation landscape. He advocated for translational research leading to meaningful innovations and underscored the need to promote DeepTech startups and transition from service-based to product-based industries. Smt. Mona Khandhar, Principal Secretary, Department of Science & Technology, Government of Gujarat, highlighted Gujarat's policy-driven approach to creating a robust innovation ecosystem through initiatives such as the Science, Technology and Innovation Policy, Gujarat Semiconductor Policy, and Electronics Policy. Dr. Sacha Wunsch-Vincent from the World Intellectual Property Organisation (WIPO) discussed India's growing IP profile and set forth action points for the coming decade, noting India's rise in patent filings and the emergence of new S&T clusters.

The sessions featured a diverse range of topics. The "Bharat Innovates: Overview of the National Innovation Ecosystem" session, moderated by Dr. R Ramanan, former MD of Atal Innovation Mission, examined strategies to build an innovation-friendly India. The session on "Navachar Niti aur Rajya Yojnaayein: Learning from the Best," chaired by Dr. Rashmi Sharma, highlighted state-level innovation initiatives and successful models. "Navachar Ke Sarathi: Pioneering Innovations," moderated by Dr. Arvind Ranade of the National Innovation Foundation, showcased inspiring grassroots innovators and startups. International perspectives were provided in "Vishwa Mein Ubharta Bharat: Strengthening India's Global Innovation Footprint," with inputs from Dr. Wunsch-Vincent and Dr. Rajul Gajjar, Vice Chancellor, Gujarat Technological University, emphasising India's growing presence on the global innovation stage.

Panel Discussions

The high-level panel discussion towards the end of the workshop was led by Dr. V.K. Saraswat and included senior officials from NITI Aayog, the Department of Space, and the Government of Gujarat. This discussion reinforced Gujarat's leadership role in driving innovation through progressive policies, research investments, and startup promotion. The panel deliberated on future action plans to foster a more integrated and collaborative innovation ecosystem,

identifying key areas where state and central governments, academia, industry, and startups can coordinate effectively.

Major Participants included DST, Government of Gujarat; UN Resident Coordinator's Office; World Intellectual Property Organisation (WIPO)**;** Department of Science & Technology, Government of India; BIRAC, DBT, Govt of India**;** Department of Scientific & Industrial Research, Government of India; Indian Council of Agricultural Research; CII; MP Council of Science & Technology; Department of Science and Technology, Government of Karnataka; DISA, Assam Downtown University; M/o Education's Innovation Cell; NIF; iCreate, Ahmedabad; I-hub, Gujarat; Atal Incubation Centre, IIT, Delhi**;** Bio Pioneer Private Ltd., Odisha**;** Gujarat Technological University; Swissnex in India, Consulate General of Switzerland; UNESCO**;** Human Space Flight Centre, Bengaluru; NeGD; Meghalaya State S&T Council**;** and Punjab State S&T Council.



Outcomes

The workshop successfully brought together representatives from state and central governments, startups, incubators, academic institutions, industry bodies, and international organisations, fostering a collaborative environment for dialogue and strategic planning. Participants shared success stories, best practices, and explored challenges and opportunities in India's innovation ecosystem. The event highlighted the need for sustained collective efforts to create a connected and empowered innovation environment. Importantly, the workshop catalysed partnerships and commitments to drive innovation-led growth across sectors such as renewable energy, healthcare, and agriculture. The feedback from participants reflected appreciation for the well-structured event and acknowledged its unique role in building synergies essential to India's innovation future. The workshop has paved the way for actionable strategies and stronger collaborations that will help solidify India's position as a leading global innovation hub.

Promoting Innovation, Investment and Industry in MSME Sector focusing on Textiles, Food Processing &Tourism in J&K

Jammu, Jammu & Kashmir

Indian Institute of Management Jammu, in collaboration with NITI Aayog & Government of Jammu & Kashmir, hosted NITI Aayog State Level Engagement Workshop on Promoting Innovation, Investment & Industry in MSME Sector focusing on Textiles, Food Processing & Tourism in J&K on 26th Mar, 2025 at IIM Jammu Campus. This workshop served as a valuable opportunity to connect with key stakeholders from the textiles, food processing, and tourism sectors in Jammu & Kashmir. A full-day workshop offered a unique platform for key stakeholders from these three sectors to engage in insightful brainstorming sessions, followed by panel discussions by the experts.

A diverse group of stakeholders actively participated in the workshop, including senior officials from the Ministry of Agriculture and Farmers Welfare, the Ministry of Commerce and Industries, the Ministry of Textiles, the Ministry of Food Processing Industries, the Ministry of Tourism, and NITI Aayog. State-level officials, including secretaries, commissioners, and directors from various departments, were engaged in the discussions.



The workshop welcomed distinguished dignitaries and experts, including Shri Manoj Sinha, Hon'ble Lt. Governor of the UT of J&K; Shri Atal Dulloo, Chief Secretary, J&K; and Shri Anurag Goyal, Senior Advisor, NITI Aayog. Key institutional leaders included Ms. Mugda Sinha, Director General, Ministry of Tourism; Mr. Vikramjit Singh, Commissioner/Secretary, Industries &

Commerce, J&K; Ms. Yasha Mudgal, Commissioner/Secretary, Tourism; and Mr. Talat Parvez Rohella, Secretary, PDMD, Government of J&K. Senior representatives from NITI Aayog, such as Mr. Ishtiyaque Ahmed, Programme Director, and Mr. Rahul Yadav (IAS), Mission Director, HADP, J&K, also participated.

Academic leadership was represented by Prof. Umesh Rai, Vice Chancellor, University of Jammu; Prof. Pragti Kumar, Vice Chancellor, SMVD University; Prof. K.S. Chandrasekar, Vice Chancellor, Cluster University of Jammu; and Prof. Shakil Ahmad Romshoo, Vice Chancellor, ISUT. Voices from the business community included Capt. Anil Gour (Retd) of FICCI J&K Chapter, Mr. Rakesh Wazir, Chairperson, PHDCCI, Jammu; Mr. Syed Afaq Qadri, MD, Qadri Textile Industries; and Shri Arun Gupta, President, Chamber of Commerce & Industries.

Additional contributors featured Ms. Renu Lata, Economic Advisor, Ministry of Commerce; Mr. Sudershan Kumar (JKAS), Director, JKTP; Dr. Jyoti Kachroo, Professor at SKUAST and Incubator Incharge; Prof. Sanjay Mohan, Incharge of the Incubator at SMVDU, along with Ms. Divya Mahajan, Business Manager. Trade representation extended to Mr. Anoop Mittal, President, Kanak Mandi Association; Shri Devinder Gupta, President, Fruit Mandi Association; and Mr. Surinder Mahajan, President, Raghunath Bazar Association.



Government and scientific representatives included Mr. Arun K. Mansotra, Retired Horticulture Officer; Ms. Phoola Koul, Deputy Secretary, Tourism Department; Mr. Ejaz Qaiser Malik (JKAS), Joint Director, Tourism; and Mrs. Indu Chib (JKAS), Chairperson, SSB. From the research community, Dr. Kanchrella Prasad and Dr. Vinod Kumar of CSIR-IIIM contributed insights. Startups were represented by Dr. Gyatri Tandon from Himalayan Bio Organic Foods Ltd., Mr. Vaibhav Sharma of Travel Dost, and Mr. Dinesh Gupta from Skyview by Empyrean. Finally, national institutions were represented by Shri Anil Kumar, Director, Ministry of Textiles, and Shri Karthick Prabu Deivendran, Vice President, ONDC.

Inaugural Session

An opening session was held at Mandapum auditorium of IIM, Jammu which was led by Chief Guest Shri Manoj Sinha, Hon'ble Lieutenant Governor of J&K and Guest of Honour Shri Atal Dulloo, Chief Secretary of J&K. Shri Manoj Sinha extended his felicitation to NITI Aayog, IIM Jammu team and other stakeholders for bringing together the policy makers, industry experts, entrepreneurs, incubators, trade associations & business federations for the workshop aimed to explore challenges & opportunities in three key sectors of J&K's economy – Textiles, Food Processing & Tourism Industry.

Shri Atal Dulloo, IAS, Chief Secretary, J&K Govt, provided an overview of the progress in the three sectors in J&K, highlighting strategic initiatives driving growth and sustainability. He emphasised the vital role of stakeholders, government bodies, private investors, entrepreneurs, and civil society in strengthening the region's economy. Stressing the impact of public-private partnerships, skill development, and pro-investment policies, he underscored the need for departmental coordination, technological advancement, and sustained peace to foster long-term economic growth in Jammu & Kashmir. Prof. B. S. Sahay, Director IIM Jammu, in his welcome address, emphasised that IIM Jammu, as an Institute of national importance, is deeply committed to the growth and development of Jammu and Kashmir. He highlighted the institute's pivotal role in fostering a vibrant startup ecosystem in the region, particularly through its active involvement in initiatives like Mission YUVA and CiTAG. Prof. Sahay reiterated IIM Jammu's dedication to nurturing innovation, entrepreneurship, and capacity-building across the Union Territory.

Shri Anurag Goyal, Senior Advisor, NITI Aayog, emphasised that a strong and resilient nation is built on the foundation of empowered States and Union Territories. He highlighted NITI Aayog's unwavering commitment to the principles of cooperative federalism, which foster collaboration between the Centre and the States for holistic development. Stressing the importance of regional empowerment, he underlined the need for inclusive and sustainable development models tailored to local strengths and challenges. Shri Goyal also pointed out that through strategic planning, policy support, and capacity building, NITI Aayog aims to ensure balanced growth and upliftment across all regions of the country.

Mr. Talat Parvez Rohella, Secretary, PDMD, Government of Jammu and Kashmir, provided an overview of the workshop and highlighted the important role of IIM Jammu in shaping the region's development journey. He emphasised that Jammu and Kashmir holds immense potential to become a thriving MSME hub, driven by its abundant natural resources, talented youth, and rapidly evolving infrastructure.

Post inaugural session, all dignitaries led by the Chief Guest Shri Manoj Sinha, Hon'ble Lieutenant Governor of J&K, visited the exhibitions wherein he interacted with the young innovators of Jammu & Kashmir working in the field of textile, food processing & tourism industry. During the exhibition, over 30 stalls were put on display for the guests and participants.

Session I: Promotion of the Textile Industry

Held in the Prahlad classroom, the session on the textile sector attracted over 100 participants and was chaired by Shri Anil Kumar, Director, Ministry of Textiles, Government of India. Prof. Ateeque Shaikh, Associate Professor at IIM Jammu, moderated the session. Attendees

included industrialists, association leaders, government officials, incubators, startups, NGOs, and students from various design institutes across Jammu & Kashmir. The discussion focused on the growth of MSMEs in the textile sector and emphasised the need for investor-friendly policies to stimulate industrial development in the region.

Session II: Promotion of Food Processing Industries

The food processing session took place in the Kashyap classroom and featured a comprehensive dialogue among stakeholders. Chaired by Shri Ishtiyaque Ahmed, Programme Director at NITI Aayog, and co-chaired by Prof. Pragti Kumar, Vice Chancellor of SMVD University, the session was moderated by Prof. Jabir Ali, Dean of IIM Jammu. Participants included industry leaders, government officials, academicians, and representatives from biotech institutes and NGOs. The discussions centred on building a robust food processing ecosystem through innovation, research, and entrepreneurship, while also focusing on policy support for MSMEs and startups and the creation of sustainable agro-based value chains.



