

RESEARCH AND INNOVATION POLICY



shaping the way cities move

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CHAPTER 1: INTRODUCTION

1.1 Context

Sustainable urban mobility is a key societal need and also a determinant of the quality of life in a city. Cities that have tackled the mobility challenge imaginatively and holistically have succeeded in building sustainable mobility eco-systems, and in harnessing consequent economic and environmental benefits. Over the last decade, several innovative solutions (or options) have emerged in the urban mobility space (e.g., technology enabled shared mobility, MaaS, tactical urbanism, active mobility). Experience from across the world has demonstrated that a cross-sectoral approach supported by technology could lead to sustainable and scalable urban mobility solutions.

Karnataka is a leader in Innovation

Karnataka, consecutively for two years in a row, is the top-ranking state in NITI Aayog's - **India Innovation Index in 2020 and 2021**. The index evaluates the innovation ecosystem and ranks different States based on how they support innovation and technologies. Karnataka is a pioneer in innovation and is well positioned to attract, support and test innovative ideas.

1.2 Need for a Research and Innovation Policy

Since its inception, DULT has been at the forefront of implementing several collaborative and innovative initiatives in the urban mobility space. DULT has also established key partnerships with academic institutions, community organizations, Industry etc. over the years. Recently, DULT has also created three technical groups with representation from Academia, Industry and Civil Society to enable focused discussions and collaborations on alternative mobility, active transport and mobility data. DULT will continue to leverage the existing academic/industry links, and forge new links in its endeavor to provide a reliable platform for innovators in urban mobility.

Efficient urban transport systems are critical for the functioning and sustainable development of urban areas as they could ensure access to education, health, employment, recreation, goods etc. The pace of technological and social changes in the past few decades have left a mark on the nature of urban mobility, and it is expected that disruptive ideas and technologies would be de rigueur in future. Karnataka is poised for rapid urbanization in the coming decades. The challenge of providing sustainable mobility while creating lively urban spaces requires careful consideration of several interconnected issues. Bespoke solutions will have to be developed, necessitating investments on research and innovation in urban mobility.

In the above context, DULT believes that a formal policy with defined objectives will provide the necessary impetus to support research initiatives and accelerate innovation in sustainable urban mobility.

1.3 Overview of some DULT Innovation initiatives

	Initiatives	Current status
2013	<p>Cycle Day- Bengaluru</p> <p>The Cycle Day is an open streets event initiated by the DULT in October, 2013 in collaboration with community organizations to promote and encourage cycling for urban commute. It has evolved through a process innovation, and is the longest-running Cycle day in the country.</p>	<p>Cycle Day currently has over 50 Community Partners and 500+ such events have been conducted across Bengaluru till date.</p>
2015	<p>Open Streets – Bengaluru</p> <p>Open Streets-Bengaluru was implemented on an experimental basis in one neighborhood in Bengaluru, to demonstrate the fact that with active mobility modes and neighborhood level bus services, one can access most of the services needed by residents on an average day. The first edition of Open Streets in Karnataka was held in HSR Layout, Bengaluru from 6am to 9pm on 20th September, 2015.</p>	<p>A neighborhood wide blocking of roads for traffic except public transport & NMT for an entire day done in September 2015 as an experiment</p>
2020	<p>Clean Air Street Initiative - Church Street First</p> <p>DULT in collaboration with the UK Catapult Network and the Indian Institute for Science launched the Clean Air Street initiative, creating a citizen-centric environment to showcase air quality and electric vehicle (EV) innovations from the UK and India. Under the Clean Air Street initiative, Church Street in Bengaluru is closed to motor vehicles every weekend. Through this, the organisations aim to reprioritize clean mobility while demonstrating the benefits.</p>	<p>Testbed carried out for 4 consecutive months and handed over to BBMP in April 2021</p>
2020	<p>Sustainable Urban Mobility Accord (SUMA)</p> <p>SuMA, Sustainable Urban Mobility Accord is an initiative of DULT aimed at achieving sustainable neighbourhoods through active engagement with local communities. Built upon the foundation of the Cycle Day initiative of DULT, this innovative measure aims to achieve specific outcomes through increased awareness, and community-level work.</p>	<p>The cohort for 2020-21 currently consisting of 7 communities from Bengaluru is running.</p>
2021	<p>Slow Street – Alexandria Street, Richmond Town</p> <p>Slow Street is a DULT initiative to make neighbourhood streets safer for pedestrians and cyclists through design interventions. On a Slow Street, all motorised traffic is a guest and active mobility modes are provided priority. ensuring that the priority matrix is tilted to provide for modes to make people mobile, active and healthy</p>	<p>Testbed conducted In January 2021. Evaluation report under preparation</p>

