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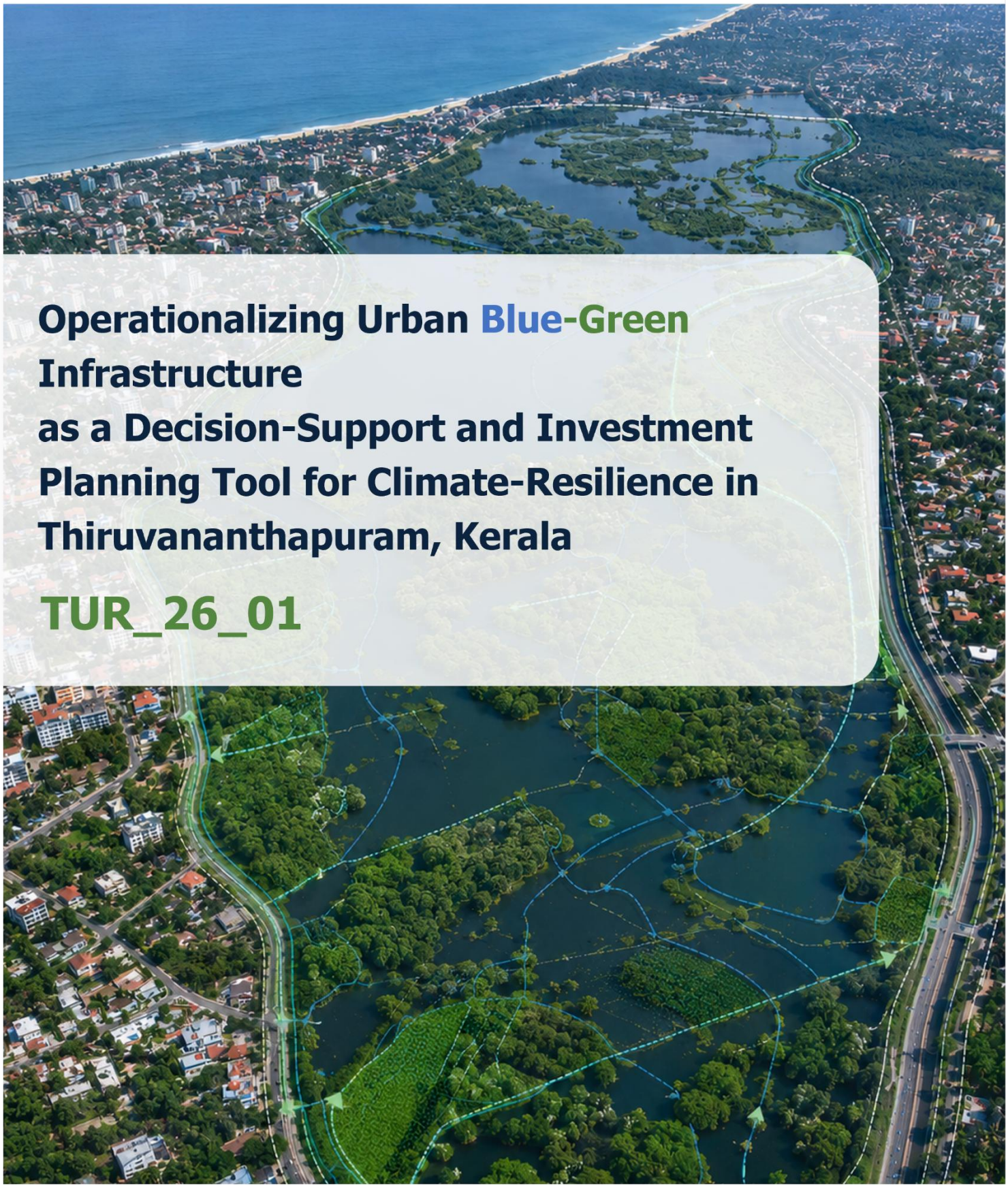

Operationalizing Urban Blue-Green Infrastructure as a Decision-Support and Investment Planning Tool for Climate-Resilience in Thiruvananthapuram, Kerala

TUR_26_01

PROJECT SUMMARY

AUGUST 2026

Preface

The AMRUT Division of Ministry of Housing and Urban Affairs (MoHUA, Government of India), has recognized SPA Vijayawada as a centre for cutting-edge research, projects and training in urban planning and climate-sensitive development, and through an MoU has established the **"AMRUT Centre of Urban Planning for Capacity Building" at SPA Vijayawada (ACUPCB-SPAV)** as a Hub of Excellence for urban planning research, innovation and advocacy.

On 17th July 2026, the ACUPCB-SPAV has sanctioned the **Targeted Urban Research (TUR) project titled "Operationalizing Urban Blue-Green Infrastructure as a Decision-Support and Investment Planning Tool for Climate-Resilience in Thiruvananthapuram, Kerala" (Project Code: TUR_26_01)**. The TUR_26_01 project, sanctioned for a **period of six months**, focuses on Thiruvananthapuram as the study context, with the Akkulam–Veli urban wetland system and its surroundings selected as the pilot area for demonstrating the operationalization of the decision-support and investment planning tool.

This study seeks to address the gap between the recognition of blue-green resources as "urban assets" in urban planning and their prioritization, projectization and investment on the ground. The study will assess urban Blue-Green Infrastructure (BGI) assets and climate-risk conditions, examine the ecological, hydrological and urban characteristics of the Akkulam–Veli system, identify and prioritize suitable climate-resilience interventions, and demonstrate their translation into implementable projects. The study will also examine the value generated by such interventions and potential municipal financing mechanisms, with the proposed decision-support and investment planning tool providing an integrated basis for spatial prioritization and investment planning for the Thiruvananthapuram Municipal Corporation (ULB).