Session III: Promotion of the Tourism Industry

The session on tourism was convened at the Senate Hall and chaired by Ms. Mugda Sinha, Director General, Ministry of Tourism, Government of India. It was co-chaired by Prof. Umesh Rai, Vice Chancellor, University of Jammu, and moderated by Prof. Sanjay Gupta from IIM Jammu. The session brought together representatives from tourism associations, Tourism Development Authorities, hotel and traders' associations, incubators, startups, NGOs, and students from the Schools of Tourism & Hospitality in the Jammu region. Key topics included promoting sustainable tourism, developing pilgrimage circuits, enhancing tourism infrastructure, expanding entrepreneurial opportunities, and strengthening policy frameworks to position Jammu & Kashmir as a leading tourism destination.

The post-lunch session featured a series of insightful presentations by domain experts, focusing on key national initiatives aimed at strengthening governance, digital infrastructure, and regional development. Ms. Antika Sarkar delivered a comprehensive presentation on NITI Aayog's initiatives tailored for states, emphasising strategies designed to foster regional development and inter-state collaboration. Her insights highlighted how decentralised planning and innovation-driven policy frameworks can drive inclusive growth across diverse regions of the country. Mr. Syed Uzair Simnani, Programme Coordinator at the Capacity Building Commission of India, led an informative session on Karmayogi Bharat. He elaborated on the initiative's objective to enhance capacity within public service through continuous learning, performance-based assessments, and skill development, aiming to create a future-ready and citizen-centric civil service. Ms. Himani Sachdeva provided an engaging overview of the Open Network for Digital Commerce (ONDC). Her presentation underscored the platform's transformative potential to democratise digital commerce by promoting inclusivity, enabling fair competition, and opening new market opportunities for small sellers and enterprises across multiple sectors.



Panel Discussions

Three panel discussions on roadmaps for textiles, food processing, and tourism industries were scheduled at the final leg of the full-day NITI State workshop Series. Textile Industry: Roadmap of Textile Industries in J&K

A panel discussion on the Textile Industry was held at the Mandapam Auditorium, IIM Jammu,

featuring a diverse group of experts from government and industry. The panel included Mr. Anil Kumar, Director, Ministry of Textiles, Government of India; Mr. Syed Afaq Qadri from M/s Qadri Textile Industries; Mr. Sudarshan Kumar, Managing Director, JKTPO, and Ms. Renu Lata, Economic Advisor, Ministry of Commerce, Government of India. The session was skilfully moderated by Prof. Ateeque Shaikh, Associate Professor at IIM Jammu. Discussions focused on emerging trends, policy support, and growth opportunities in the textile sector, particularly in enhancing the industrial landscape of Jammu & Kashmir. Shri Sudarshan Kumar, MD, JKTPO, sharing his views during the panel discussion on the Textile Industry in J&K

Panel Discussion II

A panel discussion on the Food Processing Industry was held at the Mandapam Auditorium, IIM Jammu, bringing together panelists from diverse backgrounds to share insights and experiences. The panel featured Mr. Rahul Yadav, Mission Director, HADP, J&K; Prof. Shakil Ahmad Romshoo, Vice Chancellor, IUST; Mr. Mokshak Katroo, Director, M/s Vellanutrition Pvt. Ltd and Dr. Vikas Tandon, Dean, SKUAST Jammu. The session was skilfully moderated by Dr. Jabir Ali, Dean, IIM Jammu. Discussions revolved around innovation, research, entrepreneurship, value addition, and policy interventions to strengthen the food processing ecosystem in Jammu & Kashmir.

Panel Discussion III

A panel discussion on the Tourism Industry was held at the Mandapam Auditorium, IIM Jammu, bringing together prominent experts and leaders from the sector. The panel featured Mr. Vikas Gupta, Director, Tourism Jammu; Mr. Rakesh Wazir, Chairperson, PHD Chamber of Commerce & Industry, Jammu region; Capt. Anil Gour (Retd), representative of FICCI J&K Chapter, and Shri Karthick Prabu Deivendran, Vice President, ONDC. The session was adeptly moderated by Prof. Sanjay Gupta, Professor at IIM Jammu. Discussions centred on tourism development, policy reforms, digital transformation, and collaborative opportunities to strengthen Jammu & Kashmir's position as a leading tourism destination.

Outcomes

The NITI States Engagement Workshop at IIM Jammu successfully fostered collaboration between key stakeholders, including government officials, industry leaders, and academicians, to promote innovation, investment, and industry growth in Jammu and Kashmir's MSME sector. Key outcomes included actionable insights on modernising textiles, food processing, and tourism sectors, along with policy recommendations for sustainable growth. The workshop highlighted infrastructure development, technology adoption, and eco-friendly initiatives as pivotal for transforming J&K into an entrepreneurial hub. The event set the stage for strategic partnerships and investment opportunities to drive regional economic development.

National Workshop on Teacher Education

New Delhi

India hosts one of the largest school education systems in the world, with over 15 lakh schools, 98 lakh teachers, and 24.8 crore students. While access and infrastructure have expanded significantly, the system continues to grapple with poor learning outcomes. The National Achievement Survey (NAS) 2021 reveals a worrisome decline in student performance, from an average score of 62.4% in Grade 3 to just 47.76% in Grade 10, highlighting widening learning gaps as students' progress through the system.

The National Education Policy (NEP) 2020 calls for urgent, systemic transformation. It identifies outdated teacher training models, low intrinsic motivation, and lack of institutional support as key barriers. To reverse the trend, classrooms must evolve into engaging, learner-centric spaces that cultivate curiosity, critical thinking, and emotional well-being. At the heart of this transformation is the empowerment of teachers through high-quality pre-service and in-service training, continuous professional development, and an ecosystem that supports pedagogical innovation and collaboration. Enhancing teacher agency is not a peripheral reform; it is central to ensuring that every child receives a meaningful, future-ready education.

Aligned with the vision of NEP 2020, which places teachers at the heart of systemic reform, NITI Aayog convened a National Workshop on Teacher Education on 26th March 2025 at Vigyan Bhawan, New Delhi. The event brought together a diverse constellation of stakeholders, policymakers, educators, researchers, and representatives from civil society to collectively address enduring challenges in teaching quality and learning outcomes.



Rooted in the belief that lasting educational change begins with empowered and supported teachers, the workshop served as a platform to critically examine existing gaps and opportunities in teacher education. Discussions were structured around six thematic areas: assessing the current landscape of teacher education, reimagining professional training, leveraging digital tools and technologies, strengthening Teacher Education Institutions (TEIs), transitioning toward competence-based frameworks, and scaling innovative pedagogical practices.

Across all sessions, panelists underscored the imperative to reposition teachers as confident, curious professionals, equipped not only with subject knowledge but also with the tools and autonomy to create joyful, inclusive, and future-oriented classrooms. The workshop laid the foundation for a collaborative roadmap toward building a responsive, high-quality teacher development ecosystem in India.

A key objective is to assess the current landscape of teacher education in India by conducting a thorough analysis of existing policies, institutional capacities, and pedagogical approaches. This evaluation aims to uncover systemic gaps while also identifying emerging opportunities that can inform targeted reforms and interventions.

Another focus is on redesigning training frameworks to enhance the professional development of educators. This involves creating context-specific, competency-based training models that prioritise reflective teaching practices, strengthen subject expertise, and encourage pedagogical innovation within classrooms.



To support ongoing professional growth, the integration of emerging technologies into teacher education is essential. Adaptive digital tools, blended learning environments, and virtual simulations must be embedded within both pre-service training and in-service development programmes, enabling flexible and continuous learning opportunities for educators.

Enhancing the quality of Teacher Education Institutions (TEIs) is also a critical priority. Introducing measurable quality standards and mentorship-based systems can help raise academic and practical training benchmarks. This will ensure better alignment of TEI programmes with the broader goals outlined in the National Education Policy (NEP) 2020.

A fundamental shift is required from a regulatory compliance-driven model to one that emphasises competency-based outcomes. By promoting institutional autonomy, encouraging accountability, and embracing learner-centric pedagogies, the success of teacher education can be redefined in terms of real classroom impact and teacher effectiveness.

Finally, the adoption and adaptation of national and global best practices is vital. Curating successful strategies from high-performing institutions and international models and tailoring them to local contexts will help foster a dynamic culture of continuous improvement across the teacher education ecosystem.

The workshop witnessed active participation from over 170 attendees, including representatives from government bodies, civil society organisations, academic institutions, and schools. States such as Uttar Pradesh, Kerala, and Gujarat showcased successful models and innovations in teacher education, offering valuable insights and replicable practices. The event featured engaging panel discussions with contributions from leading experts and practitioners from the Ministry of Education, SCERTs, TISS, IGNUS, and practicing schoolteachers, fostering a rich, multi-stakeholder dialogue on strengthening India's teacher development ecosystem.

Key stakeholders included representatives from the Ministry of Education (Department of School Education & Literacy), NCERT, and State Councils of Educational Research and Training (SCERTs). Delegates from the State Education Departments of Uttar Pradesh, Bhopal, Karnataka, Delhi, Kerala, Haryana, and Gujarat contributed state-specific insights and models. The dialogue was enriched by academic and civil society institutions such as Azim Premji University, IGNUS, Sri Aurobindo Society, Piramal School of Leadership, Bharti Airtel Foundation, the Centre of Excellence in Teacher Education (TISS Mumbai), and the Ravi J. Matthai Centre for Educational Innovation (IIM Ahmedabad).

Keynote Session

A Keynote was addressed by Shri Sanjay Kumar, Secretary, Department of School Education & Literacy (DoSEL), underscored the pressing need to improve both access and quality in school education, with a particular focus on fostering effective and engaging learning environments. He emphasised the transformative role of technology integration, highlighting initiatives such as universal digital literacy, the establishment of computer labs across schools, and the scaled expansion of Atal Tinkering Labs and Vocational Education to nurture creativity and innovation.

He also spoke to the critical importance of internet connectivity, driven by BSNL infrastructure, and the responsible use of Artificial Intelligence to personalise and enhance the learning experience. The launch of new NCERT textbooks, aligned with NEP 2020, was noted as a milestone in modernising curriculum delivery. Furthermore, he called for comprehensive assessment reforms and a shift toward experiential, hands-on learning models that promote deeper understanding over rote memorisation. Importantly, he urged District Institutes of Education and Training (DIETs) to proactively support State Councils of Educational Research

and Training (SCERTs) in evolving into vibrant hubs for foundational literacy, creative pedagogy, and imaginative thinking, laying the groundwork for future-ready education.

Session I: Current Status of Teacher Education: Challenges and Opportunities

Prof. Padma M. Sarangapani from the Centre of Excellence in Teacher Education (CETE), TISS Mumbai, emphasised that teacher education lies at the heart of achieving educational excellence and professionalism. Citing the *Justice Verma Commission Report*, she underscored the urgent need to strengthen regulatory frameworks, revamp pre-service teacher training, and operationalise a two-year B.Ed. A programme that is better aligned with classroom realities.

