July 2025

National Mission for Clean Ganga
Ministry of Jal Shakti
Department of Water Resources, River Development & Ganga Rejuvenation, Government of India

A COMPREHENSIVE FRAMEWORK FOR

District River Management Plan [DRMP]

cGanga

Centre for Ganga River Basin Management and Studies
Indian Institute of Technology Kanpur

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National Mission for Clean Ganga (NMCG)

NMCG is the implementation wing of National Ganga Council which was setup in October 2016 under the River Ganga Authority order 2016. Initially NMCG was registered as a society on 12th August 2011 under the Societies Registration Act 1860. It acted as implementation arm of National Ganga River Basin Authority (NGRBA) which was constituted under the provisions of the Environment (Protection) Act (EPA) 1986. NGRBA has since been dissolved with effect from the 7th October 2016, consequent to constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred to as National Ganga Council).

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Centre for Ganga River Basin Management and Studies (cGanga)

cGanga is a think tank formed under the aegis of NMCG, and one of its stated objectives is to make India a world leader in river and water science. The Centre is headquartered at IIT Kanpur and has representation from most leading science and technological institutes of the country. cGanga's mandate is to serve as think-tank in implementation and dynamic evolution of Ganga River Basin Management Plan (GRBMP) prepared by the Consortium of 7 IITs. In addition to this it is also responsible for introducing new technologies, innovations and solutions into India.

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Acknowledgment

This document is a collective effort of many experts, institutions and organisations, in particular MIs and PIs of cGanga, Institutions engaged by NRCD in CAMP Project, NMCG, Jal Shakti Ministry, GoI. Contributions to the photographs and images by individuals are gratefully acknowledged.

Suggested Citation

cGanga & NMCG, 2025, A Comprehensive Framework for District River Management Plan (DRMP)

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Preface

Rivers are the lifelines of human civilization, shaping ecological, cultural, and economic landscapes for centuries. In India, the health of our rivers is increasingly under pressure from rapid urbanization, industrial growth, agricultural expansion, and changing climatic conditions. Addressing these challenges requires a comprehensive and integrated approach that balances ecological realities with administrative frameworks.

This report, *A Comprehensive Framework for District River Management Plan (DRMP)*, has been prepared with the objective of providing such an approach. While river basin management has traditionally been conceptualized at macro scales, the district is proposed here as the most effective administrative unit for implementation. The DRMP framework integrates the distinct needs of both urban and rural areas, ensuring that interventions are synchronized, holistic, and aligned with the larger vision of the Ganga River Basin Management Plan (GRBMP).

cGanga, a think tank created as a knowledge partner to NMCG in 2016 as a follow-up to the Ganga River Basin Management Plan (GRBMP) submitted by the Consortium of 7 IITs (IITC) in 2015, holds the mandate to support the implementation of the GRBMP and dynamically evolve future versions. It is with this background that cGanga, IIT Kanpur and twelve other Indian premier institutions involved in the Condition Assessment and Management Plan (CAMP) project of the National River Conservation Directorate (NRCD), Do WR, RD & GR, MoJs, GoI for six other rivers of India (other than the Ganga) have been brainstorming on this subject.

This report presents an integrated approach to river management at the district level—an administrative unit most suited for effective implementation. Building upon the Urban River Management Plan (URMP) and aligned with the Ganga River Basin Management Plan (GRBMP), the DRMP framework bridges urban and rural contexts, addressing upstream–downstream linkages, ecological needs, and administrative realities in a unified manner.

Prepared by the Centre for Ganga River Basin Management and Studies (cGanga), IIT Kanpur, with the support of the National Mission for Clean Ganga (NMCG), this framework is intended as a guiding document for policymakers, administrators, and stakeholders to operationalize sustainable river management strategies at scale.

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Executive Summary

India's rivers are facing a severe crisis due to urbanization and unscientific management, underscoring an urgent need for a paradigm shift from a reactive to a proactive, science-driven approach. The District River Management Plan (DRMP) concept serves as the framework for this shift, aiming to manage human activities within an administrative unit to conserve and rejuvenate rivers. A foundational step in this direction is the Urban River Management Plan (URMP) framework, developed by the National Institute of Urban Affairs and National Mission for Clean Ganga (NIUA & NMCG, 2020). The URMP is a commendable and holistic framework that promotes a decentralized approach, stakeholder collaboration, and a data-driven monitoring mechanism (URMindex) in line with GRBMP prepared by IIT Consortium and subsequent efforts made by cGanga as part of developing GRBMP 2.0.

The report identifies critical gaps in the URMP. Its city-centric focus is its primary limitation, as a river is a dynamic ecosystem that functions across a natural basin that rarely aligns with a city's administrative boundaries. This approach fails to address the upstream-downstream continuum, neglects rural areas that significantly impact river health, and risks a fragmented, piecemeal implementation of national mandates like the Ganga River Basin Management Plan (GRBMP). The DRMP is proposed as a logical and necessary evolution of the URMP. By using the district as a cohesive administrative unit, a DRMP inherently integrates urban and rural river segments into a single, comprehensive plan. This provides a more practical and functional mechanism to coordinate actions, ensuring that the progressive ideas of the URMP are realized across the entire landscape. The DRMP, therefore, offers the necessary scale and integration to effectively translate the holistic principles of the GRBMP into tangible, on-the-ground action, making river rejuvenation truly sustainable and resilient.

1. Need for a District River Management Plan (DRMP)

The health of India’s rivers is inextricably linked to human activities, with a distinct and often detrimental impact from urban centers and villages. The condition of the Yamuna River, which deteriorates significantly after passing through Delhi, is a stark example of this crisis. Urban areas place enormous pressure on rivers by demanding fresh water, generating polluted wastewater, and increasing stormwater runoff. This leads to rivers becoming shrunken, polluted channels and experiencing frequent flooding during monsoons. Small rivers have been reduced to sewage drains, polluting major rivers like the Ganga and increasing the pressure on them for water supply due to excessive extraction.

A DRMP is therefore necessary to shift from a reactive, post-disaster response to a proactive, preventative approach. Its primary goal is to manage human activities within a geographical unit to conserve and rejuvenate its rivers. This ensures that when a river leaves an

administrative boundary, its ecological status is no worse than when it entered, and if possible, is better.

2. River Basin Management Studies and Planning to Grounding River Basin Management Plans

The effective management of India's rivers requires bridging a fundamental gap: the disconnect between ecological planning, which is governed by natural boundaries like river basins, and administrative implementation, which is bound by political borders like states and districts. The Ganga River Basin Management Plan (GRBMP) can be effectively grounded at the district level by adopting a **District River Management Plan (DRMP)**. This approach, which links urban and rural management strategies, provides a cohesive and actionable framework for a single administrative unit.

2.1. A Hierarchical Approach to Planning (Natural Boundaries)

Effective river management begins with a top-down, holistic planning approach that respects natural boundaries. The process should follow a hierarchical structure, akin to focusing a flashlight from a wide beam to a narrow one (Refer Figure 1). At the highest level, planning considers the entire continent and sub-continent. This narrows down to the specific river basin (e.g., the Ganga Basin) and its major sub-basins (e.g., the Kshipra Basin). The planning process continues down to the level of the main river and its tributaries (e.g., the Kanh River; Refer Figure 1). This "studies and planning" phase, based on natural delineations, provides the scientific and ecological foundation required to understand the river system's dynamics.

2.2. The Ground-Level Solution (Administrative Boundaries)

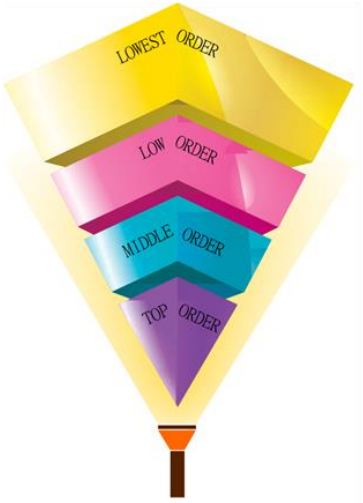
For a plan to be successfully implemented, it must transition from these natural boundaries to administrative ones. This is the crux of the DRMP approach. The implementation hierarchy begins with the country (India) and flows down to the state (e.g., Uttar Pradesh), and then to the district (e.g., Ballia; Refer Figure 1). Within the district, the plan is further detailed for urban and rural areas. This is where the DRMP becomes the key operational tool, as it is designed to be implemented within this administrative unit.

2.3. The DRMP as a Unified Tool for the District

A DRMP is a comprehensive, single plan that integrates the distinct needs of both urban and rural areas within a district. It functions as a combined **Urban River Management Plan (URMP)** and **Rural River Management Plan (RRMP)**. This is a crucial distinction, as urban issues (e.g., drainage, water needs, recreation, domestic and industrial waste, etc.) and rural issues (e.g., sanitation, grey water, agricultural and its residues, livestock and its waste, etc.) are fundamentally different.