This TUR project, thus, is intended as a practical, application-oriented planning exercise, with the Akkulam–Veli wetland pilot demonstration providing a basis for developing an approach that can be adapted to other large urban wetland and blue-green systems facing similar climate and implementation challenges.

Approved Project Team for TUR_26_01 as on August 2026:

1	**Mr. Rajeev R.** Assistant Professor, Dept. of Planning	**Principal Investigator (PI)**
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3	**Dr. Arpan Paul Singh Golla** Assistant Professor, Dept. of Planning	**Team Member**

Table of Contents

1. Background and Need for the Project

Rapid urbanization and land-use transformation are reducing the natural systems that support urban environmental functioning. The conversion of wetlands, floodplains, open spaces and vegetated areas into impervious surfaces increases surface runoff, reduces infiltration and groundwater recharge, and contributes to urban flooding. Climate change is expected to further intensify extreme rainfall and associated flood risks (IPCC, 2022; UN-Habitat, 2022). Increasing built-up density and declining vegetation also intensify urban heat, affecting thermal comfort, energy demand, productivity and public health; these stresses are expected to increase with rising temperatures and more frequent heatwaves (IPCC, 2023; Oke et al., 2017). The degradation and fragmentation of wetlands, urban forests and other natural areas further reduce biodiversity and ecosystem services such as stormwater regulation, carbon sequestration, air purification and temperature moderation (MEA, 2005; UNEP, 2021). Shrinking green and public spaces in urban areas additionally affect recreation, physical activity and community well-being (WHO, 2021; Gehl, 2010; Ewing & Cervero, 2010).

These interconnected urban pressures highlight the need for urban infrastructure approaches that can simultaneously address climate risk, ecological degradation and urban liveability, rather than relying only on conventional, single-purpose infrastructure.

1.1 Urbanization, Climate Risk and the Loss of Natural Infrastructure - Indian Scenario

India's rapid urban transition is placing increasing pressure on natural infrastructure. Lakes, wetlands, floodplains and permeable open spaces that historically regulated urban hydrological and ecological processes have been progressively transformed, contributing to increased runoff, flooding, waterlogging, heat stress and biodiversity loss. Expansion into environmentally sensitive areas has further increased urban exposure to climate-related hazards.

Major Indian cities including New Delhi, Mumbai, Chennai, Bengaluru, and Hyderabad have experienced severe flooding associated with intense rainfall and alterations to natural drainage systems. At the same time, loss of tree cover and increasing paved surfaces have contributed to rising urban temperatures, while access to adequate urban green space remains limited in many cities. These trends indicate that Indian cities need to move beyond protecting isolated green or blue assets towards integrating them as functional components of urban infrastructure and climate-resilient planning.

1.2 Blue-Green Infrastructure as a Multi-functional Urban Asset

Blue-Green Infrastructure (BGI) integrates natural and engineered blue assets such as rivers, lakes, wetlands, ponds and drainage systems; and with green assets including parks, urban forests, green corridors, bioswales and rain gardens as a multi-functional network.

Unlike the single-purpose infrastructure, BGI can simultaneously support stormwater management, temperature regulation, groundwater recharge, biodiversity, environmental quality and recreation (MEA, 2005; UNEP, 2021). Its multi-functionality makes BGI particularly relevant to climate-resilient urban planning, wherein the 'green' systems can provide shade and cooling, while 'blue' systems can retain and filter stormwater, thereby reducing flood risk and generating ecological and public-space benefits.

However, recognizing BGI as a planning principle does not necessarily translate into its implementation as functioning urban infrastructure. The challenge is therefore increasingly one of identifying, prioritizing, projectizing and financing BGI opportunities within existing urban development systems.

1.3 Climate Risk, Natural Assets and Planning Challenges in Thiruvananthapuram

Thiruvananthapuram has an extensive network of rivers, canals, wetlands, lakes, coastal ecosystems, urban forests and public green spaces that collectively provide important hydrological, ecological and recreational functions. However, rapid urbanization, infrastructure expansion and changing land-use patterns have increasingly disrupted these natural systems. Between 1988 and 2020, the built-up area of Thiruvananthapuram increased from 13.2% to 41.69%, while the mean land-surface temperature increased by 3.76°C over the same period, indicating the strong association between urban expansion, loss of natural cover and increasing thermal stress (J.B. Jibitha, A.L. Achu et al., 2024). A separate assessment of the city found that wetland area declined by about 70% between 1965 and 2019, reflecting extensive conversion of wetlands under urban development pressures (Philip, Reejo & Jayalekshmi, 2020).

The conversion of permeable land, encroachment of wetlands, alteration of drainage systems and reduction of water bodies have consequently affected urban hydrology. In the Thiruvananthapuram Urban Agglomeration, the proportion of water bodies declined from 2.0% in 2000 to 1.6% in 2018 (Anupriya & Rubeena, 2022). As a coastal city, Thiruvananthapuram is also exposed to coastal hazards, while coastal vulnerability studies identify sensitivity to sea-level rise, storm surge and coastal erosion. These interacting pressures of rapid built-up expansion, loss of wetlands and water bodies, increasing heat, altered drainage and coastal exposure underline the need to strengthen the city's existing blue-green systems as multifunctional climate-resilient infrastructure. The city of Thiruvananthapuram, therefore presents both significant climate-resilience challenges and considerable BGI potential; providing a foundation for interventions that can combine flood mitigation, ecological restoration, cooling, and public-space improvement.