Building on the vision of the National Education Policy (NEP) 2020, the discussion identified critical challenges and emerging opportunities within the teacher education ecosystem. Key recommendations included reorienting the National Council for Teacher Education (NCTE) towards a more collaborative and peer-reviewed approach, and promoting multidisciplinary teacher education models with flexible entry pathways to attract a diverse and competent talent pool.

Concerns were raised around politically influenced recruitment practices and the career uncertainty created by extended private-sector stints before securing government roles. The conversation also addressed the feminisation of the teaching workforce, shaped in part by lower pay scales and assumptions around work–life balance.

The session called for sustained, systemic reforms that prioritise teacher empowerment, advocating policies that are designed to support educators throughout their professional journey. Empowered, well-supported teachers rooted in strong pedagogical foundations are essential to transforming India's education system and advancing equity, quality, and learner success at scale.

Session II: Presentation on Teacher and Teacher Education Reforms in the Context of NEP 2020

Dr. Anurag Behar, Chancellor of Azim Premji University, delivered a candid analysis of the structural challenges in teacher education, as framed by the National Education Policy (NEP) 2020. He highlighted persistent concerns such as the limited scope of current teacher preparation programmes, the growing influence of corruption and commercialisation, and the disconnect between policy intent and ground-level practice.

Dr. Behar emphasised that meaningful reform requires aligning values, implementation strategies, and technical frameworks, underscoring that teacher education must be viewed not as a technocratic process but as a deeply social-human endeavour. He called for correcting long-standing regulatory failures and institutional dysfunctions, advocating for NEP's proposed shift to a *"light but tight"* regulatory architecture, including governance reforms involving the Higher Education Commission of India (HECI) and Teacher Education Institutions (THEIs).

A pivotal reform he endorsed was the transition from the traditional two-year B.Ed. to the

four-year Integrated Teacher Education Programme (ITEP), designed to embed pedagogical depth, classroom readiness, and interdisciplinary thinking. He stressed that expanding multidisciplinary education pathways is essential not only to raise the quality of teacher preparation but also to eliminate the pervasive "degree-selling" practices that continue to undermine the profession's integrity.



Panel Discussion I

The panel talks about Enhancing Quality Standards in Pre-Service Teacher Education. It underscored the urgent need to revitalise pre-service teacher education in India through transformative and context-sensitive reforms. Experts advocated for a shift toward practice-oriented training frameworks that integrate global pedagogical standards with localised needs. Emphasis was placed on leveraging emerging technologies such as AI to personalise learning pathways and enhance teaching effectiveness.

Panelists called for continuous professional development models tailored to individual strengths and growth areas, coupled with robust mental health support systems to foster teacher well-being. The discussion highlighted the critical role of strong school leadership in mentoring and enabling newly trained educators. Furthermore, the panel recommended embedding extensive classroom teaching experience within pre-service programmes and institutionalising regular quality assurance mechanisms across Teacher Education Institutions (TEIs). The overarching focus was on building a responsive, relevant, and teacher-centric ecosystem that empowers educators to thrive in 21st-century classrooms.

Panel Discussion II

The panel emphasised on the topic of Transforming Governance and Regulatory Frameworks in Teacher Education. The governance reforms in teacher education emphasised the urgent need to overhaul institutional structures to ensure enhanced quality, accountability, and innovation. Discussions underscored the importance of establishing robust teacher training standards, benchmarking progress against global best practices, and integrating artificial intelligence to streamline administrative processes and enhance learning outcomes.

Panelists advocated for a governance model that balances strong regulatory oversight with institutional autonomy, enabling flexibility while ensuring accountability. The conversation highlighted the need to shift from rule-based compliance to performance-based evaluation, with a renewed focus on personalised professional development, school leadership capacity, and teacher well-being, including access to mental health support. Real-world classroom immersion was identified as a cornerstone of effective pre-service education, and participants called for stronger linkages between research, teacher preparation, and classroom realities. The panel concluded with a call for practical, teacher-responsive, and evidence-informed governance reforms that empower educators and elevate the overall quality of the teacher education ecosystem.



Panel Discussion III

This session focused on viewing Teachers as Change Makers – Building Leadership for Systemic Educational Transformation. It underscored the transformative role of teachers as catalysts for systemic reform in education. Drawing on global best practices from countries like Finland and Singapore, panelists emphasised the value of reflective teaching, continuous professional development, and empowered school leadership. Key institutional collaborations were highlighted, including the MoU between the Gujarat Government and IIM Ahmedabad, and the India–Deakin Teacher Alliance, which aims to embed global pedagogical innovation in Indian contexts.

Initiatives such as the *Riverside Learning Programme* and *Prashikshak Chatbox* were cited as exemplars in reimagining classroom engagement. The panel championed the creation of joyful, purposeful learning environments, with a strong focus on Project-Based Learning (PBL). PBL was noted for its effectiveness in promoting collaboration, real-world problem-solving, and experiential understanding, aligning closely with the intent of NEP 2020 to move beyond rote learning and foster critical thinking, creativity, and holistic development.

Outcomes

A comprehensive consolidated report capturing session-wise insights, key takeaways, and actionable recommendations will be released by NITI Aayog to inform future policy formulation and programme design.

The dialogue on transforming teacher education highlighted the importance of integrating both subject expertise and practical classroom experience. Participants emphasised that teacher training programmes must go beyond theoretical knowledge, ensuring a strong academic foundation is paired with real-world exposure to classroom dynamics. This approach is essential to preparing educators who are both competent and confident in their practice.

A key recommendation was the need to strengthen regulatory frameworks governing Teacher Education Institutions (TEIs). Transparent and enforceable standards are critical to reducing irregularities, ensuring quality, and maintaining accountability across the system. In parallel, the role of technology in teacher development was underscored, with a call to leverage digital platforms to provide adaptive, on-demand professional learning tailored to the individual needs of educators.

The discussion also focused on the importance of empowering teachers as reflective leaders. By fostering self-awareness and critical thinking, educators can become agents of change within their schools and communities. Supporting this leadership requires building strong peer learning networks and encouraging collaboration through community engagement. Such networks enhance motivation, build resilience, and cultivate innovative teaching practices.

Participants advocated for the promotion of experiential learning methodologies, such as project-based and real-life teaching approaches, which enhance student engagement and deepen comprehension. To sustain these reforms, systemic collaboration and leadership across institutions were deemed essential. Aligning efforts across stakeholders ensures that improvements in teacher education are meaningful, scalable, and enduring.

Participants deeply appreciated that the dialogue was anchored in diverse, real-world perspectives. The involvement of both policymakers and frontline educators brought richness to the conversation, bridging the gap between policy and practice. Most notably, the discourse moved beyond abstract discussions to embrace the lived experiences of those who navigate the complexities of the classroom every day.

Forest-based livelihood opportunities for Tribal Communities

Nava Raipur, Chhattisgarh

The Department of Forest & Climate Change, Government of Chhattisgarh, in collaboration with NITI Aayog, New Delhi, organised a one-day workshop on "Forest-Based Livelihood Opportunities for Tribal Communities." This partnership aimed to drive policy innovation, strengthen institutional frameworks, and enhance forest-based livelihoods, aligning with India's broader green development and tribal empowerment objectives.

The workshop aimed to explore and strengthen sustainable forest-based livelihoods, focusing on the responsible use of forest products, ecosystem services, and natural resources. Discussions emphasised the critical role of forests in advancing the socio-economic development of tribal communities, ensuring long-term environmental conservation, while fostering inclusive growth



India's tribal communities have a deep-rooted connection with forests, which serve as critical sources of livelihood, cultural identity, and economic sustenance. Non-Timber Forest Produce (NTFP) plays a vital role in supporting their socio-economic well-being, yet challenges such as climate change, market fluctuations, and unsustainable harvesting practices threaten these traditional livelihoods. To ensure long-term resilience, it is essential to develop sustainable and inclusive forest-based livelihood models that balance economic empowerment with conservation efforts. Recognising this need, the Department of Forest & Climate Change, Government of Chhattisgarh, in collaboration with NITI Aayog, New Delhi, organised a one-day workshop on "Forest-Based Livelihood Opportunities for Tribal Communities" on 28th March 2025 at the Dandkaranya Auditorium, Aranya Bhawan, Nava Raipur.

The workshop served as a strategic platform for key stakeholders, including government departments, forest officials, researchers, NGOs, SHGs, and tribal representatives, to engage in dialogue, knowledge-sharing, and policy discussions. The workshop saw the active participation of approximately 200 representatives from central ministries, state governments, NGOs, academia, research institutions, civil society organisations, Self-Help Groups (SHGs), and tribal communities. The diverse representation ensured rich, multidisciplinary discussions, fostering collaboration across policy, research, and grassroots implementation.

The sessions included expert presentations, panel discussions, and experience sharing by community members, with a focus on sustainable use of forest resources, value addition, ecotourism, supply chain management, and research-driven solutions. The workshop aimed to build convergence across sectors and identify actionable policy recommendations to enhance the economic resilience of tribal communities while conserving forest ecosystems.

Objectives

The primary objective of the workshop was to assess current initiatives and challenges in advancing forest-based livelihoods for tribal communities. This involved a comprehensive review of recent developments in the sector, with a focus on identifying systemic obstacles as well as emerging opportunities that can strengthen the economic resilience of tribal populations. By understanding what is working and where the gaps lie, the workshop aimed to chart a course for more effective and inclusive interventions.

A key focus of the workshop was to facilitate the exchange of knowledge and best practices across states. Through structured dialogue, participants shared sustainable forest-based livelihood models, innovative management strategies, and successful ground-level interventions. This cross-learning approach was intended to replicate and scale context-appropriate models that have demonstrated impact, enabling stakeholders to draw lessons from diverse geographies and experiences.

In addition, the workshop sought to strengthen collaboration and policy support by fostering stakeholder partnerships and enhancing inter-agency coordination. Discussions explored existing and potential policy frameworks that can support livelihood security for tribal communities. Emphasis was placed on integrated approaches that align forest management, community participation, and economic development objectives.

To achieve these goals, the workshop was organised into three technical sessions. The first session, *"Strengthening Forest-Based Livelihoods: Connecting the Dots for a Sustainable Future,"* addressed systemic integration and long-term sustainability. The second session focused on *"Best Practices in Forest-Based Livelihoods,"* spotlighting scalable models and community-led initiatives. The final session, *"Sustainable Forest Management: Fostering Collaboration Between Industry & Government for Livelihoods,"* emphasised the importance of multi-stakeholder partnerships in enhancing sustainable practices and economic outcomes.

Inaugural Session

The workshop was formally inaugurated by Shri Vishnu Deo Sai, Hon'ble Chief Minister of Chhattisgarh, and Shri Kedar Kashyap, Hon'ble Minister for Forest & Climate Change, Water Resources, Skill Development, Cooperative, and Parliamentary Affairs. Distinguished attendees included the Principal Secretary, Department of Tribal & Scheduled Castes, Government of Chhattisgarh; Shri V. Sreenivasa Rao, PCCF & HoFF, Chhattisgarh; Shri Sonmani Borah; Smt. Shalini Raina, Additional PCCF (HRD & IT), Chhattisgarh; Shri Surender Mehra, Adviser (GTC),

NITI Aayog; and Shri Amit Verma, Director (GTC), NITI Aayog. The session began with the ceremonial lighting of the lamp and the felicitation of dignitaries, symbolising a shared commitment to strengthening forest-based livelihoods for tribal communities.