In India, urban and rural governance structures policies and programmes are separate. This often leads to fragmented efforts. The DRMP attempts to solve this by positioning the **District Magistrate (DM)** as the central administrative head. The DM is uniquely empowered to oversee the implementation of all central, state, and local schemes within their jurisdiction. This places the authority for a unified, cohesive plan under a single individual, ensuring that urban and rural river management activities are synchronized and that actions in one area do not undermine efforts in another. This approach directly addresses the challenge of implementing basin-level plans through a coordinated, practical, and accountable on-the-ground mechanism.

Study and Planning



Useful for strategic planning
But unrealistic to build

Approach
GRBMP 1.0

Strategy for Implementation and Execution

Can only construct a right pyramid for actions on ground

Approach
Studies & Planning: Natural Boundaries

cGanga

GRBMP 2.0
(Micro Level Study)

Generic	Example
Continent	Continent
Sub-Continent	Sub-Continent
Basin	Ganga Basin
Sub-Basin	Kshipra Basin
River	Kshipra River
Tributary	Kanh River

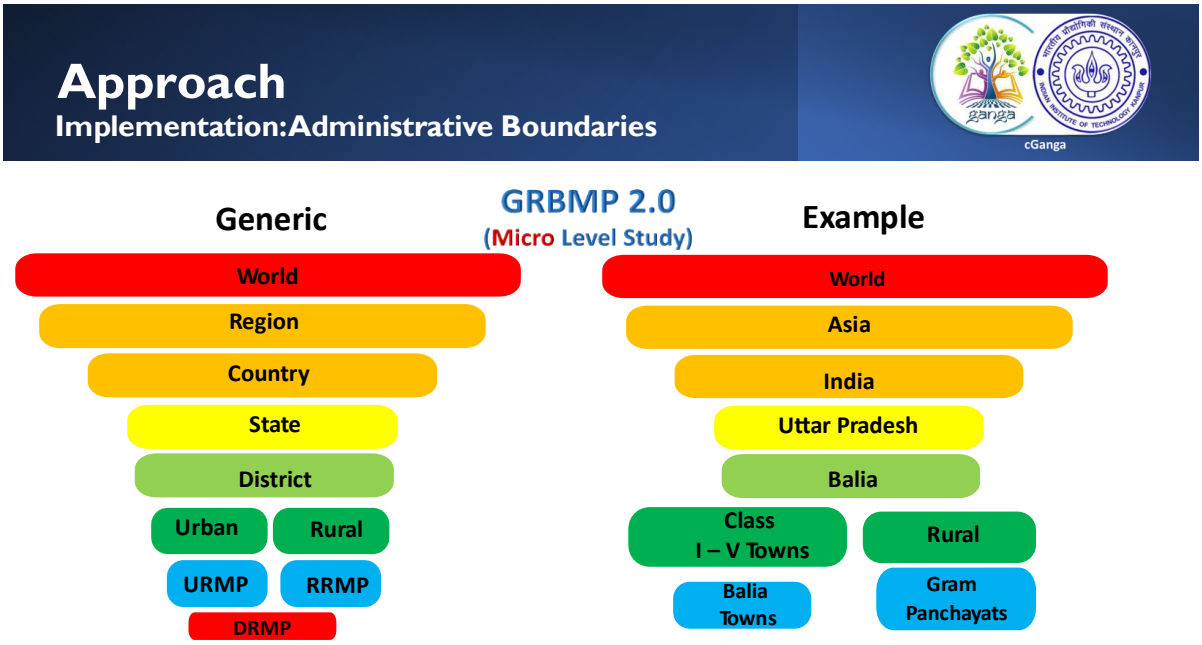


Figure 1: Approach for River Basin Management Strategic Planning as well as Micro Level Studies and Planning, and Actions on Ground

3. Present Status

The idea, need and preliminary framework of Urban River Management Plan was first brought out by the Consortium of 7 IITs (IITC) set up for preparing Ganga River Basin Management Plan by the Ministry of Environment and Forest, GoI (IITC, 2015) for the then National Ganga River Basin Authority (NGRBA). Subsequently, Centre for Ganga River Basin Management & Studies (cGanga) led by IIT Kanpur and supported by the Ministry of Jal Shakti, GoI through National Mission for Clean Ganga (NMCG) was set up to dynamically evolve GRBMP. cGanga as part of its mandate to prepare GRBMP 2.0 has broadened the concept to DRMP considering District as an Administrative Unit for implementation of River Basin Management Plans realizing that studies and planning need to be carried out considering natural boundaries (say River Basin) but for grounding the plan it is necessary to decipher the plan through Administrative Boundaries. NMCG also engaged NIUA (National Institute of Urban Affairs, MOHUA GoI) to further evolve URMP and published a report titled: "A Strategic Framework for Managing Urban River Stretches in the Ganga River Basin". While this framework is a foundational and progressive step, a critical review reveals its strengths and limitations, particularly when viewed in the context of the broader **District River Management Plan (DRMP)** concept as follows.

3.1. Synergies and Foundational Strengths

The URMP framework provides an excellent starting point and shares several key principles with the DRMP approach:

- **Holistic Vision:** The URMP correctly identifies that river health is not merely a technical or engineering challenge but a socio-cultural one, and that effective management must be grounded in a holistic understanding of the river-city relationship. Its three pillars of sustainability—environmental, economic, and social—provide a strong foundation for comprehensive planning.
- **Decentralization and Customization:** The framework promotes a decentralized approach, advocating for small, locally managed STPs and recognizing that interventions should be city specific. The two-part structure, with common objectives and city-specific interventions, ensures a balance between national vision and local realities.
- **Accountability and Public Engagement:** The framework's inclusion of a measurable index (URMindex) for monitoring and evaluation is a vital step toward accountability. Furthermore, it emphasizes the importance of community participation and "citizen science," advocating for a shift from "citizens as spectators" to "citizens as actors" in river management.

3.2. Gaps and Divergence from the DRMP Concept

Despite its strengths, the URMP framework's city-centric approach presents significant gaps and divergences when it comes to the ground-level implementation of a holistic plan like the Ganga River Basin Management Plan (GRBMP).

- **Administrative vs. Ecological Boundaries:** The primary limitation is its focus on a city's administrative boundaries. A river is an integrated, dynamic ecosystem that functions across a natural basin or watershed, which rarely aligns with urban limits. This city-centric approach fails to address the upstream-downstream continuum and the impacts of non-urban areas.
- **Exclusion of Rural Areas:** The URMP is primarily designed for "Class I towns" (population > 1 lakh), leaving rural stretches and smaller settlements largely unaddressed. This creates a critical gap, as the influence of rural portion on river health is "equally significant". A city-specific plan cannot effectively manage the collective impact of these unaddressed rural zones.
- **Fragmented Governance:** The URMP model, if implemented city by city, can lead to fragmented governance. While a common framework exists, the lack of an overarching administrative unit like a district to coordinate urban and rural segments creates potential for conflicting actions and a piecemeal approach. This stands in direct contrast to the GRBMP's vision of a holistic, integrated management framework.

3.3. DRMP vis-à-vis URMP

The DRMP is not a replacement but a logical and necessary evolution of the URMP, designed for the effective implementation of national plans like the GRBMP on the ground.

- **Holistic Integration:** A DRMP, by using the district as its administrative unit, inherently integrates urban and rural river segments into a single, cohesive plan. This ensures that the efforts in a city are not undermined by unregulated activities in adjacent rural areas, thereby addressing the urban-rural synergy that the URMP identifies as a crucial challenge.
- **Coherence with National Vision:** The GRBMP's mandate to treat the Ganga as a "integrated, dynamic ecosystem" can only be truly implemented through a plan that respects the river's ecological boundaries. A DRMP, aligned with the district-level governance structure, provides a more coherent and functional mechanism to achieve this.
- **Actionable Blueprint:** The DRMP provides a more robust blueprint for action by institutionalizing data gathering, planning, and implementation across the entire district, ensuring that the progressive ideas of the URMP are realized across the entire landscape.

URMP is a highly commendable and valuable framework, however, its city-specific nature makes it a partial solution to a whole-basin problem. The DRMP, by expanding this vision to the district level, provides the necessary scale and integration to effectively translate the holistic principles of the GRBMP into tangible, on-the-ground action.

4. Importance of a Cyclic Planning Process for River Management

River basin management (RBM) and district river management (DRM) must be treated as continuous, cyclic processes, not as one-time, linear projects. This approach is essential for ensuring that management strategies are periodically updated and remain effective over time. As illustrated in Figure 2, the planning process involves a series of embedded steps that are designed to build upon one another.