Despite these significant natural assets and increasing climate risks, their integration into urban development and resilience planning remains uneven. While statutory plans including the recent Master Plan for Thiruvananthapuram recognise green spaces, wetlands and environmentally sensitive areas; the pathway from identified spatial assets to prioritised, implementable and investable interventions remains insufficiently established. This limits the ability to realise the full climate-resilience and urban value of Thiruvananthapuram's natural assets.

1.4 Issues and Challenges in the Akkulam-Veli Wetland System

The Akkulam-Veli wetland system, comprising lakes, interconnected canals, marshes, streams and adjoining green spaces, is an important blue-green infrastructure asset within the Thiruvananthapuram urban system. It receives drainage from several urban catchments before discharging towards the Arabian Sea and provides important hydrological, ecological and recreational functions (Thiruvananthapuram Master Plan, 2019; Sarun & Vineetha, 2026). However, rapid urbanization and infrastructure development have progressively altered the wetland system and its surrounding landscape.

Wetland loss and land-use transformation are among the most significant concerns. The Akkulam-Veli wetland system has reportedly shrunk by 28.05% over approximately seven decades, with associated wetlands declining by 37.81%, highlighting the cumulative effects of urbanization on this important coastal wetland system. The lake is connected to the coastal system through the TS Canal and receives flows from several feeder streams, making its ecological and hydrological condition particularly relevant to urban drainage and flood management (Sajinkumar, K.S., Revathy, A. & Rani, 2017).

A recent geospatial assessment reported an approximately 81% decline in wetland area between 1995 and 2023, while open-water area reduced due to reclamation, shoreline modification and urban development (Sarun & Vineetha, 2026). These changes have reduced natural water-storage capacity and weakened the wetland's ability to regulate runoff, recharge groundwater and support biodiversity. The degradation of the wetland is compounded by alteration and obstruction of drainage channels. Narrowing, channelization, blockage and encroachment along streams and canals have reduced hydraulic connectivity and increased local flood risk (Sarun & Vineetha, 2026). The vulnerability of the urban drainage system was evident during the October 2023 extreme rainfall event, when approximately 211.4 mm of rainfall was recorded in 24 hours, resulting in widespread flooding in Thiruvananthapuram (IMD, 2023, as cited in Sarun & Vineetha, 2026). Recent reports have also identified blocked drains, encroachments and inadequate drainage maintenance as continuing contributors to urban flooding (The Times of India, 2026).

Water quality and ecological degradation present yet another major challenge. Sewage inflows, urban runoff, solid-waste accumulation, sedimentation, invasive aquatic vegetation and eutrophication have affected the ecological condition of the lake system (Sarun & Vineetha, 2026). At the same time, fragmentation of wetlands, loss of surrounding vegetation and alteration of ecological corridors have reduced habitat connectivity and the wider

ecosystem functions of the wetland. This wetland degradation also affects the public and recreational value of the waterfront. Veli Tourist Village has reportedly experienced a substantial decline in visitor activity, with weekend footfall falling from approximately 5,000 to around 1,000 visitors, alongside deterioration of boating facilities, public infrastructure and environmental quality (The Times of India, 2025). This indicates that degradation of the blue-green system has consequences beyond ecology and flooding, affecting recreation, tourism and the economic value of the waterfront.

Taken together, these pressures indicate that the Akkulam-Veli system represents both a climate-risk hotspot and a significant BGI opportunity. Its declining wetland capacity, altered drainage network, ecological degradation and underperforming public assets point to the need for an integrated approach that can identify where intervention is most needed, what type of BGI intervention is appropriate, what benefits it can generate, and how investments can be prioritized and supported. This makes Akkulam-Veli a suitable demonstration area for operationalizing Urban BGI.

1.5 The Need: From Planning Intent to Project Implementation

Although the recently sanctioned statutory Master Plan for Thiruvananthapuram (2024) identifies urban green spaces and environmentally sensitive areas for conservation and development, implementation remains limited. Several designated green spaces remain under-utilized, fragmented or disconnected from larger urban systems and therefore do not function fully as climate-resilient infrastructure. **The key challenge is therefore not merely the absence of BGI assets or their recognition in plans, but the gap between planning intent and implementation.**

Existing planning processes provide spatial designations and development controls, but provide limited mechanisms for systematically determining which BGI opportunities should be prioritized, what interventions are appropriate, what benefits the interventions can generate, what they may cost, and how implementation can be supported. Municipal agencies of various ULBs consequently face difficulties in converting BGI opportunities into economically viable and implementable projects and in mobilizing resources for their development, irrespective of it being outlined in statutory plans. Thus, creating a clear planning-to-implementation gap, as the pathway from 'spatial opportunity' to 'priority' to 'project' to 'investment' is insufficiently established.

1.5.1 Need for Integrated Approach to BGI Implementation in Thiruvananthapuram

The identified gap calls for a practical approach that can connect climate-risk evidence, BGI opportunities, project priorities, expected benefits, implementation feasibility and investment considerations within the urban planning process. Such an approach is particularly relevant for coastal cities such as Thiruvananthapuram, where natural systems perform multiple functions but are simultaneously exposed to increasing development and climate pressures.

In the study area Akkulam-Veli, identified BGI opportunities shall be translated into a prioritized set of potential interventions; their climate, ecological and public-value benefits assessed; the implementation and investment considerations examined; and feasible municipal financing and value-capture mechanisms explored. This pilot study will provide a practical basis for demonstrating how BGI can move from planning proposals to investable urban interventions.