Smt. Shalini Raina delivered the opening remarks, extending a warm welcome to all delegates, experts, and participants. She underscored the importance of the workshop in formulating inclusive and sustainable livelihood strategies at the grassroots level, stressing the value of collaborative stakeholder engagement in empowering tribal communities through forestry.

Shri Surender Mehra, Adviser at NITI Aayog, emphasised forests as both a critical livelihood source and a pillar of cultural identity for tribal populations. He highlighted the urgency for collaborative action and practical strategies to build resilient forest-based enterprises while ensuring ecological conservation and responsible resource use.

In his address, Shri V. Sreenivasa Rao, IFS, PCCF & HoFF of Chhattisgarh, welcomed the participants and elaborated on the state's forest richness, home to numerous medicinal plants and over 200 ecotourism sites. He identified Minor Forest Produce (MFP) as the economic backbone for forest dwellers, with timber-based enterprises gaining traction. Key initiatives highlighted included the distribution of 5,000 medicinal plants to promote sustainable agroforestry, the training of 105 individuals in Bastar to support self-employment, the development of para-taxonomists to enhance scientific classification of flora, and a state-led project to evaluate ecosystem service value. Chhattisgarh, under the Van Dhan Yojana, leads the nation in offering the highest Minimum Support Price for MFPs, thereby improving financial security for tribal communities.

Shri Rao emphasised the importance of viewing forests not just as biodiversity reserves but also as vital providers of ecological and economic services. He advocated for stronger

institutional support for forest-based enterprises, organic certification to promote sustainable commercialisation, adoption of sustainable harvesting techniques, and the creation of incubation and ASPIRE centres to nurture entrepreneurship and skill development. He concluded by affirming the need for continued strategic backing from NITI Aayog and the Central Government to scale these initiatives and uplift forest-dependent populations.

Shri Sonmani Borah, IAS, Principal Secretary, Government of Chhattisgarh, Department of Tribal & Scheduled Castes, emphasised the symbiotic relationship between forests and tribal communities. He noted that NTFP-based livelihoods are both economically critical and ecologically sustainable. Key recommendations from his address included securing community forest rights under the Forest Rights Act, 2008; supporting tribal-led MSMEs with a focus on empowering women; integrating AI-enabled forest governance and precision agriculture; and promoting tribal welfare schemes like Lakhpati Didi and Dharti Aaba Janjatiya Gram Utkarsh Abhiyan. He also highlighted the importance of converging efforts with cooperative banks and institutional partners to improve credit access, digital outreach, and rural infrastructure.

Hon'ble Minister Shri Kedar Kashyap spoke on the vital role of sustainable forest management in preserving tribal livelihoods and enhancing rural economic resilience. He underscored the need to promote enterprises based on NTFP, specifically mentioning traditional forest products like Siadi rope, Mahua fruit, Torha, Imli (tamarind), and Chirata seeds. He acknowledged Chhattisgarh's leadership in issuing Van Adhikar Patras and emphasised the development of ecotourism across more than 100 identified sites to create lasting livelihood opportunities.

Hon'ble Chief Minister Shri Vishnu Deo Sai reaffirmed the state government's commitment to tribal welfare, drawing attention to the intrinsic link between healthy forests and tribal prosperity. He shared key initiatives including the issuance of gender-inclusive forest rights under Van Adhikar Patras in the names of both spouses, recognition of 67 forest produces types under the Van Dhan Yojana, and the implementation of the PM-JANMAN Yojana, which addresses the critical gaps in healthcare, education, livelihood, and infrastructure for Particularly Vulnerable Tribal Groups (PVTGs). The Chief Minister also mentioned that 50% of the road construction funds in the state are allocated to improve tribal connectivity. He advocated for cooperative models inspired by successful ventures like Amul, urged for the establishment of fair pricing mechanisms, improved market access for forest produce, and the integration of organic and modern agricultural practices to ensure long-term sustainability.

The inaugural session concluded with a vote of thanks delivered by Shri Amit Verma, Director (GTC), NITI Aayog. He expressed his deep gratitude to all dignitaries, guests, and participants for their valuable contributions and insights, which will play a pivotal role in shaping future policies and initiatives aimed at advancing forest-based livelihoods across tribal regions.

Session I

The session titled "Strengthening Forest-Based Livelihoods: Connecting the Dots for a Sustainable Future" opened with a keynote address by Shri Anil Kumar Sahu, IFS, Managing Director of the Chhattisgarh MFP Co-operative Federation, Nava Raipur, who highlighted the pivotal role of Non-Timber Forest Produce (NTFP) in empowering tribal communities across Chhattisgarh, particularly rural women. He addressed critical challenges, including inadequate infrastructure, limited branding opportunities, and restricted market access, while emphasising

the importance of grassroots institutions such as Van Dhan Samitis and Swachhata Samuhas in organising and mobilising forest-dependent populations for collective action.

With strategic backing from TRIFED, Chhattisgarh has successfully engaged over 11,000 forest-based communities, where women represent a significant share of the workforce. The state's model is anchored in sustainable harvesting techniques that preserve ecological integrity while enhancing economic opportunity. Skill development is central to this approach, with value-addition centres like the Van Dhan Vikas Kendras providing hands-on training in the production of processed foods, herbal remedies, and natural skincare items.

A notable example of NTFP-led financial inclusion is the Tendu leaf collection initiative, which contributes around ₹5,500 per collection unit. This programme not only bolsters the state's revenue but also ensures consistent income for tribal households. Coupled with welfare schemes, these efforts have diversified livelihoods and strengthened the socio-economic resilience of forest-reliant communities.

In a second keynote address, Shri Bibhash Kumar Thakur, IFS, PCCF & Managing Director, Madhya Pradesh MFP Federation, Bhopal, presented Madhya Pradesh's structured approach to promoting forest-based livelihoods. The state has adopted a dual-stream model that supports both timber-based and NTFP-based economies, with growing emphasis on the latter due to its sustainability and inclusive nature. Under the PM Van Dhan Vikas Yojana, Madhya Pradesh has focused on adding value to forest products through improved processing, packaging, and branding, enabling tribal communities to secure fairer market prices and build stable income sources.

Currently, the state engages over 36 lakhs forest-based collectors, half of whom are tribal individuals. Their participation underlines the significance of indigenous stewardship in forest conservation and resource management. A key component of Madhya Pradesh's strategy is the decentralisation of forest governance, wherein Gram Sabhas retains complete autonomy over collection activities without interference from the MPFP Federation. Operational innovations such as the Rapid Assessment of NTFP Production have been introduced to optimise efficiency while preserving ecological balance.

Highlighting successful entrepreneurial outcomes, Shri Thakur referenced initiatives like the Mainawadi Highway Restaurant, which showcases traditional tribal grains like Kodu and Kutki in its menu, thereby promoting indigenous diets through community-owned enterprises. In another example, Van Dhan Vikas Kendras in Chandu and Bhainsdehi Range have partnered with La Bon Beans & Coffee to process and market locally cultivated coffee, strengthening value chains and local business ecosystems.

Collectively, these targeted interventions in Madhya Pradesh are cultivating self-reliant tribal communities while ensuring sustainable, economically viable forest governance models. The session underscored the growing recognition of NTFP as a cornerstone for ecological preservation and inclusive development across forest-rich states.

Panel Discussion I

The panel discussion, chaired by Shri K. Subramaniam, IFS (Retd), Member, CG State Planning Commission, and co-chaired by Shri B. Anand Babu, IFS (Retd), Former PCCF & MD, CG Forest

Development Corporation, focused on sharing successful models and best practices in forest-based livelihoods. Shri Mayank Agrawal, IFS, Divisional Forest Officer, Baloda Bazar, served as the rapporteur. The session provided an in-depth look into how forest-dependent livelihoods can promote economic resilience among tribal communities while ensuring ecological sustainability.

In his opening remarks, Shri K. Subramaniam emphasised the urgent need to shift perceptions of forest resources from being seen as inexhaustible to recognising their ecological thresholds. He highlighted that aligning forest product extraction with the rate of natural regeneration is crucial to preventing long-term degradation. Agriculture alone, he noted, often falls short in generating a marketable surplus for 60–70% of tribal populations. Therefore, enhancing secondary livelihood options, promoting tribal entrepreneurship, and initiating eco-restoration projects were presented as critical strategies for inclusive development. He also spoke about the high incremental capital-output ratio in forestry, stressing that targeted investments in forest ecosystems can yield long-term developmental dividends and strengthen community resilience.



Co-chair Shri B. Anand Babu built on this narrative by highlighting the significant dependence of tribal communities in Chhattisgarh on Non-Wood Forest Produce (NWFP). He expressed concern over the declining availability of key forest products like Amla and Chironji due to overharvesting and climate change. His recommendations included a multipronged approach

involving stronger conservation measures, community-led sustainable harvesting, and capacity-building initiatives. Special emphasis was laid on empowering tribal women through Self-Help Groups (SHGs) for skill enhancement and financial autonomy. He advocated for increased investment in research and the creation of standardised harvesting protocols. Drawing inspiration from cooperative models such as Amul, he proposed similar frameworks for the forest sector to ensure equitable benefit-sharing. Additionally, he recommended leveraging remote sensing for monitoring and called for institutional support in areas like pricing, marketing, and cold-chain logistics to reinforce the Minor Forest Produce (MFP) value chain.

The session featured several insightful presentations from panellists across states. Shri Sanjeev Kumar, IFS, PCCF and Member Secretary of the Jharkhand State Biodiversity Board, focused on NTFP's role in Jharkhand's tribal livelihoods, especially Lac and Tasar. He noted that nearly 10 lakh people in the state depend on forest-based income, with Jharkhand contributing 53% of India's Lac and 60–70% of Tasar production. However, challenges such as limited brood banks, poor infrastructure, and lack of market access continue to hinder the sector. His recommendations included developing Lac biopolymer as a sustainable plastic alternative, enhancing R&D, integrating traditional knowledge with modern technologies, and establishing dedicated Lac-focused institutions. He also suggested expanding Kusum plantations to scale Lac production sustainably.

Smt. Smita Bijjur, IFS, from the Karnataka Forest Department, shared Karnataka's experience in ecotourism-led livelihood generation. She highlighted the success of the Jungle Lodges and Resorts (JLR) network, especially the Kabini River Lodge, as flagship examples of nature-based tourism. Karnataka's ecotourism model focuses on themes like wildlife, adventure, wellness, and beach tourism, enhanced by digital tools such as the Aranya Vihar app. She emphasised the role of educational initiatives, such as summer and butterfly camps, in increasing local participation and environmental awareness.

From Maharashtra, Smt. Piyusha Jagtap, IFS, DCF (Working Plan), outlined the state's community-driven ecotourism approach. She cited successful models from Tadoba, Sahyadri, and Melghat, where livelihood opportunities such as homestays, safari guiding, bamboo handicrafts, and coffee plantations have flourished. She noted the rise in "revenge tourism" post-COVID as an opportunity to expand non-extractive tourism linked to hospitality and local craft economies. However, she cautioned that challenges such as a lack of recreation policy, inadequate capacity-building, and waste management must be addressed. Her presentation strongly advocated for consistent local participation to ensure long-term success.