CHAPTER 2: RESEARCH AND INNOVATION POLICY OBJECTIVES

2.1 Policy Objectives

DULT's Research and Innovation Policy aims to provide an enabling ecosystem that actively supports research, and nurtures innovation, in line with UN's Sustainable Development Goal 11 - Sustainable Cities and Communities - and its sub-goal to "provide access to safe, affordable, accessible, and sustainable transport systems for all". The objectives of the policy are:

1. To promote and engage in research on urban mobility systems with focus on ecological sustainability, accessibility and inclusivity.
2. To leverage the existing innovation system in urban mobility to support and promote disruptive ideas and solutions, relating to mobility of people and goods.

2.2 Focus Areas for Research and Innovation

The following diagram illustrates the improvement/innovation possibilities at the intersection of DULT's urban mobility focus areas and enablers.

Focus areas for Research and Innovation (Illustrative)

Sustainable Urban Mobility Focus Areas	Enablers		
	Technology	Design	Process
Active Mobility	Data acquisition tools	Safe infrastructure	Effective Collaboration
Public Transport			
Micro Mobility	Enhanced planning, management and monitoring tools	Tactical urbanism	Outcome focused planning
Urban Freight			
Travel Demand Management	Mobility as a Service	Efficient land use and transport integration	Enhanced accountability

2.3 Policy Delivery Measures

The proposed strategies and actions to achieve the objectives of the Research and Innovation policy are summarized below.

Objective 1:	
To promote and engage in research on urban mobility systems with focus on ecological sustainability, accessibility and inclusivity.	
Strategies	Actions
<p>1.1 Build collaborative research proposals in association with other government stakeholders, reputed academic institutions, Industry and civil society to facilitate research on matters of topical interest.</p>	<ul style="list-style-type: none"> 1.1.1 DULT will put in place an annual “call for research topics” (CART) soliciting research ideas and suggestions from stakeholders in Government. 1.1.2 Projects that credibly addresses research questions on sustainable mobility issues. will be designed both internally and in collaboration with stakeholders 1.1.3 ASPIRE: An Annual research programme will be drawn up with adequate funds for encouraging identification of priority research areas in the field of urban mobility considering both technology- and policy-oriented research. Focus areas would be on promotion of tools supporting urban transport policy development, such as integration of land use and transport planning; coordinated information and communication strategies targeting transport users and operators, promotion of inter-modality between existing mobility services and promotion of innovative intermodal mobility services in urban areas, to cite a few. 1.1.4 DULT will support and/or sponsor relevant internal, external or joint research initiatives by providing/sharing resources such as workspace, data, access to networks and funding.

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Strategies	Actions
1.2 Develop research culture at the institutional level by engaging staff across the organization in applied research projects.	<p>1.2.1 A modelling research lab will be created with all necessary tools, software etc.</p> <p>1.2.2 DULT will aim to publish a minimum of two papers in research journals initially, which would be gradually increased. An incentive mechanism will be put in place to encourage paper publications. Approvals for peer review, paper publication, participation in conferences if any etc. will be simplified if needed.</p>
1.3 Integrate research mindset into organizational processes by creating a learning roadmap and Knowledge repository.	<p>1.3.1 A tool-Capture of Learnings and Insights from Project Execution and Review (CALIPER) will be developed and administered every quarter from organisational verticals to create a knowledge repository.</p> <p>1.3.2 DULT will put in place an online catalogue of available avenues/resources like conferences/magazines/journals etc. with details of mandatory compliances, submission formats etc. to facilitate publication of research papers.</p> <p>1.3.3 DULT noticeboard cum publication portal will be put into operation.</p>
1.4 Strengthen the current fellowship programs by enhancing opportunities for research fellows to investigate and explore cutting-edge level topics, as well as by providing them with a platform for testing their findings in living labs and testbeds.	<p>1.4.1 An annual announcement calling for applications for research fellows will be done to publicize DULT fellowship programme and to attract talent. DULT will support, as necessary, testing of findings of the research fellows through living labs and testbeds.</p>

Objective 1:

To promote and engage in research on urban mobility systems with focus on ecological sustainability, accessibility and inclusivity.