Series of embedded steps

- Understanding
- Communication
- Negotiation
- Strategizing
- Formulating Policies
- Legislations
- Planning
- Identification of Responsive Agencies, Institutions, Individuals, etc. & Mobilization of Resources
- Design & Implementation
- Incentives, Governance & Regulation
- Monitoring & Feedback

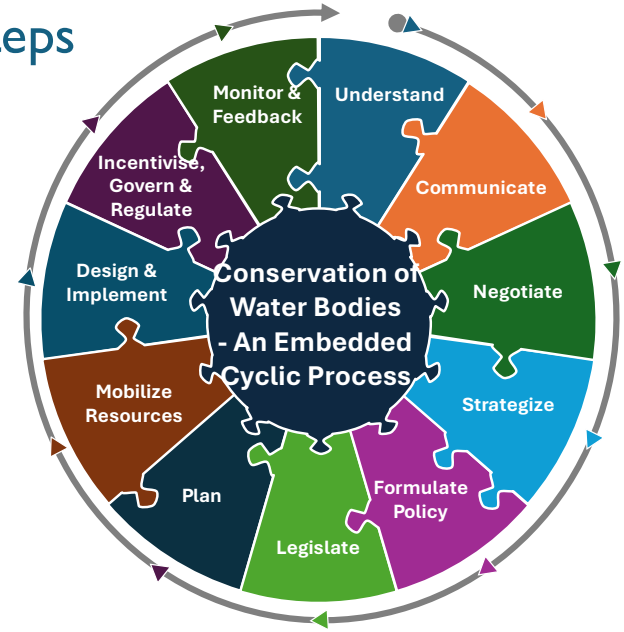


Figure 2: River Basin Planning & Preparation of DRMP — An Embedded Cyclic Process

4.1. The Criticality of Understanding, Communication, and Negotiation

The first three steps of the planning cycle—Understanding, Communication, and Negotiation—are the most crucial for successful and sustainable river management.

- **Understanding:** Effective River Management starts with a deep, science-based understanding of the subject matter. This includes knowing the river's resources, its behaviour, and the pressures it faces. This foundational knowledge, supported by scientific evidence, is indispensable for making informed and rational decisions about a complex and limited resource.
- **Communication:** Once this understanding is established, it must be effectively communicated to all stakeholders and actors involved in the river system. This step is vital for building a shared perspective and ensuring that everyone from policymakers to local communities is aligned on the challenges and objectives.
- **Negotiation:** The reality of river management is that resources are limited and there are multiple stakeholders with often conflicting demands. These conflicts cannot be resolved through unilateral action. Meaningful negotiation, based on the shared understanding of scientific evidence, is the only way to reconcile these conflicts and secure the necessary buy-in for a plan to succeed.

4.2. Consequences of a Linear Approach

The greatest pitfall in river management is the tendency to bypass these initial, critical steps and jump directly to "Design & Implement". This invariably results in a lack of trust among stakeholders, social unrest, and the implementation of plans that are ultimately undesirable and unsustainable. A linear approach, by its nature, is not adaptive and cannot respond to the dynamic changes in a river's ecosystem or the needs of its communities.

4.3. Cyclical Framework for Sustainable Management

The proposed cyclic framework for River Basin Planning and DRMP provides a robust alternative. After the initial steps of understanding, communication, and negotiation, the process moves to:

- **Strategize, Formulate Policy, and Plan:** Here, the collective insights are used to develop actionable policies and plans.
- **Design & Implement:** This is where the physical work begins, from designing infrastructure to executing on-the-ground projects.
- **Monitor & Feedback:** This final step of the cycle is crucial. The outcomes are monitored, and feedback is collected to inform the next "Understanding" phase, starting the cycle anew.

This continuous, embedded process ensures that both the RBMP and the DRMP are living documents that are constantly refined based on real-world outcomes and emerging challenges. It provides a governance model that is not only effective but also transparent, inclusive, and built for long-term sustainability.

5. Linkage to River Basin Management Plans (RBMPs)

A DRMP is a decentralized plan that functions within the broader framework of a River Basin Management Plan (RBMP). The Ganga Basin, for example, is a large natural boundary that spans 11 states and is divided into 274 districts. The governance structure for the Ganga Basin reflects this, with national-level authorities like the National Mission for Clean Ganga (NMCG) as an authority and implementing agency associated with the Department of Water Resources, River Development and Ganga Rejuvenation of the Ministry of Jal Shakti (MoJS) at the first level, State Missions for Clean Ganga (SMCGs) at the second level, etc. This structure extends down to the sub-basin and district levels, with bodies like the District Ganga Committee. The DRMP, therefore, serves as the operational blueprint for river management at the district level, ensuring that local actions align with the overall vision of the larger basin management plan.

6. Definition and Core Concepts of a DRMP

A District River Management Plan (DRMP) is a plan aimed at managing human activities within the administrative boundaries of a district to conserve and rejuvenate its rivers following the "Samarth Ganga" framework as shown in Figure 1 (cGanga & NMCG, 2021). The core philosophy is to minimize urban water withdrawals and stop polluted discharges into rivers.

This is best achieved by **closing the water usage loop** at an appropriate scale (e.g. at a local scale). This means recycling used water within the district through decentralized Sewage Treatment Plants (STPs), natural drains, and water bodies, rather than discharging it into rivers using four layer concept of water quality alterations as outline in River Restoration and Conservation Manual prepared by cGanga (cGanga & NMCG, 2019). This process serves the dual purpose of protecting rivers from over-exploitation and ensuring local water security. The only annual net input is rainfall, and the net output is evaporation/transpiration, with rivers acting as a link to flush out accumulated salts and nutrients. A key technical consideration in such a closed-loop system is the potential for a gradual build-up of Salinity or Total Dissolved Solids (TDS) in the waterbodies due to continuous recycling. However, this is naturally managed on an annual basis. The heavy rainfall during the monsoon season serves to dilute and flush the recycled water in urban drains and waterbodies, restoring the original low salinity levels each year and ensuring the long-term sustainability of the system.

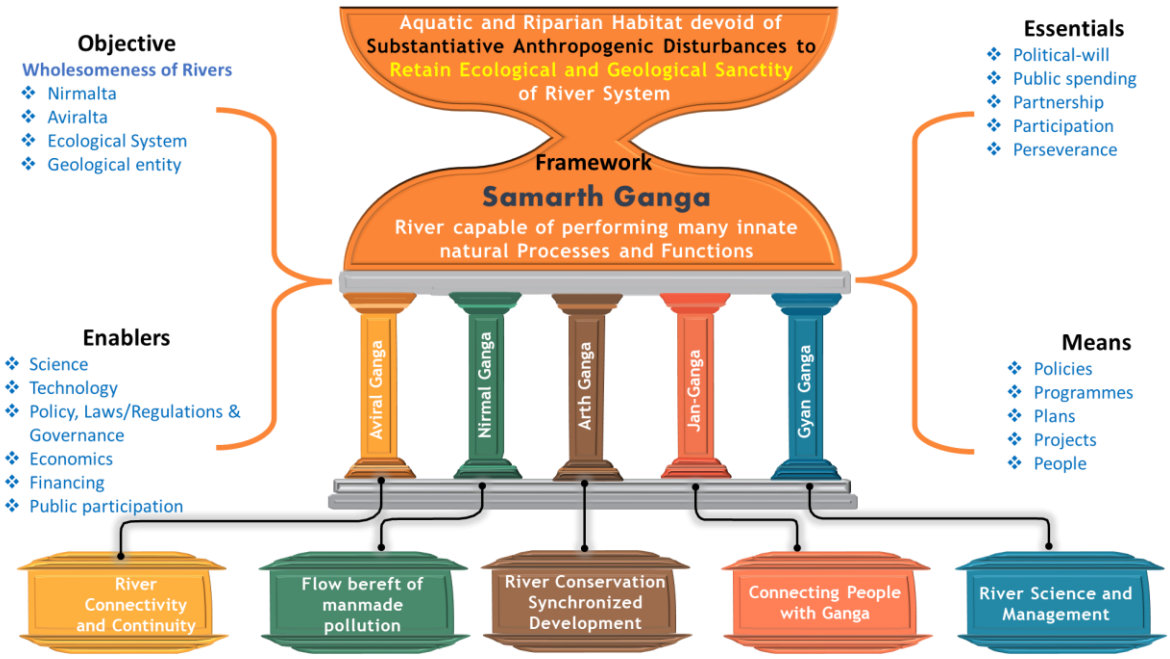


Figure 3: Representation of River Rejuvenation and Conservation Efficacy as an Interplay Amongst Several Aspects

7. Data and Information Requirements

An effective DRMP requires a broad spectrum of data for detailed analysis and planning. This data must cover technical, socio-economic, and environmental dimensions. A comprehensive plan should include:

- **Geospatial Data:** Geographical and administrative boundaries, high-resolution Digital Elevation Models (DEMs), and Land Use & Land Cover (LULC) maps.
- **Hydrological Data:** Daily rainfall data for the last 30 years, groundwater levels, and flow capacity of natural drains.
- **Urban Infrastructure Data:** Maps of the city's Master Plan, sanitation plans, sewerage networks, and the location and capacity of Water Treatment Plants (WTPs) and STPs.
- **Socio-Economic Data:** Population distribution, residential areas, and industrial water usage data.
- **Satellite Imagery:** The plan should utilize data from sources like **USGS (CORONA imagery)** and **AIRBUS (World DEM)** for historical context and micro-level planning.