Shri R. D. Raj, Director of Leafplate Technologies Pvt. Ltd., Hyderabad, presented on the value-addition process in leaf-based plate manufacturing. His four-phase model involves advanced cleaning to retain medicinal value, improved stitching for durability, multiple-size manufacturing, and eco-friendly branding and packaging. His innovations have resulted in significant value additions—up to 500%—and present a viable model for forest-based entrepreneurship aligned with sustainability and market demand.

Finally, community representatives from the Dhudmaras Village Committee in Bastar, led by Ms. Manisha Nag, shared their experiences. They highlighted how ecotourism has transformed their lives, offering dignified and sustainable income sources. They acknowledged the critical role of government support in enabling tribal economic independence. They advocated for

scaling up non-extractive livelihood models, increasing tribal mobilisation, and enhancing training and capacity-building efforts to ensure inclusive and long-term growth.

Together, the panelists and community representatives offered a rich tapestry of practical insights, scalable innovations, and strategic recommendations for advancing forest-based livelihoods through participatory, sustainable, and community-led approaches.

Session II

The session on "Sustainable Forest Management: Fostering Collaboration Between Industry and Government for Livelihoods" was chaired by Dr. R. K. Singh, IFS (Retd), Former PCCF & HoFF, Chhattisgarh, and co-chaired by Shri JACS Rao, IFS (Retd), Former PCCF & CEO, CG Tribal Local Health Traditions & Medicinal Plant Board, with Dr. Sanjeev Prashar, Professor (Marketing), IIM Raipur serving as the Rapporteur. The discussion centred on strengthening forest-based livelihoods through integrated efforts between government, industry, and community stakeholders.

In his address, Dr. R. K. Singh emphasised the intrinsic connection between tribal livelihoods, environmental sustainability, and broader climate action goals. He argued that creating meaningful and lasting impact in forest ecosystems requires collaboration that extends well beyond government agencies. Highlighting the need for localisation of the Sustainable Development Goals (SDGs), he advocated for the active participation of private sector players, civil society organisations (CSOs), academic institutions, and local governance bodies under the Panchayats (Extension to Scheduled Areas) Act (PESA). He noted that these actors play a vital role in advancing innovation in areas such as research and development, carbon credit mechanisms, eco-labelling, and Geographical Indication (GI) tagging of forest products.

Dr. Singh also pointed out that while robust policy frameworks exist for forest conservation and livelihood enhancement, the main challenge lies in effective on-ground implementation. He stressed that successful sustainable forest management hinges not just on policy creation but on the ability to translate those policies into action at the grassroots level. In this context, he urged that the role of the government should evolve from being merely regulatory to becoming an integrator, facilitator, and enabler. He called for institutionalised multi-stakeholder partnerships to ensure that efforts are synergised, scalable, and responsive to the needs of forest-dependent communities.

Overall, the session underscored the necessity of cross-sector collaboration to achieve a resilient and sustainable model of forest management that not only preserves ecological resources but also empowers tribal communities through inclusive and dignified livelihood opportunities.

Panel Discussion II

The final panel discussion brought together a diverse range of perspectives focused on optimising forest-based livelihoods through innovations in supply chain management, scientific research, and community empowerment. Col. Sanyam Kashyap, General Manager at TRIFED Head Office, New Delhi, led the discussion on "Optimising Supply Chain Management in Forest Resources – Insights and Future Prospects." He outlined TRIFED's pivotal role in enhancing tribal livelihoods through key initiatives under the PM Janjatiya Adivasi Nyaya Maha Abhiyan

(PM-Janman), such as the Minimum Support Price (MSP) for Minor Forest Produce (MFP), Van Dhan Yojana, and the development of retail markets. Looking ahead, he emphasised TRIFED's strategic focus on offering end-to-end support to tribal entrepreneurs—from processing and packaging to branding, marketing, and capacity building. He also highlighted the importance of forging new partnerships, particularly with Eklavya Model Residential Schools (EMRS), to expand outreach and awareness. Additionally, he advocated for bolstering B2B and institutional tie-ups, alongside integrating digital platforms and e-commerce to create robust, responsive, and inclusive logistics networks for forest products.

Dr. N. B. Chowdary from the Central Tasar Research & Training Institute, Ranchi, presented insights under the theme "Empowering Tribal Livelihoods – Challenges & Opportunities in Tasar Cultivation." He raised concerns over the decline in Tasar production due to habitat disruption and growing human interference, calling for targeted eco-restoration measures. India, he noted, is home to 45 eco-races of Tasar silkworms, including Tropical Tasar, Muga, Eri, and Oak Tasar, all of which require conservation. Dr. Chowdary pointed out the persistent disconnect between government schemes and research initiatives, advocating for greater synergy between policy and science. Among his innovative suggestions was the use of mulberry plantations in forest buffer zones to mitigate elephant intrusions. He emphasised the crucial role of government-backed restoration projects in reviving the Tasar silk ecosystem and ensuring livelihood continuity.

Focusing on research-driven transformation, Dr. Hari Om Saxena, Scientist at the Tropical Forest Research Institute (TFRI), Jabalpur, spoke on "Transforming Forest-Based Livelihoods – The Power of Research & Development." He identified key challenges in the Non-Timber Forest Produce (NTFP) sector, such as the lack of comprehensive data on wild resources, unsustainable harvesting practices, limited value addition, and poor market connectivity. As a way forward, Dr. Saxena proposed standardising harvesting timelines to maintain product quality, and diversifying NTFP applications in high-demand sectors like cosmetics, health, biofuels, food, dyes, and pharmaceuticals. He also recommended tapping into the potential of existing research institutions to bridge the gap between innovation and market access, thereby enhancing the commercial viability of forest-based products.

Adding a nutritional and entrepreneurial dimension to the discussion, Ms. Kavitha Dev, a millet entrepreneur, explored the theme "Millet Procurement – A Catalyst for Tribal Livelihoods & Nutritional Security." She shared her personal journey of promoting millet consumption as a means to tackle lifestyle diseases such as PCOD, thyroid conditions, and diabetes. Kavitha emphasised the immunity-boosting and nutrient-rich profile of millets, advocating for their mainstream inclusion through at least one millet-based meal per day. From an environmental standpoint, she stressed that millets are climate-resilient, requiring only 300 liters of water per kilogram, compared to 9,000 liters for rice, making them a viable option for sustainable agriculture. Her efforts exemplify how traditional food systems can offer market and health advantages, particularly in tribal and rural communities.

Members of the Para-taxonomist Programme added a grassroots perspective by sharing their firsthand experiences of identifying and harnessing the ecological and economic potential of previously overlooked forest products. Community members shared that Tamarind (Imli) collection has emerged as a stable source of income, supported by government-led training initiatives that have enhanced both knowledge and livelihood security. They emphasised the

need to further expand such training programmes, particularly for **tribal youth**, to ensure continued economic empowerment and ecological stewardship.

In conclusion, **Shri Amit Verma, IFS**, Director at NITI Aayog, summarised the session with key takeaways and a strategic vision for the way forward. He reiterated the **transformative potential** of forest-based livelihoods in improving the quality of life for tribal communities while promoting environmental sustainability. Shri Verma stressed the importance of **multi-stakeholder collaboration**, involving government bodies, research institutions, civil society, and local communities to co-create scalable and inclusive solutions. He recommended drawing lessons from **successful models across states**, enhancing **tribal enterprises** through skill development and infrastructure investment, and continuing **NITI Aayog's support** in aligning forest-based livelihoods with India's broader **green development agenda**.



In the concluding session of the workshop, **Shri Raju Agasimani, IFS, Chief Conservator of Forests (CCF), Raipur**, delivered the **Vote of Thanks**, extending heartfelt gratitude to all dignitaries, experts, and participants for their insightful contributions and active engagement throughout the event. He commended the **Department of Forest & Climate Change, Government of Chhattisgarh**, and **NITI Aayog** for their collaborative efforts in organising a meaningful and impactful workshop focused on strengthening forest-based livelihoods.

Shri Agasimani also acknowledged the **valuable contributions of tribal community representatives**, emphasising that their perspectives, rooted in lived experiences, brought depth, authenticity, and practical relevance to the deliberations. Their participation, he noted, served as a crucial reminder of the central role that tribal voices must play in shaping inclusive and sustainable livelihood strategies.

He concluded on an optimistic note, expressing confidence that the **key insights and**

recommendations emerging from the workshop would be translated into tangible policy actions, driving forward a shared vision of sustainable development, ecological preservation, and economic empowerment for tribal communities across the country.

Outcomes

The workshop generated valuable insights and actionable recommendations aimed at strengthening forest-based livelihoods while promoting sustainable economic growth for tribal communities. A central outcome was the reaffirmation that Non-Timber Forest Produce (NTFP)-based livelihoods and ecotourism play a critical role in supporting both tribal welfare and ecological sustainability. Integrating these sectors into broader state and national development strategies was emphasised as essential for enhancing economic resilience while safeguarding natural ecosystems.

One of the key themes that emerged was the potential for replicating successful community-led livelihood models across other forest-rich regions. Initiatives such as leaf plate manufacturing, Lac and Tasar cultivation, and localised ecotourism were identified as scalable interventions that could significantly boost rural livelihoods. These models not only promote sustainable resource harvesting but also strengthen market linkages and improve income stability for tribal populations.

The need for stronger institutional convergence was another prominent takeaway. Participants highlighted the importance of coordinated action among government departments, research institutions, civil society organisations, and local communities. This convergence is especially crucial in addressing persistent gaps in infrastructure development, policy implementation, and market access. Improved synergy across these actors can ensure more efficient resource management and streamlined delivery of forest-based livelihood programmes.

Empowering women and youth within forest economies was underscored as a priority area. Supporting Self-Help Groups (SHGs), implementing targeted skill development initiatives, and fostering tribal entrepreneurship were seen as key strategies to create dignified and sustainable livelihood opportunities. These efforts are vital to ensuring financial inclusion, especially for marginalised and underrepresented groups within tribal communities.

Finally, the workshop called for strategic policy and technological interventions to unlock the full potential of forest-based economies. Recommendations included formulating dedicated policies on recreation and ecotourism to guide environmentally responsible tourism practices, expanding the Minimum Support Price (MSP) regime to cover more forest products, and reinforcing cooperative marketing models to support fair price realisation. The use of digital platforms was proposed to enhance market access and supply chain efficiency. Furthermore, greater investment in research and development for sustainable forest product utilisation was encouraged. A notable suggestion was the establishment of a National Lac Board to oversee Lac cultivation, streamline regulatory processes, and strengthen market competitiveness.

These outcomes reflect a shared vision for inclusive, sustainable development rooted in forest ecosystems, with a strong focus on community empowerment, ecological preservation, and multi-stakeholder collaboration.

Internationalisation of Higher Education in India: Challenges, Best Practices, and Policy Interventions

Chennai, Tamil Nadu

NITI Aayog organised a day-long National Workshop on "Internationalisation of Higher Education in India: Challenges, Best Practices, and Policy Interventions" on Friday, 29th March 2025, at IIT Madras, Chennai. The event convened senior representatives from government bodies, academic leaders from premier Indian institutions, and global experts to deliberate on India's strategic roadmap for higher education internationalisation, in line with national priorities.