Strategies	Actions
	1.4.2 DULT will also formulate a programme called “Apprentice Research Fellow” by which research fellows from academic institutions will be given an opportunity to intern in DULT for a specified time. This will facilitate them to fine-tune their ideas by interactions with practitioners in DULT and other government agencies.
1.5 Conduct or participate in Interdisciplinary workshops and events that expose fellows to ongoing research in urban mobility and enable a peer review of their work	1.5.1 DULT will depute research fellows/ office staff to at least one national workshop to present their work for peer review or for gaining awareness on current research in urban mobility.

Objective 2:

To leverage the existing innovation system in urban mobility to support and promote disruptive ideas and solutions, relating to mobility of people and goods.

Strategies	Actions
2.1 Establish links with urban mobility think tanks, academic, industry, and bilateral government partners across the world to form an active innovation network.	2.2.1 DULT will enter into MoU's/agreements with various organisations to plan and implement projects/ testbeds/ living labs which align with the organisational goals and objectives, and if needed, meet a portion of the expenses towards joint activities.
2.2 Leverage the existing innovation system in Karnataka and proactively initiate measures as per the Startup policy by establishing collaboration with Startup Karnataka	2.3.1 DULT will leverage ITBT & ST Department's programs such as the Grand Challenge to encourage innovation in urban mobility. 2.2.2 DULT will also work with the Technology Incubation centres setup by the ITBT & ST Department in institutes of higher learning in the state to engage with academic institutions. 2.2.3 The NAIN program of the ITBT & ST Department will be leveraged to engage with budding innovators from engineering, medical and post-graduate institutions. 2.2.4 Open challenges to identify innovative technology or design or data-based solutions will be crafted in consultation with experts, and adequately publicized to attract best proposals from Innovators.

Objective 2:

To leverage the existing innovation system in urban mobility to support and promote disruptive ideas and solutions, relating to mobility of people and goods.

Strategies	Actions
<p>2.3 Conceptualize and implement testbeds/living labs in association with government, academic, industry and civil society partners to assess innovative urban mobility solutions, and gain policy, regulatory and implementation insights.</p>	<p>2.3.1 INNOVATE@DULT: DULT will implement an initiative called Innovate@DULT to proactively support, implement and fund unique initiatives in sustainable urban mobility.</p> <p>2.3.2 Robust operational framework and guidelines are formulated for planning, implementing and evaluating testbeds/living labs, concurrently with the policy, so as to ensure minimum lag time in operationalizing the policy.</p> <p>2.3.3 A transparent and rigorous process will be put in place to select participants in the testbeds/living labs with well-laid out processes for collection, analysis, sharing of data, and for appraisal and evaluation of outcomes.</p> <p>2.3.4 Sufficient project management and other resources including funds will be earmarked to implement testbeds/living labs, measure results and disseminate findings under the umbrella of Innovate@DULT programme of DULT.</p> <p>2.3.5 DULT will consider funding implementation of pilots of innovative technologies/ products/ process solutions in urban mobility through testbeds/living labs.</p>

CHAPTER 3: POLICY ENABLEMENT

3.1 Setting up Research and Innovation Centre

DULT will set up a Centre for Research and Innovation (CERI) in its Policy, Research and Innovation vertical with adequate managerial and technical resources. DULT intends to create an operational budget to cover staffing costs and to set up infrastructure to support the research and innovation initiatives.

The Centre for Research and Innovation (CERI) will prepare an annual implementation plan detailing planned initiatives to achieve the policy objectives. Following review and approval of the annual plan, implementation budget will be sought from the State Urban Transport Fund (SUTF).

In the last quarter of the financial year, the Centre for Research and Innovation (CERI) will prepare an Annual Performance Report that will provide details of all research and innovation activities during the year. This report will inform DULT as well as other departments on policy, product and process changes that are required to tangibly improve sustainable urban mobility.

3.2 Operational Guidelines

Detailed operational guidelines to implement the programs under this policy shall be put in place by DULT. The guidelines will be reviewed and amended annually.

3.3 Policy Validity

The Research and Innovation policy will be valid for a period of five years (2021-2026). The policy is a living document, and its performance will be evaluated annually and refreshed, as necessary.