2. Introducing the City and The Case Area

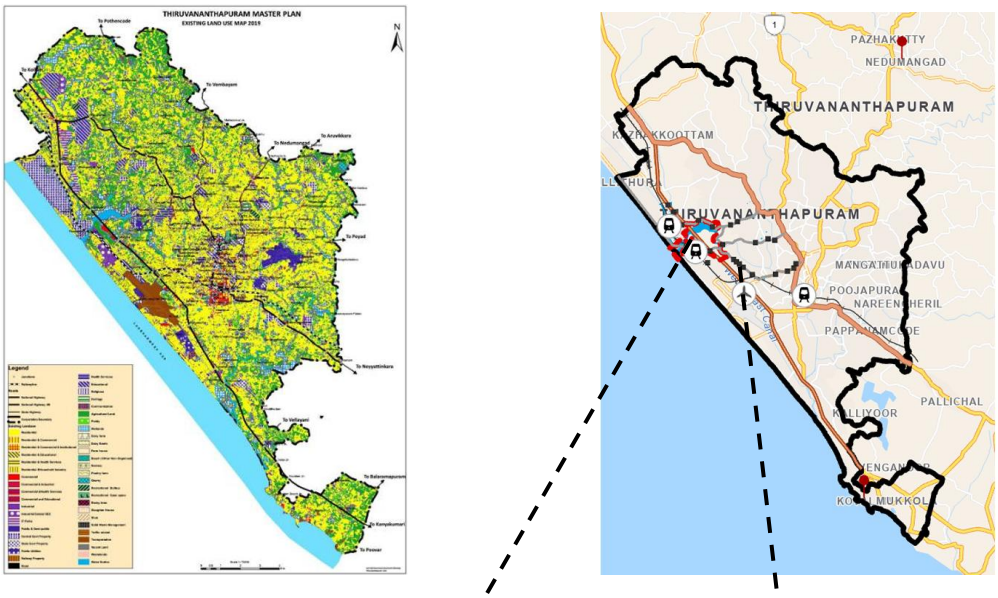
2.1 Regional Setting

The Akkulam-Veli site is located on the northern urban edge of Thiruvananthapuram, forming a critical link between the Akkulam backwaters and Veli Lake.

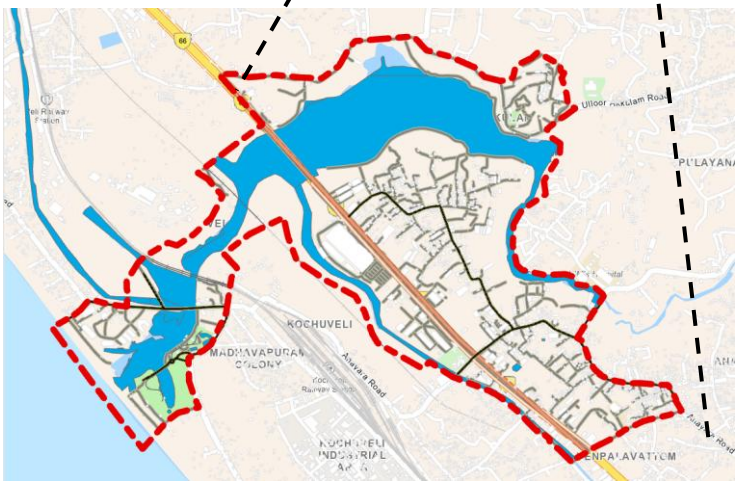
COMPONENT		DISTANCE
AIRPORT		4.5km
RAILWAY STATION		8km
BUS STATION		8km
NATIONAL HIGHWAY		0.2km

Figure 1 & 2: Regional Connectivity; and Transport Connectivity from Akkulam-Veli

Its strategic position close to the city core, the coastal corridor, and major transport networks enhances its accessibility and functional importance within the metropolitan region. With the international airport only 4.5 km away, Trivandrum Central is also widely used as the primary major terminal, located about 10 to 11 km away, and the national highway just 0.2 km from the site, the area enjoys robust regional connectivity. This advantageous location makes the site a strategic focus area for operationalizing urban Blue-Green Infrastructure (BGI) as a decision-support and investment planning tool for coastal resilience. The site lies within an urban-edge wetland environment that integrates the Akkulam Lake system with the Veli backwaters and the Arabian Sea. This unique geographical position supports a mosaic of ecological habitats, including wetlands, mangroves, and open water systems. The landscape supports rich biodiversity and acts as a natural buffer within the expanding urban fabric of Thiruvananthapuram, making it highly valuable for conservation and sustainable landscape planning.



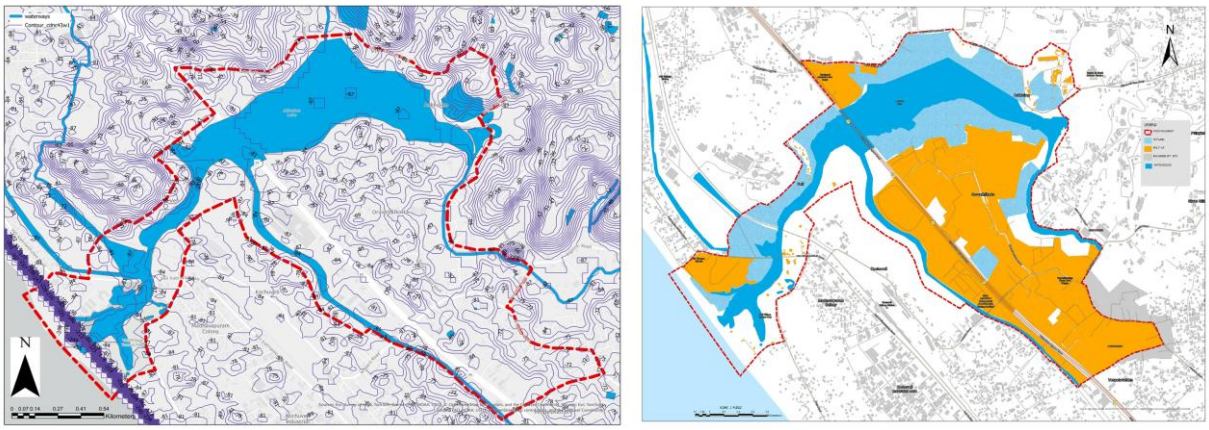
Map 1 & 2: Existing Landuse Of Thiruvananthapuram; Thiruvananthapuram City Boundary
Source: Trivandrum Master Plan(TMC)