The workshop commenced with a context-setting address by Dr. Shashank Shah, Director and Senior Specialist (Higher Education), NITI Aayog, who outlined the strategic vision for internationalising higher education in India as envisioned in NEP 2020. Following this, Dr. Sonia Pant, Programme Director (Education), NITI Aayog, welcomed the participants and provided an overview of the Indian higher education sector and its potential. Additionally, Prof. Raghunathan Rengaswamy, Dean – Global Engagement, IIT Madras, and Principal Investigator of the ongoing NITI policy research study on 'Internationalisation of Higher Education in India,' presented a brief overview of the study and introduced the thematic structure of the workshop.

The Inaugural Session featured special addresses by Dr. (Mrs.) Pankaj Mittal, Secretary General of AIU, and Shri Adrian Mutton, Executive Chairman of Sannam S4 Group, are both institutional members of the consortium undertaking the NITI study. Prof. Kamakoti Veezhinathan, Director of IIT Madras, delivered the Inaugural Address, while Dr. Vinod Kumar Paul, Member (Education) of NITI Aayog, presented the keynote address.



The workshop provided a platform for meaningful dialogue and collaboration, aiming to formulate actionable policy interventions to facilitate the internationalisation of Indian higher education in alignment with national objectives and global best practices.

Session I

The first technical session on Internationalisation of Higher Education in India—Retrospect and Future Prospects of the workshop focused on providing a comprehensive analysis of past efforts and future directions in the sector.

Dr. Kuldeep Dagar, Joint Secretary, AIU, presented key findings from the ongoing NITI Aayog study, shedding light on emerging trends and strategic recommendations. Esteemed speakers, including Ms. Louise Kinnaird, Executive Director of the Asia-Pacific Association for International Education (APAIE); Dr. Aghila, Director, NIT Trichy; Dr. Erik Lithander, Deputy Vice Chancellor, University of Auckland; and Dr. Roger Brindley, former Vice Provost, Penn State University, USA, shared global best practices and emphasised the necessity for systemic reforms to enhance India's higher education landscape.

The session also featured institutional case studies, highlighting successful internationalisation initiatives from key Indian universities. Dr. Mohit Dubey, Pro Vice Chancellor, MIT ADT University, Pune; Dr. Ashok Daryani, Director - International Relations, Sharda University, Greater Noida; and Dr. Sasidhar Gumma, Dean - Global Engagement, IIT Tirupati, presented insights into institutional best practices, demonstrating effective strategies in fostering global partnerships and academic exchange. This session provided valuable perspectives on strengthening India's higher education framework, aligning it with global standards while preserving its unique educational identity.



Session II

The second technical session focused on Student and Faculty Mobility Programmes, exploring strategies to facilitate academic exchange and collaboration. Ms. Oshin Dharap, Consultant (Higher Education), NITI Aayog, presented key findings from the ongoing NITI study, highlighting trends in global mobility and its impact on Indian higher education.

Distinguished panelists, including Dr. B. Chandrasekar, Executive Director, Ed CIL; Prof. Vaidhyasubramaniyam, Vice Chancellor, SASTRA University, Thanjavur; Mr. Jay Poria, Head of International Relations and Partnerships (STEMM), Australian National University, Canberra; and Prof. Jenny Dixon, Provost, Universitas 21, New Zealand, deliberated on models for credit transfer, dual degrees, and research partnerships, emphasising their significance in fostering cross-border academic opportunities.

Additionally, country perspectives were shared by Shri Etienne Rolland Piegue, Consul General of France in Puducherry and Chennai; Ms. Janaka Pushpanathan, Head - South India, British Council; Shri Tomas O'Brien, Senior Advisor, Australian Trade and Investment Commission; and Shri Sagar Bahadur, Executive Director - India and South Asia, Acumen, who underscored the importance of mutual recognition, funding mechanisms, and policy alignment in strengthening global engagement.

Session III

The third technical session addressed the Internationalisation of Curricula & Programmes, focusing on curriculum development and challenges in implementing joint, dual, and twinning programmes. Prof. Bhawna, Head, Transnational Education, Acumen, presented findings from the ongoing NITI study, providing an academic perspective on evolving global education models.

Panelists included Prof. B.J. Rao, Vice Chancellor, Hyderabad Central University; Prof. R. Baskaran, Director, Centre for International Relations, Anna University; Shri Daniel Baxter, Associate Dean - International, Glasgow Caledonian University, Scotland, UK; and Dr. T. Kishen Kumar Reddy, Vice Chancellor, Jawaharlal Nehru Technological University, Hyderabad, who deliberated on curriculum innovation and the hurdles in developing globally integrated academic programmes.

Institutional perspectives were provided by Shri Siddharth Shahani, Executive Vice President, Atlas Skilltech University, Mumbai; Shri Balakrishna B., Head – External Affairs & Marketing Programmes, IIM Bangalore; Ms. Amrita Sadarangani, Senior Director & Head – Global Research Alliances, Ashoka University; and Prof. Ankit Agarwal, IIT Roorkee, who discussed approaches to co-designing globally relevant programmes tailored for international collaboration.

Session IV

The fourth technical session explored strategies for expanding the global footprint of Indian universities through offshore campuses. Prof. Preeti Aghalayam, Director, IIT Madras Zanzibar Campus, presented key insights from the ongoing NITI study, focusing on policy frameworks and operational challenges.

Panelists, including Dr. Archana Thakur, Joint Secretary, University Grants Commission; Prof. Joby Joseph, Provost, IIT Delhi Abu Dhabi Campus; Dr. Vijayakumar Chandrasekaran, Vice Chancellor, VIT Mauritius; Dr. Kiran Trivedi, Associate Professor, University of Wollongong, GIFT City Campus; and Shri Basab Choudury, Associate Director - South Asia, Deakin University GIFT City Campus, shared institutional experiences in establishing Indian campuses overseas and hosting foreign universities within India, with a special focus on GIFT City, Gandhinagar.

Legal and regulatory considerations were outlined by Ms. Aarushi Jain, Partner - Education, Cyril Amarchand Mangaldas, who provided insights into facilitating international campuses in India. The session underscored the importance of quality assurance, strategic collaborations, and regulatory support in advancing the internationalisation of Indian higher education through offshore initiatives.

In the concluding session, Prof. Raghunathan Rengaswamy, Dean - Global Engagement, IIT Madras, presented a consolidated summary of key takeaways from the workshop. Dr. Vinod Kumar Paul, Member (Education), NITI Aayog, outlined six major Action Pathways that should be pursued as an outcome of the deliberations. Dr. Sonia Pant, Programme Director (Education), NITI Aayog, delivered the Vote of Thanks, expressing appreciation to all participants for their contributions towards shaping the future of India's higher education internationalisation. This comprehensive workshop served as a critical platform for knowledge-sharing, fostering collaboration, and driving policy recommendations towards a globally integrated higher education ecosystem in India.



Outcomes

The workshop's insights and recommendations have been consolidated into four thematic areas, aligned with the technical sessions. Each reflects critical priorities and forward-looking strategies for advancing the internationalisation of higher education in India.

India faces a significant imbalance between outbound and inbound student mobility, with far more Indian students studying abroad than foreign students coming to India. Short-term

exchange programmes offer a viable alternative to full-time overseas study, especially where financial or procedural barriers exist. However, attracting international students remains a challenge due to complex visa processes, lack of structured recruitment strategies, and insufficient national-level planning. Furthermore, while undergraduate enrolment is strong, the underdevelopment of postgraduate and research programmes hampers long-term international research collaborations. India's fragmented institutional partnerships contrast with structured global models like the Ivy League or C9 League, suggesting a need for cohesive alliances and sustainable collaboration frameworks. Infrastructure, safety, and inadequate cultural integration also affect India's global academic appeal, underscoring the need for improved campus support, orientation services, and more inclusive policies.

Though aligned with NEP 2020, India's internationalisation policies face bureaucratic delays and regulatory inconsistencies that hinder faculty and student mobility. Rigid credit transfer systems and limited degree recognition constrain exchange programmes. To enhance global engagement, institutions must adopt transparent, flexible frameworks and secure long-term funding. Internationalised curricula and joint degrees can improve academic competitiveness but require strengthened accreditation mechanisms and logistical support. Establishing Indian campuses abroad remains a promising but complex goal due to financial and legal hurdles. Sustained investment, including through public-private partnerships and alumni contributions, will be essential to scale internationalisation efforts effectively.



To enhance global competitiveness, Indian HEIs must undertake strategic reforms focused on improving research output, faculty diversity, and global rankings. Effective NEP 2020 implementation depends on aligning institutional policies with internationalisation goals and streamlining cross-border academic processes. Many institutions still rely on individual-led collaborations rather than structured institutional frameworks, limiting long-term impact. Simplifying administrative procedures and increasing financial support for international

students are key to improving India's appeal. Moreover, digital platforms, virtual mobility, and online collaborations are essential tools to overcome geographical and financial barriers, offering scalable pathways for broader global academic engagement.

A robust and simplified regulatory environment is vital for establishing international campuses and partnerships. A single-window clearance mechanism for approvals and clear credit and financial regulations will improve institutional efficiency. India's presence in global higher education can be strengthened by strategically expanding offshore campuses in locations aligned with academic priorities. Examples like IIT Delhi's Abu Dhabi campus and IIT Madras Zanzibar campus show the value of local partnerships and infrastructure planning. Beyond mobility, academic collaborations must include joint research hubs and industry-aligned programmes in areas like AI, fintech, and sustainability. Increasing international student diversity through flexible admissions and expanded financial aid, alongside strong cultural integration efforts, will enhance India's academic appeal. Leveraging hybrid and digital models will further strengthen cross-border engagement.

Advancing the internationalisation of Indian higher education demands a comprehensive national strategy underpinned by streamlined regulations, robust institutional frameworks, and sustainable funding. Priorities include expanding student and faculty mobility, integrating digital platforms, fostering long-term international partnerships, and aligning academic systems with global standards. These measures will help position India as a globally connected, high-quality destination for higher education. A detailed policy report on this theme, prepared by the Education Division, will be released in May–June 2025.

Developing an Ecosystem for Assistive Technology in India

Pune, Maharashtra

As part of its NITI-State Workshop Series under the SSM Initiative, NITI Aayog, in collaboration with the Government of Maharashtra, organised a day-long workshop on 'Developing an Ecosystem for Assistive Technology in India' on 9th April 2025, at YASHADA, Pune.

The primary objective of the workshop was to convene key stakeholders, including representatives from Central Government Ministries/Departments, State/UT Governments, international organisations, and the assistive technology (AT) industry/startups, to deliberate on the current landscape and future directions of assistive technology in India. The discussions focused on identifying policy interventions, technological innovations, and strategies for fostering a comprehensive ecosystem to promote assistive technology in the country.



The workshop saw active participation from concerned Central Ministries, representatives from State/UT Governments, and international organisations such as the World Health Organization (WHO), United Nations Development Programme (UNDP), and AT Scale. In addition, leading assistive technology startups, including AssisTech Foundation and Tynor, contributed valuable insights during panel discussions on enhancing the accessibility, affordability, and scalability of assistive technology solutions in India.

Through expert deliberations and multi-stakeholder engagement, the workshop aimed to lay the groundwork for policy reforms, technological advancements, and collaborative efforts to establish India as a leader in assistive technology, ensuring inclusive and equitable access for all individuals requiring assistive solutions.