The case study of Kanpur District highlights the data status, showing that while very limited digitized data is available from agencies like SOI and KNN, substantive efforts have been made by cGanga, IIT Kanpur (cGanga & NMCG, 2025) some other critical data such as high-resolution DEMs, local rainfall, industrial wastewater generation, capacity of drains, flows in rivers while entering and leaving the districts, groundwater extracted by individual household, farmers,

industries & businesses, etc. are not available. This underscores the need for a robust data gathering and digitization effort.

8. Methodology to Prepare a DRMP

The methodology for preparing a DRMP is adaptive, addressing both urban and rural landscapes through a two-stage procedure for each component, corresponding to dry/non-monsoon and monsoon seasons.

Urban Component (URMP)

Stage 1: Urban Water Recycling and Reuse (for ~330 dry days)

- **Identify Outfall Points:** Locate secondary/tertiary sewer outfall points near natural drains and determine sewage flows.
- **Decentralized STP Planning:** Plan for new decentralized STPs near residential clusters to treat sewage.
- **Waterbody Integration:** Divert treated water from STPs into natural drains ("nalas") and then into nearby ponds/lakes for natural polishing and storage.
- **Water Reuse:** Pump water from these water bodies to Water Treatment Plants (WTPs) for reuse within the city.
- **Make-up Water:** Compensate for water lost to evaporation and seepage by drawing marginal amounts from rivers or groundwater, thereby maintaining the water loop.

Stage 2: Urban Monsoon Runoff Management (for ~35 rainy days)

- **Drainage Capacity Assessment:** Use Rainfall Intensity-Duration-Frequency (IDF) curves and catchment characteristics to determine peak runoff rates and check if drains have adequate capacity (CPHEEO, 2019).
- **Flood Mitigation:** Refill water bodies with a portion of the storm runoff and ensure the drainage network can carry surplus runoff to the river. Clear drains of obstructions before the monsoon to prevent flooding.
- **Holistic Solutions:** In low-lying areas, implement solutions like underground drainage or pumping to remove stagnant water.

Rural Component (RRMP)

Stage 1: Water Management during Non-Monsoon (approx. 330 days)

- **Minimize Water Withdrawal:** Reduce direct water withdrawal from rivers for irrigation by promoting effective use of local water sources.
- **On-Farm Water Use:** Implement practices like rainwater harvesting and using rural ponds and natural depressions to store water for livestock and irrigation.
- **Animal Husbandry Waste Management:** Develop and promote systems for the collection and treatment of animal waste (dung and urine) to prevent it from

contaminating local water bodies and runoff into rivers. This could include community-level biogas plants or composting facilities.

- **Wastewater Treatment:** Use natural wetlands or filtration systems to treat water contaminated by livestock and other sources before it re-enters the local water cycle.
-

Stage 2: Flood Management during Monsoon (approx. 35 days)

- **Flood Prevention:** Ensure that natural drainage paths, streams, and village ponds are clear of blockages and silt to handle excess runoff from heavy rains.
- **Groundwater Recharge:** Use the monsoon season to replenish groundwater and refill local water bodies, which can dilute any salinity buildup from the dry season.
- **Preventing Pollution:** Prevent agricultural runoff, which may contain chemicals from fertilizers, from flowing directly into the main river during storms.

9. Desirable Structure of a DRMP

An effective DRMP should include a detailed set of components to ensure a symbiotic relationship between a district and its rivers.

- **Waste Management:** A plan for the collection and treatment of liquid waste, solid waste, and STP sludge.
- **Storm Water Management:** Strategies for managing monsoon runoff, including improving drainage systems and linking water bodies to control flooding.
- **Conservation:** A plan for conserving river areas and surrounding water bodies, creating habitats and spaces for human-river interaction.
- **Blue and Green Infrastructure:** Planning for the preservation of wetlands, surface water bodies, and vegetation that are important for ecological health.
- **Multipurpose Use:** Planning for using rivers for cultural, recreational, and other socio-economic activities, ensuring no adverse effects on river health.
- **Transparency:** The plan should be transparent, publicly accessible, and clearly outline the benefits, accountability, and phased implementation timeline.

10. Benefits of a DRMP

A DRMP is a strategic economic investment that goes beyond environmental duty. Its benefits include:

- **Increased Water Security:** By closing the water loop and reusing treated wastewater, cities can reduce dependence on fresh water and enhance local water security.
- **Public Health and Productivity:** Clean water bodies directly improve public health by reducing water-borne diseases, which in turn leads to a healthier and more productive workforce.

- **Economic Development:** The rejuvenation of water bodies can boost tourism, recreation, and property values, while the infrastructure required for these projects creates new jobs and promotes innovative technologies.
- **Disaster Risk Reduction:** Protecting floodplains and wetlands reduces the risk of flooding and protects urban infrastructure, saving significant costs on repairs and reconstruction.
- **Monetization of Ecosystem Services:** Healthy water bodies provide ecosystem services like natural water purification, which creates long-term economic value for the city.

11. Review of URMP Ayodhya and URMP Kanpur in Light of DRMP Framework

The Urban River Management Plan (URMP) documents for Ayodhya and Kanpur represent a monumental step toward sustainable river management in India. Developed under the framework by the National Mission for Clean Ganga (NMCG) and the National Institute of Urban Affairs (NIUA), they embody a progressive, holistic approach (NIUA & NMCG, 2021; NIUA & NMCG, 2023). However, in the context of a comprehensive District River Management Plan (DRMP), these URMPs, while excellent starting points, reveal both synergies and critical gaps in their ability to translate the overarching vision of a plan like the GRBMP into effective, on-the-ground action.

11.1. Synergies and Foundational Strengths

Both the Ayodhya and Kanpur URMPs demonstrate strong alignment with the core principles of a DRMP:

- **Holistic Vision and Three Pillars:** Both plans are built on the foundational principles of sustainable development—environmental, economic, and social—with a set of ten common objectives. This holistic vision, which treats the river as a valuable asset rather than a mere drain, is a direct synergy with the DRMP approach.
- **Decentralization and Stakeholder Collaboration:** Both URMPs advocate for decentralized solutions, such as locating STPs to reuse treated water in local drains, thereby closing the water loop within the city. The formation of dedicated working groups, comprising officials from various departments (e.g., Jal Nigam, Forest, Tourism, Pollution Control) and NGOs, is a prime example of the multi-stakeholder governance model essential for a successful DRMP.
- **Data-Driven and Quantifiable:** Each plan undertakes a baseline assessment to identify issues and data gaps, a crucial first step for any science-based plan. The use of a quantifiable metric like the

Urban River Management Index (URMindex), with its ten indicators, provides a transparent mechanism for monitoring and accountability, which is a key component of the DRMP framework.

11.2. Gaps and Divergence with DRMP

Despite these synergies, the URMP framework's city-centric nature creates significant gaps that a DRMP is designed to fill. This is the core divergence and the justification for its necessity on the ground.

- **Administrative vs. Ecological Boundaries:** The URMP is inherently limited to a city's administrative boundaries—the Ayodhya Nagar Nigam (ANN) and Ayodhya Development Authority (ADA) limits, and the Kanpur Nagar Nigam (KNN) limits. A river, however, is an integrated ecosystem that functions across a natural basin, which rarely aligns with these administrative divisions. This city-centric approach fails to address the upstream-downstream continuum and the ecological impacts of non-urban areas.
- **Exclusion of Rural Stretches:** The DRMP framework emphasizes an "urban-rural synergetic model" , recognizing that rural areas and villages have an equally significant, though different, impact on a river's health. In Ayodhya, for example, the document notes that the opposite bank of the Sarayu river has minimal anthropogenic activity but also acknowledges that these pristine areas are planned for future inclusion in the expanded ADA limits. Similarly, in Kanpur, the plan focuses heavily on urban pollution, while noting that the Pandu River is polluted by waste from the city, and Ganga faces pollution from upstream towns. A URMP, by its very definition, is ill-equipped to manage the rural landscape that feeds into the river within a district.
- **Fragmented Implementation of GRBMP:** A central challenge of implementing a holistic plan like the **Ganga River Basin Management Plan (GRBMP)** is ground-level fragmentation. The GRBMP's vision of treating the Ganga as a single, dynamic ecosystem cannot be achieved through a piecemeal, city-by-city approach. The **DRMP**, by using the district as a cohesive administrative unit, provides a more practical and functional mechanism to coordinate actions across both urban and rural segments, thus directly translating the GRBMP's holistic principles into a unified, actionable blueprint.