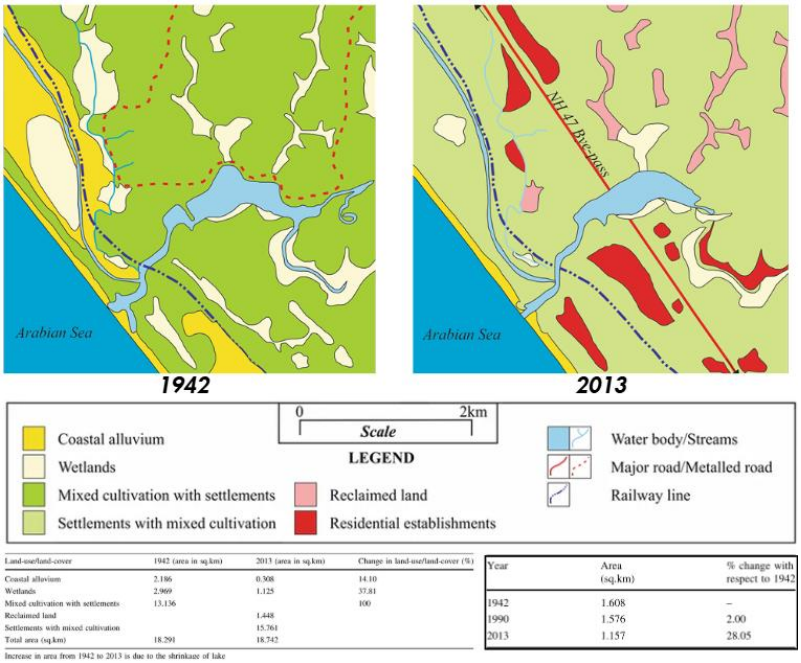
Map 3: Pilot Area of Aakulam-Veli

2.2 Topography

Akkulam-Veli sits on a flat, low-lying coastal plain in north-western Thiruvananthapuram, with ground levels close to sea level - around 12 m near Akkulam, gradually tapering down to sea level at the Veli estuary mouth. The terrain is gentle and near-flat, typical of Kerala's coastal backwater landscape, with the lake averaging about 3 m in depth. A sandbar builds up seasonally, separating the lake from the Arabian Sea, and the surrounding ground is made up of sandy, alluvial soil that turns soft and muddy closer to the estuary.



Map 4 & 5: Contour Map; Wetland Map 2025



Land-use/land-cover	1942 (area in sq.km)	2013 (area in sq.km)	Change in land-use/land-cover (%)
Coastal alluvium	2.186	0.308	14.10
Wetlands	2.969	1.125	37.81
Mixed cultivation with settlements	13.136		100
Reclaimed land		1.448	
Settlements with mixed cultivation		15.761	
Total area (sq.km)	18.291	18.742	

Increase in area from 1942 to 2013 is due to the shrinkage of lake

Year	Area (sq.km)	% change with respect to 1942
1942	1.608	–
1990	1.576	2.00
2013	1.157	28.05

Figure 3: Spatio-Temporal Change of Akkulam Lake

2.3 Climate

The region experiences a tropical monsoon climate with hot summers, heavy southwest monsoon rainfall, and milder winters. The abundant rainfall supports thriving wetland ecosystems and lush vegetation throughout the year. The climatic conditions also influence water levels in the backwater system, reinforcing the need for adaptive and climate resilient design strategies in site development.

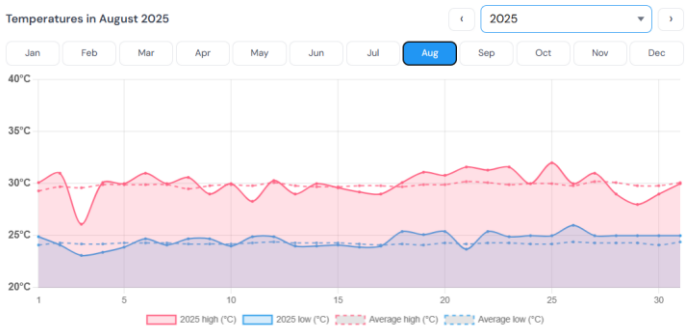
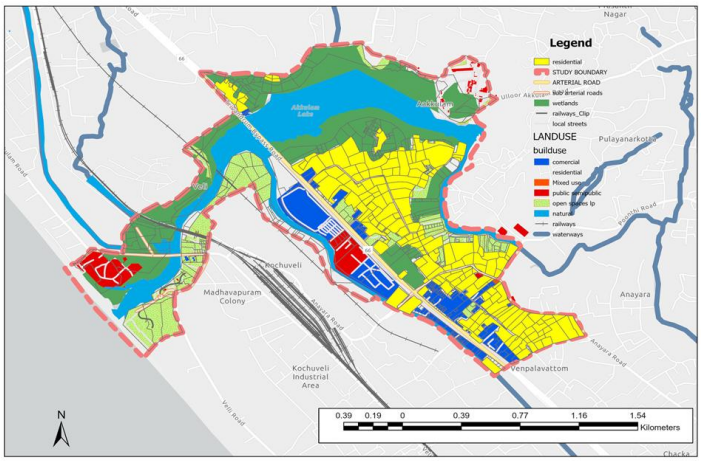