The workshop witnessed participation from senior government officials, policymakers, and international organisations, including Hon'ble Ministers: Shri Sanjay Shirsat, Minister of Social Justice and Special Assistance Department, Government of Maharashtra; and Shri Ramdas Athawale, Union Minister of State for Social Justice & Empowerment; Central Ministries: Ministry of Social Justice and Empowerment, Department of Empowerment of Persons with Disabilities; and Ministry of Health and Family Welfare; and representatives from 25 States; International Organisations: World Health Organisation (WHO), United Nations Development Programme (UNDP), International Committee of the Red Cross (ICRC), AT Scale, and United Nations Resident Coordinator's Office (UNRCO)

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In addition to the inaugural and concluding sessions, there were three technical sessions in the workshop based on the following themes and a Special Session on SSM.

- Technical Session I- Improving access to assistive technology in India
- Technical Session 2- State Initiatives in Assistive Technology
- Technical Session 3- AT Manufacturing and Global Collaboration.

The workshop was inaugurated by Shri Sanjay Shirsat, Hon'ble Minister of Social Justice and Special Assistance Department, Govt of Maharashtra. Dr. V.K. Paul, Hon'ble Member, NITI Aayog, Smt. Sujata Saunik, Chief Secretary, Govt. of Maharashtra, Shri Rajib Kumar Sen, Senior Adviser, NITI Aayog, Shri Niranjan Kumar Sudhanshu, Director General, YASHADA, and Shri K.S. Rejimon, Joint Secretary, NITI Aayog, were also present among other dignitaries. During the inaugural address, the Hon'ble Minister highlighted the importance of the domestic capability of the AT industry and its role in promoting inclusivity. Dr. V.K. Paul, Member, NITI Aayog, in his special address, emphasized the health paradigm of AT to ensure inclusion at the grass root level and the urgent need for developing an eco-system for Assistive Technology, which is critical for social inclusion in achieving the vision@2047. Smt. Sujata Saunik, CS Maharashtra, highlighted the pillars of AT and various initiatives taken by the state of Maharashtra to promote the AT ecosystem and the need for a strategic approach for meeting the domestic AT demand for PwDs and elderly persons.

Session I

The this technical Session on "Improving Access to Assistive Technology in India", representatives from the Central Government, ICMR and National Institutes have emphasized on the i) Emerging needs of AT for the PwDs, rising elderly population, and its integration in the inclusive classrooms for children with special needs as well as in the Healthcare delivery system ii) Role of government initiatives, policies, and inter-sectoral collaborations which are playing a transformative role in making assistive technologies more accessible for persons with disabilities (PwDs), the elderly, and other marginalized communities. It was also highlighted that there is a need for creating the national database to assess the current demand of AT products for well as the need for establishment of Centre of Excellence for Assistive Technology in India for a more focused approach.

In the Special Session on State Support Mission Shri Shoyabahmed Kalal, Director, NITI Aayog, deliberated upon the key initiatives taken under the State Support Mission of NITI Aayog, such as ADP/ABP, State Institution for Transformation, Viksit Bharat Strategy Room for display and compilation of national database, etc. and NITI for States Portal. Initiatives of NITI Aayog for enhancing the development of the states as well as to promote Cooperative and Competitive Federalism were also discussed.

Session II

In the session on 'State Initiatives in Assistive Technology', the representatives from the state governments of Kerala, Goa, Maharashtra, Odisha, Punjab, Telangana and Tamil Nadu, highlighted how targeted policies, partnerships and on-the-ground efforts are improving the reach and impact of AT. The key points discussed are as under:

- Govt. of Kerala: The Government of Kerala shared that they have drafted a Policy on Assistive Technology which is a welcome step focused on bridging the rural urban gap in addressing demand for AT products.

- Govt. of Maharashtra: The Government of Maharashtra has specifically earmarked 5% of their total budget for the welfare of PwDs, which includes the distribution of AT devices. The Govt is also engaging with the private start- ups to promote domestic production of AT devices.
- Govt of Goa: The representative of Govt of Goa shared that, considering the rising no of Patients with Spinal Cord Injury, the Govt is planning to establish a Centre for Spinal Cord Injury. Initiatives like the 'Purple Fest for PwDs' to promote inclusion of PwDs, as well as engagement with AT start-ups for promotion of AT, are key initiatives.
- Govt of Telangana: In addition to its existing schemes for the PwDs and Elderly Persons, the Govt of Telangana has established the Telangana Innovation Cell to encourage and promote potential ideas.



Session III

In this technical Session on 'AT Manufacturing and Global Collaborations' representatives from international organizations such as WHO, UNDP, AT Scale, and AT start-ups such as Assistech Foundation, Tynor, etc. highlighted the following points:

- Best practices and initiatives taken by international organizations to promote global collaborations and investment in the AT Sector.
- The efforts taken under the existing industrial policies to support the manufacturing of AT products were highly appreciated.
- With respect to sharing challenges faced by the start-ups, it was mentioned that there is a need to promote the use of AT to increase demand and, therefore, supply, the need to meet cost effectiveness to meet the user demand as well as encouraging AT start-ups.

The Concluding Session of the was graced by Shri Ramdas Athawale, Hon'ble Union Minister

of State for Social Justice & Empowerment. In his remarks, he briefed upon India's potential to become a global supplier of AT products and encouraged the budding start-ups to ensure the quality and standards while manufacturing the AT products. He also called upon the Central Ministries and States to build a supportive environment for encouraging the start-ups. The workshop ended with concluding remarks from Shri K.S. Rejimon, Joint Secretary, NITI Aayog.

Outcomes

The event marked a pivotal step in uniting representatives from Central Ministries, State Governments/UTs, and assistive technology (AT) start-ups, fostering in-depth discussions on the current state of AT products in India. It provided a platform for stakeholders to identify key challenges faced by AT start-ups, deliberate on necessary policy interventions, and outline strategic approaches for building a stronger, more inclusive assistive technology ecosystem.

One of the key outcomes of the workshop was the successful sensitization of State Government officials on the importance of fostering an AT ecosystem within their respective regions. Participants actively engaged in conversations around policy reforms, technological advancements, and collaborative strategies to promote innovation and accessibility.

Through expert-led discussions. valuable inputs were gathered and these recommendations will be included in the *National Strategic Framework for Assistive Technology*; a position paper currently being developed by the Social Justice & Empowerment (SJE) Division. The document will serve as a comprehensive roadmap to guide national efforts in advancing assistive technology accessibility and innovation.

Vision Assam @ 2047

Guwahati, Assam

NITI Aayog, in partnership with the Transformation and Development Department and the State Innovation and Transformation Aayog (SITA), Assam, convened the *Viksit Assam @2047* Workshop to chart a roadmap for the state's long-term development. The workshop aimed to identify key sectoral priorities and actionable strategies to realise the vision of a developed Assam by the year 2047. Through focused deliberations, the event fostered a collaborative environment for aligning state and national development goals.

The workshop was led by Dr. V.K. Paul, Hon'ble Member of NITI Aayog, and was graced by the presence of Dr. Ravi Kota, Chief Secretary of Assam, along with senior officials from various departments of the state and central governments. Technical experts, development partners, and representatives from multiple sectors participated actively in the discussions, which centred on policy frameworks, infrastructure development, and inclusive growth strategies.



Prominent figures who contributed to the workshop included Dr. O.P. Agarwal, Distinguished Fellow at NITI Aayog; Dr. Neelam Patel, Project Director (Assam), NITI Aayog; Shri Ranjan Sharma, Special Commissioner & Secretary, Transformation & Development Department; and Shri P. Vijaya Bhaskar Reddy, CEO of SITA. The workshop was further enriched by the insights of Dr. Pravakar Sahoo and Shri Yugal Kishore Joshi, Project Directors at NITI Aayog; Shri Franklin L. Khobung, Joint Secretary (INM), Government of India; and Dr. Vikramaditya Pandey, Principal Scientist, Horticultural Science Division.

International collaboration was represented through contributions by Mr. Pratap Sinha and Jeherul Islam from GIZ. The education sector was also actively engaged, with Shri Shibdas Sarkar, Director, Department of School Education & Literacy, Government of India, sharing sectoral insights. Additionally, senior officials from Assam's Departments of Industries, Health, Education, Power, and Transport participated in the workshop, reflecting a multi-sectoral approach to planning and implementation.

Overall, the workshop laid a strong foundation for coordinated action, drawing on diverse expertise to shape Assam's path toward inclusive and sustainable development by 2047.

Sessions

The workshop sessions of the *Viksit Assam @2047* initiative provided a comprehensive platform for sectoral analysis and strategic planning toward Assam's long-term development. The Keynote Address was delivered by Dr. V.K. Paul, Hon'ble Member of NITI Aayog, who highlighted Assam's strategic significance in the Viksit Bharat 2047 vision. He emphasised the state's demographic advantages, rich natural resource base, and growing economic momentum, especially after recent investment summits. Dr. Paul stressed the importance of sustained long-term planning, institutional reform, and policy coherence to align Assam's development trajectory with national priorities.

Dr. Neelam Patel, Senior Advisor at NITI Aayog, outlined a detailed framework for *Vision Assam 2047*, proposing the establishment of measurable targets for 2030 and 2047, with a special focus on agriculture and allied sectors. She advocated the integration of global best practices while tailoring interventions to Assam's unique socio-economic context. Her recommendations emphasised the need for data-driven policy-making and actionable goals to enable sustainable development outcomes.

Dr. O.P. Agarwal, Distinguished Fellow at NITI Aayog, provided a comprehensive SWOT analysis of Assam, identifying tourism, healthcare, and environmental sustainability as key opportunity areas. He called for decentralised development models and proposed sustainability-focused initiatives such as plastic-free cities and climate-conscious urban planning to strengthen the state's long-term resilience.

Tourism was identified as a critical growth driver. Shri Yugal Kishore Joshi, Programme Director at NITI Aayog, emphasised Assam's strong domestic tourism base and untapped potential in international markets. He advocated for developing tourism infrastructure, preserving cultural heritage, adopting smart tourism practices, and promoting private sector participation and skilling. The Director of the Tourism Department, Government of Assam, reinforced this vision by presenting plans to scale high-value, high-volume tourism with minimal environmental impact, capitalising on Assam's wildlife sanctuaries, biodiversity, and unique tourism offerings like golf courses.

In the agriculture and horticulture sectors, the Secretary of the Agriculture Department, Government of Assam, highlighted the state's role as a potential agri-horti powerhouse. Priorities included achieving nutritional security, becoming net-surplus in key commodities by 2047, mobilising investment, undertaking sectoral reforms, and strengthening risk mitigation and climate resilience frameworks. Shri Franklin L. Khobung, Joint Secretary (INM), Ministry of

Agriculture, pointed out inefficiencies in logistics and fragmented value chains, recommending technology integration and market-oriented reforms. Dr. Vikramaditya Pandey, Principal Scientist, showcased region-specific horticultural innovations, particularly in fruit, spice, and vegetable cultivation suited to the Northeast.

In the area of fisheries and aquaculture, Shri Pratap Sinha and Shri Jeherul Islam from GIZ outlined progress under the Sustainable Aquaculture Initiative. Their presentation focused on scientific pond management, improving access to finance, and the importance of multi-stakeholder platforms. Short-term goals included ensuring food security and diversifying rural livelihoods through eco-friendly aquaculture and natural farming practices.