11.3. Conclusion: A DRMP is Required for Implementation

The URMPs for Ayodhya and Kanpur are not the ultimate solution but are vital first steps toward a **DRMP**. The documents' own findings—on incomplete data, the existence of a fragile riparian zone, and the prevalence of on-site sanitation systems in non-sewered areas—all point to the need for a more comprehensive, district-wide strategy. The DRMP is a logical and necessary evolution of the URMP. It expands the foundational principles of holistic planning and decentralization to the more appropriate scale of a district, thereby bridging the critical

gap between administrative boundaries and ecological reality. By doing so, it provides the necessary scale and integration to effectively implement national mandates like the GRBMP on the ground, making river rejuvenation efforts truly sustainable and resilient.

12. Conclusion: The Imperative for a DRMP

The Urban River Management Plans (URMPs) for Ayodhya and Kanpur represent a monumental and commendable first step toward river rejuvenation, offering a data-driven, holistic, and decentralized framework for urban centres. However, as this report has demonstrated, their city-centric approach, while progressive, remains a partial solution to a whole-basin problem. A river is a single, integrated, and dynamic ecosystem that functions across a natural basin, a reality that administrative boundaries, by their nature, fail to capture. The implementation of a national mandate like the Ganga River Basin Management Plan (GRBMP), which envisions treating the Ganga as a holistic entity, cannot be achieved through a fragmented, piecemeal approach. The DRMP, by using the district as a cohesive administrative unit, emerges as the logical and necessary evolution of the URMP. It provides the crucial scale and integration required to bridge the gap between ecological planning and ground-level implementation, ensuring that both urban and rural segments are managed in a synchronized manner. By championing this integrated, district-wide strategy, we can translate the progressive ideas of the URMP into tangible, on-the-ground action, making our river rejuvenation efforts truly sustainable and resilient for generations to come.

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Appendix: Digital Datasets for Kanpur Nagar District

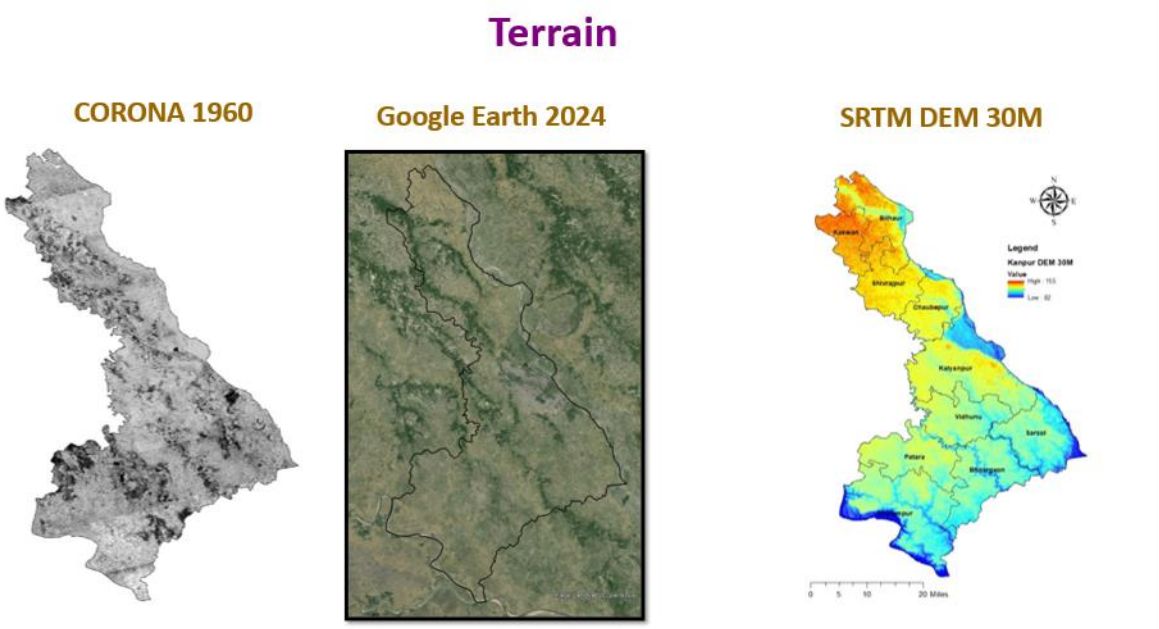
S. No.	Name of Dataset
1.0	**Geomorphological Datasets**
1.1	Historical Corona, Google Earth Imagery, and SRTM DEM
1.2	Land Use and Land Cover Changes: 1965 to 2025
1.3	Land Use and Land Cover from BHUVAN 2014
1.4	Block-Wise Land Use Datasets
2.0	**Climatological Datasets**
2.1	Rainfall, Precipitation, and Evapotranspiration
3.0	**Geological Datasets**
3.1	Types of Soil
4.0	**Hydraulic Datasets**
4.1	Cross-Section Survey
5.0	**Hydrological Datasets**
5.1	Measurement Points and Discharge Datasets
5.2	Ground Water Level Datasets
6.0	**Demography Datasets**
6.1	Population Statistics
6.2	Maps of Urban and Rural Areas
6.3	Maps of Administrative Units
6.4	Maps of Ward Boundaries, River Streams, Ganga River Sand, and Industrial Locations
6.5	Maps of Panchayat-Level Administrative Units
6.6	Cadastral Maps of Administrative Units
6.7	Block and Village-Level Land Records
7.0	**Economic Datasets**
7.1	Crop Production
7.2	Crop Yield
7.3	Location and Type of Industries
8.0	**Environmental Datasets**
8.1	Flow Sheets of Waste Water Treatment Facilities
8.2	Capacity and Utilization of Pankha STP
8.3	Capacity and Utilization of Bingawan STP
8.4	Capacity and Catchment Area of 130 MLD & 43 MLD STP, Jajmau, Kanpur
9.0	**Agricultural Datasets**
9.1	Percentage of Agricultural Labor
9.2	Irrigation Datasets

S. No.	Name of Dataset
9.3	Fish Production and Fertilizer Consumption
9.4	Crop-Wise Geographical Area
9.5	Crop-Wise Irrigated Area
9.6	Farmers' Details
9.7	Fertilizer Consumption
10.0	**Livestock Datasets**
10.1	Livestock Statistics

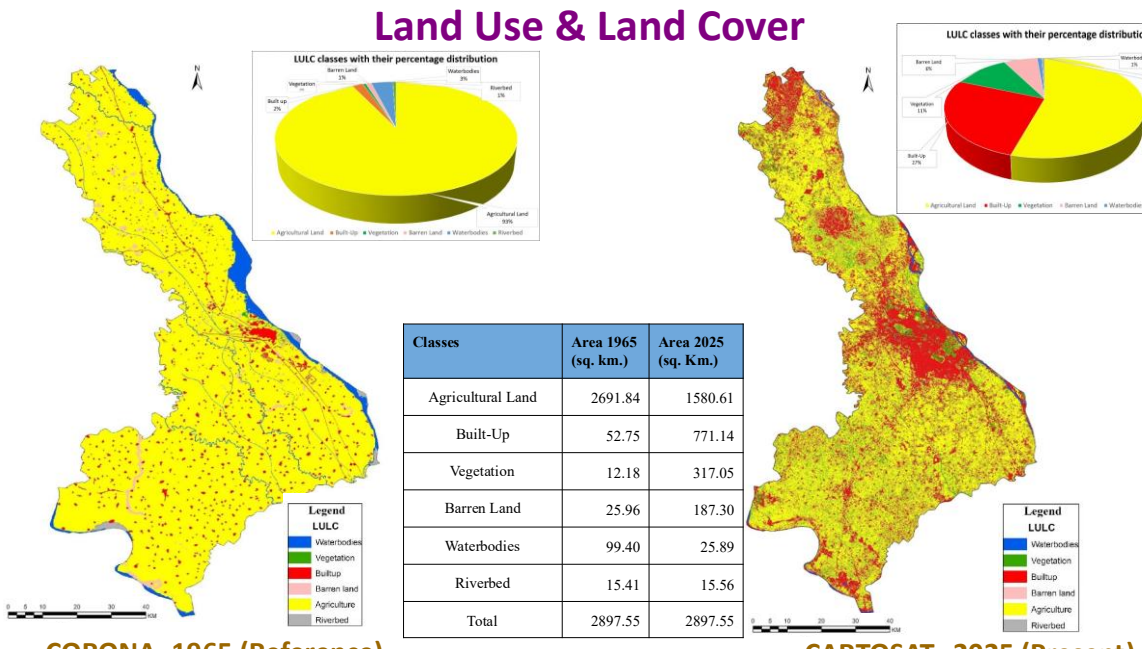
Digital Datasets for District: Kanpur Nagar