Figure 4: Climate of Thiruvananthapuram

2.4 Land Use Characteristics

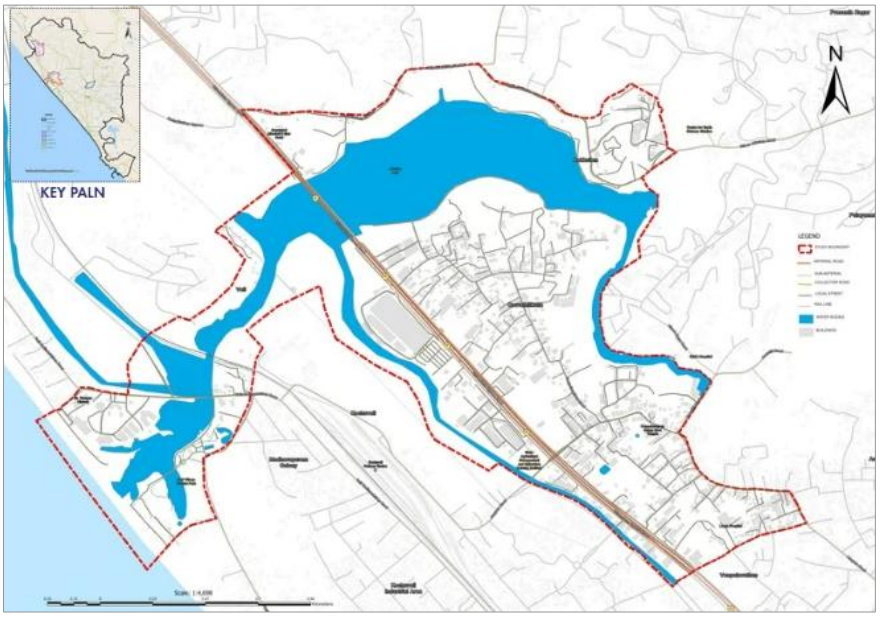
The surrounding land use reflects a mix of urban settlements, institutional zones, recreational spaces, and ecological landscapes. Existing tourism facilities, residential pockets, wetlands, and vegetated zones create a diverse environment that aligns with both ecological preservation and recreational development. The site's land-use structure positions it as a prominent urban-edge green asset capable of supporting integrated ecological, tourism, and community-based initiatives.



Map 6: Existing Land use Map (October, 2025)

2.5 Site Characteristics

The Akkulam-Veli-Parvathy Puthanar corridor, located in the northern part of Thiruvananthapuram city, forms one of the most distinctive blue-green landscapes of Kerala's capital region. The area is characterized by the Akkulam Lake, a scenic backwater that merges with the sea at Veli, and the historic Parvathy Puthanar canal, which once served as a vital inland navigation route connecting Kovalam to Kollam.



Map 7: Site Map

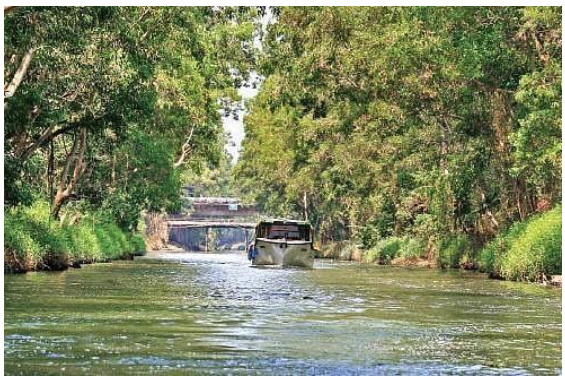
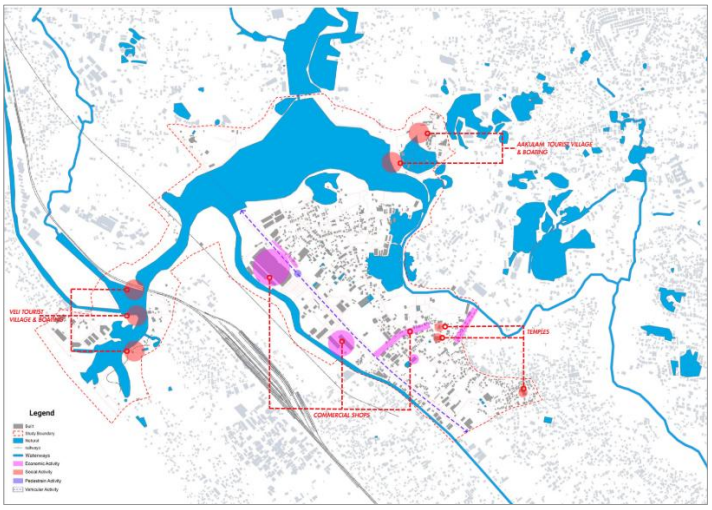


Figure 5 & 6 : Parvathy Puthanar; Akkulam-Veli.