The session on MSME and industrial development emphasised the sector's vital role in Assam's economy. The Secretary of the Industries Department, Government of India, showcased flagship initiatives such as the *Chief Minister's Atma Nirbhar Asom Abhiyan* and *Advantage Assam 2.0*. These programmes aim to promote entrepreneurship, enhance skill development, and support women and youth-led enterprises. The discussion called for stronger capacity-building initiatives, policy support, and an enabling infrastructure to attract investment and foster industrial growth.

Collectively, the workshop sessions underscored a multi-sectoral, inclusive, and innovation-driven roadmap for Assam's development. By addressing strategic areas such as tourism, agriculture, aquaculture, and MSMEs, the workshop laid a strong foundation for achieving the goals of *Viksit Assam @2047*, in alignment with India's broader vision of inclusive and sustainable national growth.

Day 2: Healthcare, Education, Infrastructure & Energy

The second day of the *Viksit Assam @2047* workshop focused on critical enablers of human and economic development—healthcare, education, infrastructure, and energy. These discussions brought forward evidence-based assessments and forward-looking strategies to strengthen Assam's long-term growth trajectory.

Healthcare Advancements & Inclusive Policies

The Secretary of the Health Department, Government of Assam, presented a compelling overview of the state's healthcare advancements. Assam has achieved a 31% reduction in under-five mortality and a 33% decrease in infant mortality—both figures exceeding national averages. While these outcomes reflect commendable progress, he underscored the need to extend healthcare access to remote and aspirational districts. The session emphasised the importance of building an inclusive, equitable health system through focused outreach, infrastructure enhancement, and human resource development in underserved regions.



Education & EdTech Innovation

In the education session, Shri V. N. Masthnaiah, Director of SIEMAT, shared a comparative analysis between Assam and Andhra Pradesh, outlining key lessons and potential reforms. He recommended the development of a state-specific EdTech platform, a phased implementation of smart classrooms, and technology-enabled models for inclusive and outcome-driven education. Building on this, officials from the Department of School Education, Assam, detailed strategies to create a modern, technology-integrated education ecosystem. Their plan included strengthening equitable access, fostering digital learning, and aligning curriculum with emerging industry needs to build a future-ready workforce.

Infrastructure & Energy Roadmap

Officials from the Ministry of Road Transport & Highways (MoRTH) and Assam Electricity Grid Corporation Limited (AEGCL) presented a holistic roadmap for advancing infrastructure and energy systems in the state. They provided an analysis of the current landscape, identifying critical gaps, governance inefficiencies, and policy barriers. Key focus areas included mobilising investments, improving execution frameworks, and integrating risk mitigation strategies. The proposed roadmap highlighted the need for sustainable, climate-resilient connectivity and a reliable energy infrastructure to support inclusive growth and ensure Assam's long-term economic competitiveness.

Together, the sessions on Day 2 reinforced the importance of integrated development across social and physical infrastructure sectors, aligning policy interventions with measurable outcomes to drive Assam's transformation by 2047.



Outcomes

Assam holds significant potential to achieve high and sustained economic growth by effectively leveraging its demographic dividend. With an ambitious target of becoming a one trillion-dollar economy by 2047, the state must proactively address vulnerabilities such as frequent natural disasters, economic disruptions, and infrastructural bottlenecks. The workshop identified key strategic growth drivers and proposed a multi-pronged approach to accelerate Assam's development journey.

One of the primary growth enablers highlighted was tourism, which can act as a powerful economic catalyst. This requires a strong focus on enhancing safety, modernising infrastructure, and implementing skill development initiatives to position Assam as a global tourism destination. Connectivity enhancement was another critical area, especially considering the geographical challenges posed by the Brahmaputra River. Upgrading road, air, and inland water transport systems—guided by global standards—was identified as essential for regional integration and mobility.

The sessions also emphasised increasing female workforce participation and promoting balanced urbanisation. Inclusive planning that expands economic opportunities for women while bridging the urban-rural divide was seen as pivotal to equitable growth. Finally, the importance of green energy and sustainable development was underlined. Strategies include harnessing local natural resources, integrating rural and urban development plans, and exploring smart town models and metro systems to enhance both environmental and economic sustainability.

To translate these strategic priorities into actionable outcomes, the workshop recommended the formation of dedicated sectoral committees focused on areas such as agriculture, health, education, industry, and environment. These committees will undertake in-depth assessments of sectoral strengths, challenges, and opportunities, laying a data-driven foundation for informed policymaking. The Government of Assam, with support from NITI Aayog, will spearhead and coordinate these efforts to ensure alignment with national developmental frameworks.

A high-visibility public launch of selected focus areas will be organised under the leadership of the Hon'ble Chief Minister of Assam. This event will not only showcase the government's strategic intent but also foster transparency and invite public participation. Tools such as citizen dialogues, digital platforms, and outreach campaigns will be used to gather inclusive feedback and build public ownership of the vision.

In parallel, the integration of citizen inputs into the *Vision Assam 2047* draft document is a key commitment. Grassroots perspectives and innovative ideas from across the state will be incorporated to ensure that the vision is both aspirational and grounded in local realities. A multi-stakeholder validation workshop will be conducted as the final stage of consultation, involving representatives from government departments, academia, industry, civil society, youth, and community organisations. This consultative approach will ensure the final vision document is inclusive, well-informed, and actionable, paving the way for Assam's transformation into a resilient, prosperous, and inclusive economy by 2047.

Skilling, Employment & Livelihood for women, tribal, and youth in Chhattisgarh

Raipur, Chhattisgarh

The workshop, jointly convened by NITI Aayog and the Chhattisgarh State Skill Development Authority (CSSDA), served as a dynamic platform to explore pathways for skilling, employment, and sustainable livelihoods, particularly for youth, women, and tribal communities. With an emphasis on inclusive development, the sessions brought together key stakeholders from industry, government, and civil society to co-design actionable strategies aimed at strengthening human capital and enabling equitable economic participation.



The event witnessed robust participation from over 450 individuals, bringing together a diverse spectrum of leadership, expertise, and grassroots voices. Distinguished attendees included Shri Vishnu Deo Sai, Hon'ble Chief Minister of Chhattisgarh; Shri Vijay Sharma, Hon'ble Minister for Technical Education and Employment & Training; Shri Amitabh Jain, Chief Secretary of Chhattisgarh; Dr. Sonia Pant, Programme Director (Skill Development, Labour & Employment), NITI Aayog; Dr. S. Bharathidasan, Secretary, Skill Development and Technical Education, Government of Chhattisgarh; and Shri Ashish Bhatt, Member Secretary, State NITI Aayog, Chhattisgarh. Officials from the governments of Chhattisgarh, Odisha, and Madhya Pradesh, as well as representatives from NITI Aayog, added strength to the proceedings. The event also engaged leaders from the private sector, including Mahindra & Mahindra; academic experts from IIM Raipur and NIT Raipur; and key nonprofit organisations such as Naandi Foundation, Transforming Rural India Foundation (TRIF), IWWAGE, Pradan, Chinhari Art Foundation,

Navgurukul, Bamboo Craft Startup, and the Foundation for Ecological Security (FES). The presence of successful entrepreneurs and community leaders from across Chhattisgarh further enriched the dialogue with local insights and on-the-ground experiences. This diverse convergence reflected a shared commitment to collaborative action for inclusive development.

Inaugurated by the Hon'ble Chief Minister of Chhattisgarh, Shri Vishnu Deo Sai, the workshop brought together a diverse cohort of stakeholders, including senior officials from NITI Aayog, state governments, industry leaders, and academic institutions. The event served as a collaborative platform to explore inclusive strategies for skilling, employment, and livelihood generation, particularly for youth, women, and tribal communities.

Three key panel discussions shaped the dialogue:



Session I: Empowering Tribals: Towards Inclusive Economic Growth

Discussions centred on scaling up value chains in Minor Forest Produce (MFP) such as lac, imli, kosa, bamboo, and medicinal plants through strengthened Self-Help Groups (SHGs). Emphasis was placed on setting up local processing units, expanding Sanjeevni outlets, and enhancing product branding. The session also highlighted the potential of preserving tribal heritage, such as Devgudi traditions, folk arts, and cuisines, as tangible economic assets, alongside integrating eco-tourism initiatives (e.g., Bastar homestays, Kanger Ghati Park) into sustainable livelihood plans.

Session II: Promoting Sustainable Livelihoods and Skill Development for Women

With a Female Labour Force Participation Rate (FLFPR) of 62%, Chhattisgarh is positioned to become a leader in women-led development. The session advocated for empowering women as economic anchors by strengthening SHGs, enabling market-oriented production, improving access to finance, and expanding skilling in non-traditional sectors. The importance

of product quality, standardisation, and digital–physical market integration—especially for imli and mahua—was underscored. Vocational training strategies aligned with Industry 5.0 and 6.0 were discussed, including the Ministry of Skill Development and Entrepreneurship's ₹60,000 crore plan for ITI upgrades. Scalable training models such as Odisha's World Skill Centre and Navgurukul were spotlighted, along with rehabilitation-linked skilling for surrendered Naxals.



Session III: Skilling, Employment, and Entrepreneurial Opportunities for Youth

This session explored community-led initiatives such as Baiga homestays and bamboo rafting in Bastar that blend local enterprise with sustainable tourism. Participants emphasised the development of local markets and cluster-based approaches to support women entrepreneurs, complemented by training-of-trainers programmes through premier institutions like IITs and NITs. High-potential sectors identified included construction, the care economy, green jobs, digital services, logistics, and tribal handicrafts, each linked to national missions such as PM Vishwakarma, the Green Hydrogen Mission, and PM JANMAN.

Outcomes

The conclave served as a catalyst for advancing a future-ready skilling ecosystem in Chhattisgarh, marked by the formalisation of four high-impact institutional partnerships. These Memoranda of Understanding (MoUs) reflect a strong multi-stakeholder approach that bridges state-led initiatives with industry expertise and civil society innovation. The key MoUs signed included agreements between the Chhattisgarh State Skill Development Authority (CSSDA) and NASSCOM, CSSDA and the Naandi Foundation, CSSDA and Mahindra & Mahindra, and the Higher Education Department with both NASSCOM and the Naandi Foundation. These partnerships are aligned with the broader vision of Viksit Bharat@2047 and aim to equip the youth and marginalised communities of Chhattisgarh with inclusive, technology-enabled, and demand-driven skills.

Discussions held across three thematic sessions—*Empowering Tribals: Towards Inclusive Economic Growth, Promoting Sustainable Livelihoods and Skill Development for Women, and Skilling, Employment, and Entrepreneurial Opportunities for Youth*—brought forth a rich body of insights, best practices, and replicable models. Each session emphasised the importance of community-led, context-specific interventions while highlighting the critical need for alignment with national missions and private sector innovation.

The outcomes of the conclave have established a strategic foundation for shaping future policy directions and targeted programmatic efforts in Chhattisgarh. The discussions offered a clear roadmap to expand equitable economic participation by enhancing sustainable livelihoods, strengthening market linkages, upgrading vocational training infrastructure, and reinforcing Self-Help Group (SHG) and cluster-based enterprise models. With these learnings and partnerships in place, the Government of Chhattisgarh is well-positioned to implement impactful initiatives that empower tribals, women, and youth across the state.

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NITI Aayog