1. Geomorphological Datasets

1.1 Historical Corona, Google Earth Imagery, and SRTM DEM

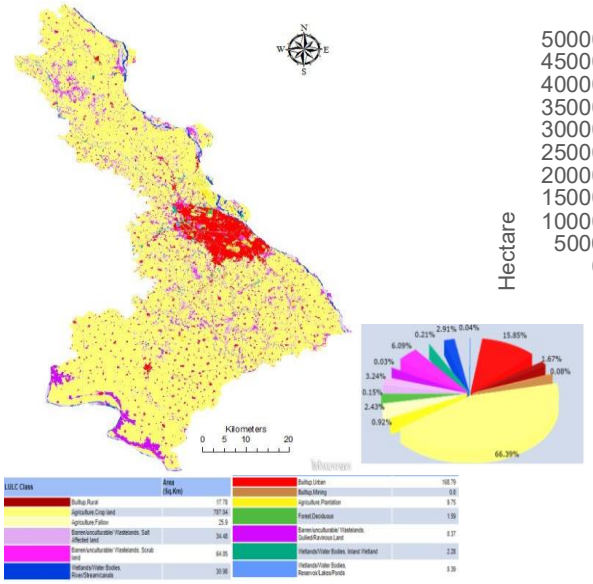


1.2 Land Use and Land Cover Changes: 1965 to 2025

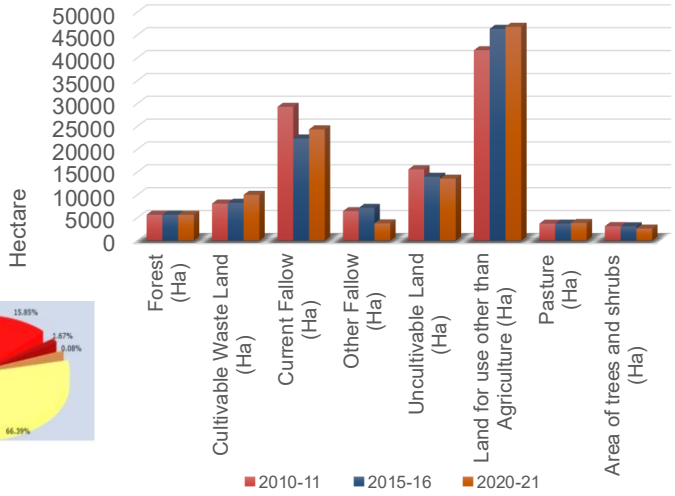


Classes	Area 1965 (sq. km.)	Area 2025 (sq. Km.)
Agricultural Land	2691.84	1580.61
Built-Up	52.75	771.14
Vegetation	12.18	317.05
Barren Land	25.96	187.30
Waterbodies	99.40	25.89
Riverbed	15.41	15.56
Total	2897.55	2897.55

1.3 Land Use and Land Cover from BHUVAN 2014



Land Use & Land Cover: BHUVAN 2014



Land Use & Land Cover: UPDES

1.4 Block-Wise Land Use Datasets

Land Use: UPDES

Blocks & Years	Forest (Ha)			Agricultural waste land (Ha)			Current Fallow (Ha)			Other Fallow (Ha)			Barren and Uncultivable Land (Ha)			Land for use other than agriculture (Ha)			Pasture (Ha)			Area of trees and Shrubs (Ha)		
	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000
Kalyanpur	363	364	95	629	592	920	1921	2696	1633	532	799	1581	1524	1853	1729	3978	1951	1704	584	562	667	298	189	550
Vidhanu	190	193	20	769	477	1216	1611	2088	2610	751	739	1560	670	992	967	4147	2143	2144	701	674	663	195	377	1014
Sarsaul	850	853	295	1620	267	1028	1625	2123	2050	615	1013	1107	515	1188	1293	4896	4035	2729	1424	1369	1212	184	336	889
Bilhaur	1077	1084	265	1209	1043	1111	3385	3423	3078	312	690	355	1542	1890	2448	3838	4037	2958	77	73	73	161	312	397
Kakwan	641	645	196	928	796	226	1482	871	1986	275	243	82	1416	1511	2630	2244	1537	783	20	18	18	165	45	430
Shivrajpur	749	752	245	2670	2443	793	1438	1988	1577	326	378	199	2540	2465	4540	1634	3061	1625	101	97	96	168	47	103
Chaubeypur	641	642	200	565	547	669	2186	2771	4205	342	376	217	1527	1682	2709	1846	2438	1586	37	36	36	186	25	237
Patara	203	207	13	400	318	429	1645	1019	348	298	291	824	751	705	788	4246	2671	1895	54	52	64	257	150	374
Bhitargaon	257	260	95	189	247	558	3275	6153	203	319	254	1323	733	1008	1325	5219	3509	2420	40	37	32	329	258	601
Chhatarpur	293	295	36	102	113	701	3357	6998	437	338	537	2106	1171	1703	2304	6529	6096	4115	85	81	55	162	25	382

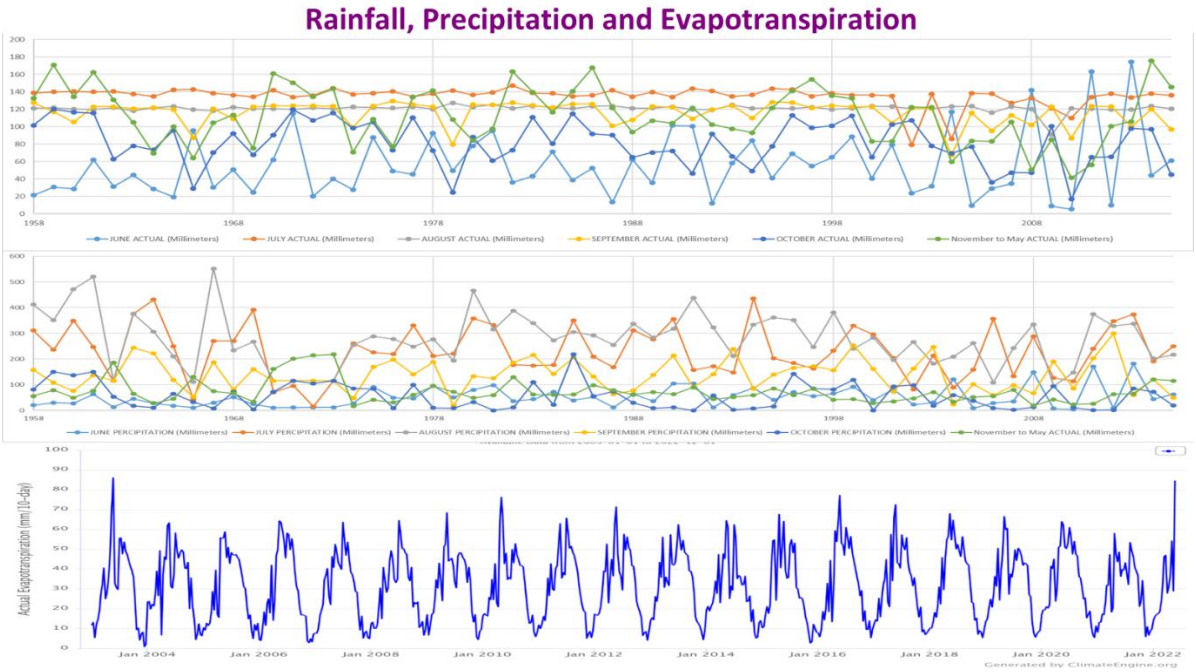
Land Use & Land Cover (2024): BHULEKH

S No	Tehsil	Pasture	Trees Shrubs	Pond	Lake	Well	River + Sand	Drain	Pump Canal	Canal	Canal Distributaries	Drain+ Constructed Drain	Stack yard	Compost Pit	Barren Land	waste land	Dam	Total
1	Kanpur Sadar	1763.82	620.21	341.20	6.87	0.02	1142.29	142.12	22.83	65.53	8.30	165.38	189.51	38.01	1727.80	814.55	0.13	22102.12
2	Narbal	1335.73	231.57	290.91	0.00	0.15	919.16	136.83	6.97	10.64	18.52	251.86	254.67	76.83	931.99	414.75	0.07	10587.95
3	Bilhaur	195.01	0.00	632.63	0.95	0.79	2131.38	196.13	0.00	0.12	7.30	396.66	211.60	72.48	3374.74	1586.96	0.03	19951.87
4	Ghatampur	160.35	0.00	767.95	0.00	0.26	1019.07	188.74	0.00	5.24	3.58	564.51	355.81	100.14	405.45	518.92	0.26	12973.53
	Total	**3454.91**	**851.78**	**2032.69**	**7.82**	**1.22**	**5211.9**	**663.82**	**29.8**	**81.53**	**37.7**	**1378.41**	**1011.59**	**287.46**	**6439.98**	**3335.18**	**0.49**	**65615.47**

Total River Area: 5211.9 Hectare
Total Water Body (Pond + Lake + Dam) Area: 2041 Hectare
Total Irrigation Canal, Drain, Distributaries: 2191.25 Hectare

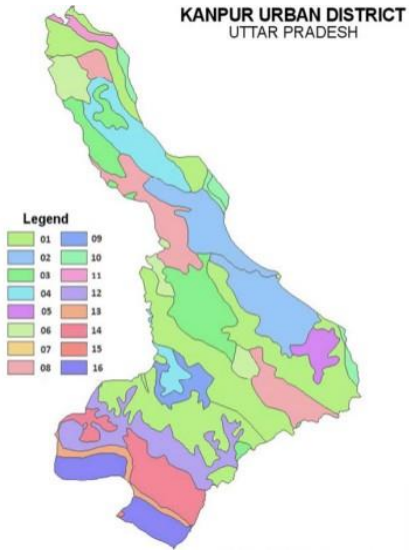
2. Climatological Datasets

2.1 Rainfall, Precipitation, and Evapotranspiration



3. Geological Datasets

3.1 Types of Soil



Soil Type

Alluvial plain (0-1% slope)

1. Deep, loamy soils and slightly eroded.
2. Deep, loamy soils and slightly eroded associated with silty soils.
3. Deep, fine soils moderately saline and sodic associated with loamy soils, slightly eroded.
4. Deep, fine soils and slightly eroded associated with loamy soils slightly saline and moderately sodic.
5. Deep, fine soils and slightly eroded associated with loamy soils.
6. Deep, silty soils with moderately salinity and sodicity associated with loamy soils with moderate salinity and sodicity and water logging .
7. Deep, silty soils associated with loamy soils slightly croded .
8. Deep, loamy soils and slightly eroded associated with silty soils slightly saline/sodic and moderately sodic.
9. Deep, silty soils and slightly croded associated with fine soils.