The Akkulam-Veli site covers a total area of 3.41 sq. km, made up of a mix of land and water that shapes its overall character. Water bodies account for about 0.9 sq. km, contributing significantly to the site's ecological value and landscape appeal. The remaining 2.51 sq. km forms the usable land area, serving as the primary base for planning, infrastructure, and recreation or tourism-related development.



Map 8: Activity Mapping

Figure 7 & 8: Tourist Village in Akkulam-Veli

2.5.1 Evolution of the Akkulam-Veli-Parvathy Puthanar System (2010-2025)

The canal began as a historic inland navigation network central to Travancore's economy, but mounting urbanization pressures from the 1970s onward triggered its ecological decline and loss of navigability. To counter this, government-led rejuvenation efforts have emerged since 2010, aiming to restore the canal-lake system as a sustainable waterfront asset that supports both environmental health and urban development.

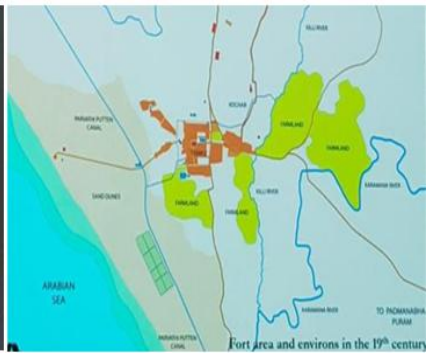


Figure 9, 10 & 11: Parvathy Puthanar 2012; Road Buffer Along Canal; Evolution Trajectory of Canal

Satellite imagery over a fifteen-year period reveals a clear visual narrative of progressive ecological decline driven by urban pressure. While the water bodies retained considerable continuity in 2010, rapid built-up expansion by 2015 caused noticeable canal narrowing and illegal edge developments.

Figure 12 & 13: Spatial-Growth in 2010 and 2015

Figure 14 & 15: Spatial-Growth in 2020 and 2025

By 2020, the canal contracted further, showing stagnant, polluted water, and despite recent rejuvenation attempts, unchecked urbanization continues to strain the hydrological system in 2025.

These temporal changes have severely reduced natural water flow, threatening the ecological integrity of wetlands, increasing vulnerability to eutrophication, and exacerbating flood risks during monsoon seasons. To prevent further degradation, future urban planning must urgently enforce sustainable land-use zoning, control encroachments, and integrate blue-green infrastructure to protect the region's environmental and socio-economic potential.

2.6 Blue-Green Infrastructure of Akkulam-Veli

2.6.1 Concept and Significance

Blue-green infrastructure refers to an interconnected network of water bodies (blue) and vegetated open spaces (green) that are planned together to manage stormwater, support biodiversity, and provide recreation within an urban setting. In the Akkulam-Veli context, the Akkulam Lake, Veli Lake, the Parvathy Puthanar canal, and the intervening mangrove and wetland patches together form a continuous blue-green spine along the northern edge of Thiruvananthapuram. **Rather than treating the lakes, canal, and surrounding greenery as isolated features, this approach links them into a single functional system that absorbs monsoon runoff, filters pollutants, cools the urban microclimate, and stitches together tourism, ecology, and every day public life along the waterfront.**

2.6.2 Components of the Blue-Green Network

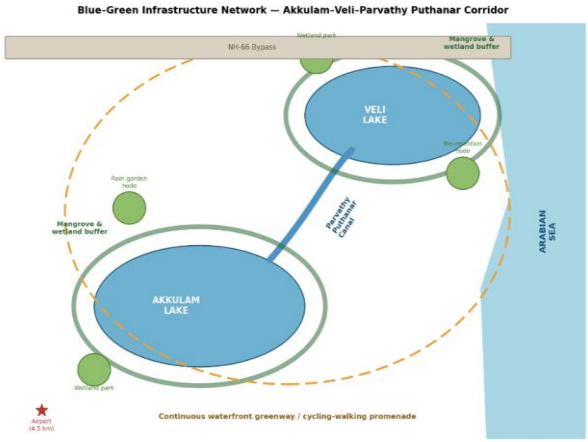


Figure 16: Blue-Green Infrastructure Network - Akkulam-Veli-Parvathy Puthanar Corridor

The blue-green network of Akkulam-Veli is made up of several interdependent layers. The blue layer comprises the Akkulam and Veli lakes, the Parvathy Puthanar canal, and their connection to the Arabian Sea, forming the primary hydrological backbone of the corridor. Wrapped around this water system is a green buffer of mangroves, reeds, and wetland vegetation that stabilizes the banks, provides fish and bird habitat, and naturally treats runoff before it enters the lakes. A continuous waterfront greenway of walking and cycling paths threads through this buffer, connecting the Akkulam Tourist Village, the Veli Tourist Village, and the neighborhoods in between. Distributed along this greenway are smaller rain gardens, bio-retention nodes, and pocket wetland parks that intercept surface runoff from adjoining roads and settlements before it reaches the main water bodies.

2.6.3 Ecosystem Services

Figure 17, 18, and 19: Tourism Village, Recreational Activities in Aakkulam-Veli, and Figure 20: Water Hyacinth Growth in Veli Lake

The combined blue-green system delivers a range of ecosystem services that are critical to the resilience of Thiruvananthapuram's northern urban edge. The mangrove and wetland fringes around Akkulam and Veli lakes attenuate flood peaks during the southwest monsoon by temporarily storing excess runoff, reducing the severity of waterlogging in adjoining low-lying settlements. Vegetated buffers filter sediments and nutrients before they enter the lakes, helping to slow the eutrophication and water hyacinth growth already observed in parts of the system. The tree cover and open water surfaces moderate local temperatures, while the mosaic of habitats supports fish breeding grounds and resting sites for migratory and resident birds. Together, these functions reduce the burden on engineered drainage infrastructure while sustaining the tourism and recreational value of the Akkulam Tourist Village and Veli Tourist Village.

3. Scope of the Project

As already discussed in above sections, despite the recognition of green spaces, wetlands and environmentally sensitive areas in urban plans, their potential as multifunctional climate-resilient infrastructure remains insufficiently operationalized. In Thiruvananthapuram, increasing climate risks and degradation of natural systems coexist with under-utilized, fragmented or unimplemented BGI opportunities. The key gap is therefore not only the identification of BGI assets, but the absence of a practical mechanism to translate these opportunities into prioritized, projectized and financially supportable interventions. Urban Local Bodies require a means to determine where BGI investment is most needed, what interventions are appropriate, what benefits and implementation constraints they entail, and which municipal financing or value-capture mechanisms could support them.

This proposed project aims to develop an operational Decision Support and Investment Planning Tool to facilitate the planning, prioritization, phasing, and implementation of urban BGI interventions in Thiruvananthapuram. The study focuses on the Akkulam-Veli wetland system and its surrounding urban areas as the pilot, recognizing the strategic role of coastal wetlands in flood regulation, ecological connectivity, climate adaptation, and urban liveability.

3.1 Objectives

The 05 project objectives for this Targeted Urban Research (TUR_26_01) are presented below.

1. **To identify the Urban BGI planning and implementation gap in Thiruvananthapuram by identifying key climate-risk areas, existing BGI assets, planned BGI interventions and opportunities.**
2. **To develop BGI-PRIME, a practical Decision Support and Investment Planning Tool for prioritizing Urban BGI interventions.**
3. **To demonstrate the application of BGI-PRIME in the Akkulam-Veli pilot area by identifying and projectizing priority BGI and supporting urban infrastructure interventions.**
4. **To assess selected climate, ecosystem and public-value benefits of priority BGI interventions and examine community willingness to support or contribute to their provision and maintenance.**
5. **To identify and assess potential municipal financing and value-capture options for supporting priority BGI investments.**

3.2 Methodology

For this TUR_26_01 project, a two-tier approach is proposed to be adopted. At the city level, a rapid spatial assessment using secondary datasets, satellite imagery, Master Plan proposals, drainage networks, land use, and environmental information will identify existing BGI assets, spatial gaps, and priority intervention zones.

At the pilot area, detailed field-based investigations will examine hydrological characteristics, land ownership, infrastructure conditions, ecological functionality, implementation constraints, and development opportunities within the Akkulam-Veli landscape.

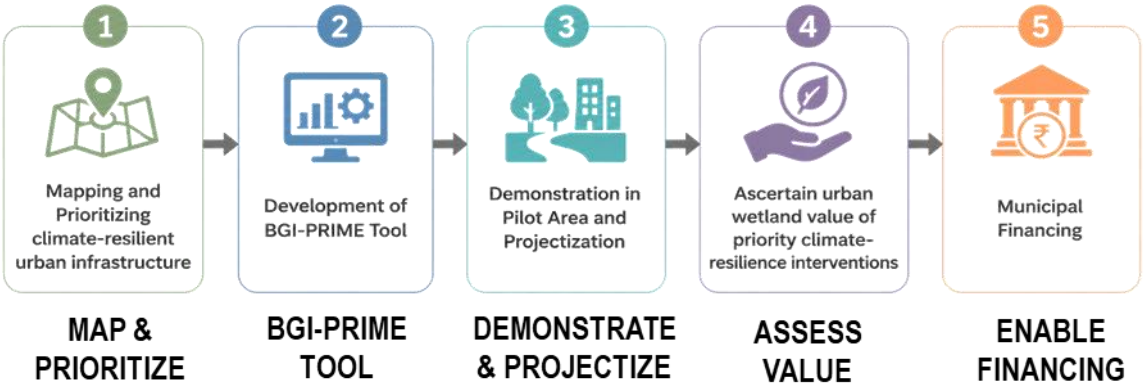


Figure 20: Method Flow Diagram highlighting the key project stages and milestones

Building upon these assessments, the study will evaluate the functionality of existing and proposed BGI components, estimate selected ecosystem services and climate resilience co-benefits, and develop standardized BGI intervention typologies with technical specifications and indicative investment costs. These inputs will be integrated into a practical Decision Support and Investment Planning Tool that enables prioritization of interventions, phased implementation, financing strategies, and implementation pathways, including convergence with existing government programmes.

The methodological flow devised for TUR_26_01 involves use of a combination of spatial and open-source tools to ensure analytical robustness, and replicability across Urban Local Bodies, viz. ArcGIS/QGIS for spatial analysis, Google Earth Engine for satellite data processing, InVEST for ecosystem services modelling (runoff retention, urban cooling), FRAGSTATS for spatial pattern and fragmentation analysis of greens, rainfall-runoff estimation tools, Google Forms for primary surveys, MS Office tools for documentation, analysis (including financial analysis) and presentation etc.

The proposed tool **BGI-PRIME (Urban Blue-Green Infrastructure Prioritization, Readiness and Investment Model for Execution)** is intended to support urban local bodies and planning agencies in translating statutory planning proposals into implementable projects, thereby strengthening climate resilience in coastal cities through evidence-based investment planning. The proposed methodology under TUR_26_01 is designed to be scalable and replicable for other areas within Thiruvananthapuram city and also other Indian cities facing similar climate and urbanization challenges.

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