Active Flood Plain (1-3% slope)

10. Deep, sandy soils with moderate flooding associated with stratified loamy soils and slight flooding.
11. Deep, stratified loamy soils, with severe flooding associated with loamy soils with moderate flooding.

Ravinous land (3-5% slope)

12. Deep, silty soils and severely eroded associated with loamy soils severely eroded.
13. Deep, loamy soils and severely eroded.
14. Deep, loamy soils, very severely croded associated with silty soils, very severely eroded.

Very gently sloping uplands with hummocks (1 -3% slope)

15. Deep, fine soils, slightly eroded associated with fine smectitic soils and slightly eroded.

Ravinous Land (5-10% slope)

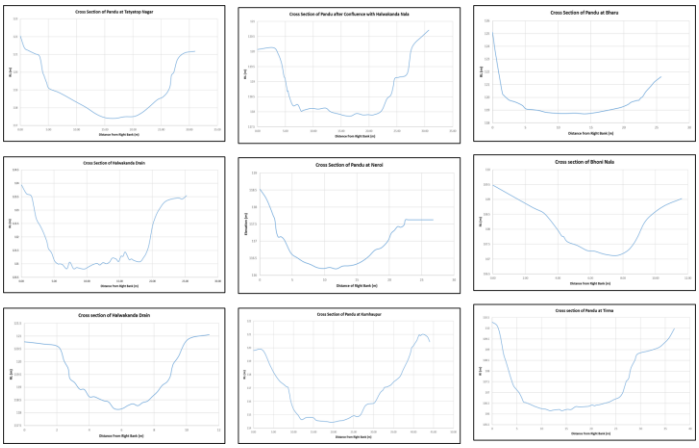
16. Deep, fine smectic soils and are moderately eroded associated with fine soils moderately eroded.

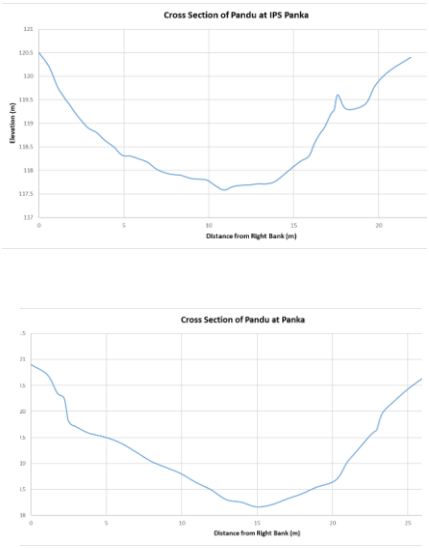
NBSS & LUP Regional Centre, New Delhi

4. Hydraulic Datasets

4.1 Cross section Survey

Cross Section Survey

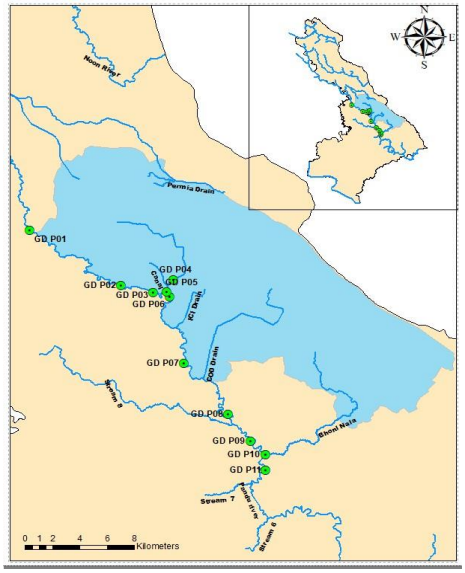




5. Hydrological datasets

5.1 Measurement Points and Discharge Datasets

Discharge Measurements in Kanpur Urban



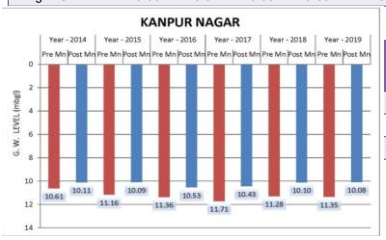
Measuring Point	Location	Discharge (MLD)
GD P01	Pandu river before entry into Kanpur Urban	192.35
GD P02	Pandu river before confluence with Industrial area drain	450.16
GD P03	Pandu river after confluence with Industrial area drain and before confluence with Halwakhanda Nala	829.9
GD P04	Halwakhanda Nala before confluence with Canal	135.14
GD P05	Halwakhanda Nala after confluence with Canal and upstream of confluence with Pandu	378.04
GD P06	Pandu river after confluence with Halwakhanda Nala	1175.81
GD P07	On Pandu after confluence with ICI drain and u/s of COD drain	1274.81
GD P08	Pandu U/S of confluence with unnamed stream	1365.49
GD P09	Pandu D/S of confluence with unnamed stream	1486.14
GD P10	Bhoni Nala	140.186
GD P11	Pandu after exit from Urban and confluence with Bhoni nala	1649.34

5.2 Ground Water Level Datasets

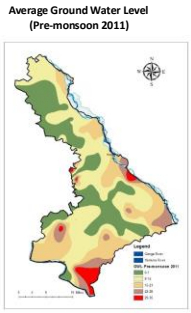
Ground Water

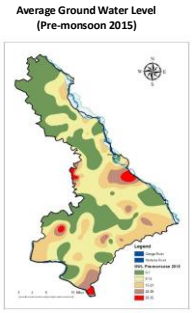
Average Ground Water Depths in Rural Area

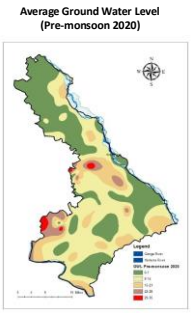
Blocks	RL, m	Year - 2011		Year - 2015		Year - 2020	
		Pre Mn	Post Mn	Pre Mn	Post Mn	Pre Mn	Post Mn
BHITARGAON	126.85	11.08	12.63	13.62	12.59	10.63	11.53
BILLHAUR	132.54	8.56	9.93	11.53	10.33	11.98	9.68
CHAUBEPUR	129.47	8.07	9.45	8.08	9.25	10.25	9.96
GHATAMPUR	134.39	16.46	17.75	17.01	15.65	16.64	17.11
KAKABAN	131.15	2.12	3.67	5.18	4.58	4.64	4.74
KALYANPUR	126.54	8.38	9.44	9.79	8.09	8.66	7.08
PATARA	138.03	11.48	13.47	19.45	18.23	22.16	21.02
SARSOL	119.52	13.00	13.99	16.10	14.89	15.23	13.01
SHIVRAJPUR	130.63	4.43	5.61	5.94	3.76	5.57	4.90
BIDHNOO	136.96	4.41	5.56	6.23	4.66	5.93	4.61
Avg. URBAN	**130.64**	**9.39**	**10.52**	**10.94**	**9.89**	**10.85**	**10.18**
Avg. RURAL	129.36	13.94	15.03	15.59	14.15	15.45	14.94

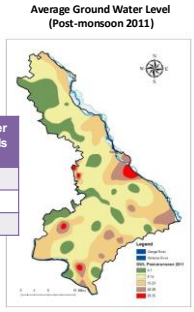


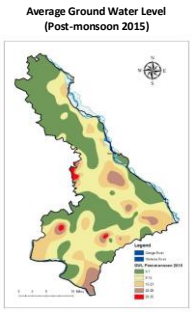
S No.	District	Number of Wells
1	Urban	56
2	Rural	96
3	Total	152

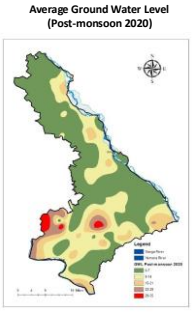












6. Demography Datasets

6.1 Population Statistics

Demography

SUMMARY

Urban Population: 3015645
Rural Population: 1565623
Total Population: 4581628
** As per Census 2011*

URBAN

S No.	Name	2011 Population
1	Ghatampur	40623
2	Bithoor	11300
3	Bilhaur	20493
4	Shivrajpur	11948
5	Kanpur	2768057

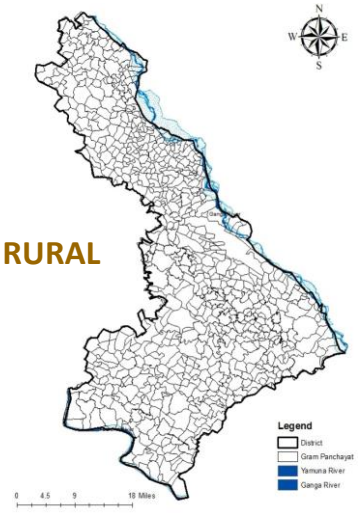
RURAL

S No.	Blocks	Rural Population 2011	Number of Villages
1	Bhitargaon	178550	112
2	Bilhaur	172167	96
3	Chaubepur	128833	101
4	Ghatampur	211778	118
5	Kakwan	64250	36
6	Kalyanpur	171240	70
7	Patara	149958	68
8	Sarsol	187301	90
9	Shivrajpur	121549	119
10	Vidhunu	179997	92

S No.	Work	Prepared By	Format	Data	Source
1	Population	cGanga	.shp	Blocks	Census 2011
2	Population Density	cGanga	.shp	Blocks	UPDES (2019)
3	Urban Centers	cGanga	.shp	05 Nos.	Census 2011
4	Village	cGanga	.shp	902 Nos.	Census 2011

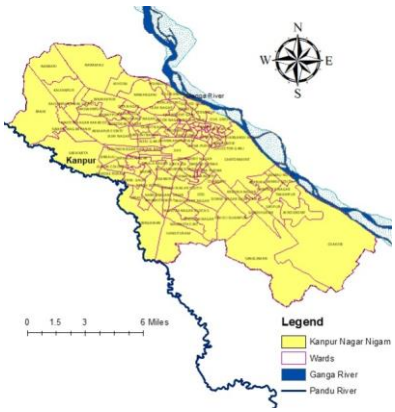
6.2 Maps of Urban and Rural Areas

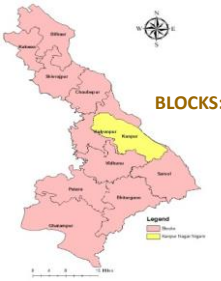
Urban and Rural



6.3 Maps of Administrative Units

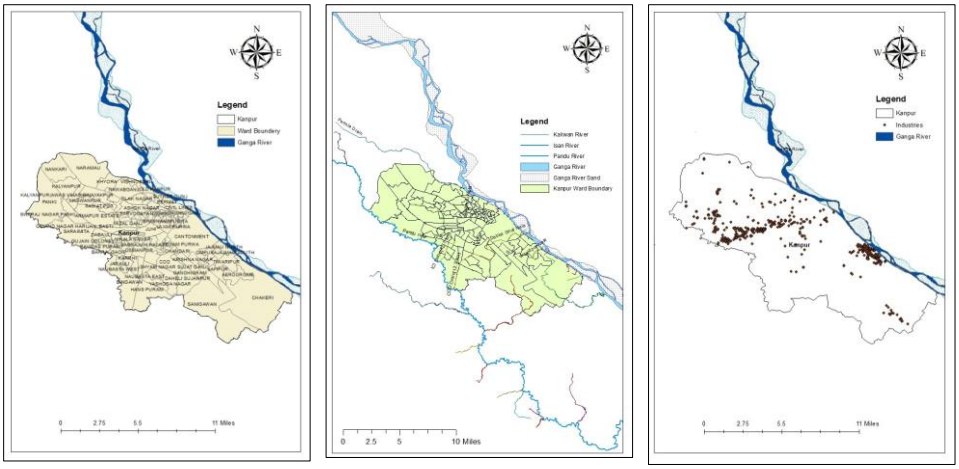
Administrative Boundaries





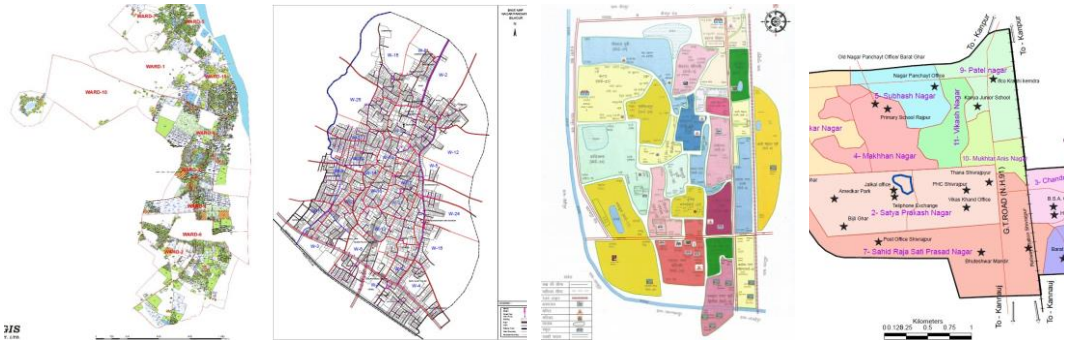
6.4 Maps of Ward Boundaries, River Streams, Ganga River Sand, and Industrial Locations

Kanpur Nagar Nigam



6.5 Maps of Panchayat-Level Administrative Units

Panchayats



Bithoor Nagar Panchayat | Bilhaur Nagar Panchayat | Shivrajpur Nagar Panchayat | Ghatampur Nagar Panchayat

6.6 Cadastral Maps of Administrative Units

Kanpur Nagar District: Bhu-Naksha (Indian Cadastral Mapping Solution) (upbhunaksha.gov.in)

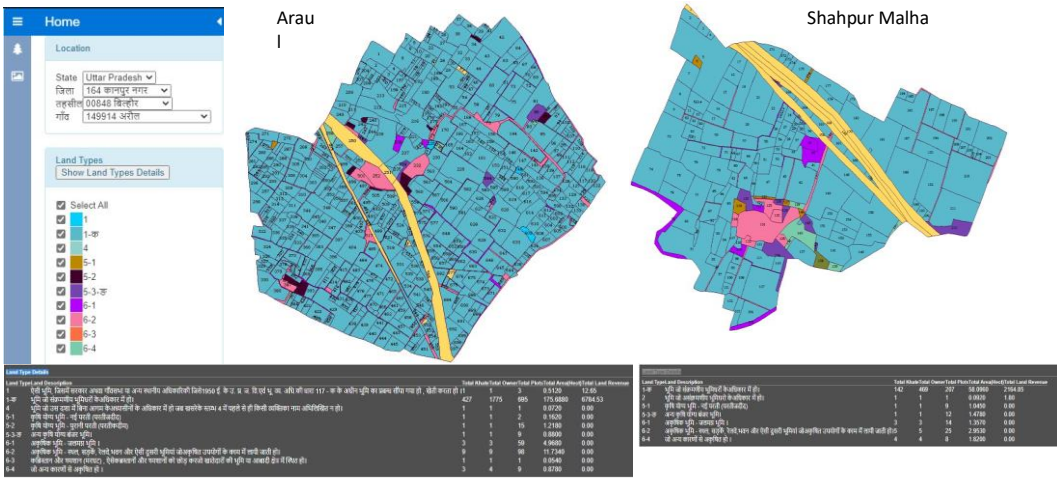


Image form Data Available, Category wise every village Land data available.

6.7 Block and Village-Level Land Records

Kanpur Nagar District: Land Record

S No	Tehsil	चरागाह (पशुचर)	जलाने की लकडी की जगह	तालाब	झील	कुआ	नदी+रेत+बालू	नाला	पम्पनहर	नहर	बम्बा + बम्बी	नाली + पक्की नाली	खलिहान	खाद के गडढे	ऊसर	बंजर	बाँध	कुल योग खतौनी
1	Kanpur Sadar	1763.82	620.21	341.20	6.87	0.02	1142.29	142.12	22.83	65.53	8.30	165.38	189.51	38.01	1727.80	814.55	0.13	22102.12
2	Narbal	1335.73	231.57	290.91	0.00	0.15	919.16	136.83	6.97	10.64	18.52	251.86	254.67	76.83	931.99	414.75	0.07	10587.95
3	Bilhaur	195.01	0.00	632.63	0.95	0.79	2131.38	196.13	0.00	0.12	7.30	396.66	211.60	72.48	3374.74	1586.96	0.03	19951.87
4	Ghatampur	160.35	0.00	767.95	0.00	0.26	1019.07	188.74	0.00	5.24	3.58	564.51	355.81	100.14	405.45	518.92	0.26	12973.53

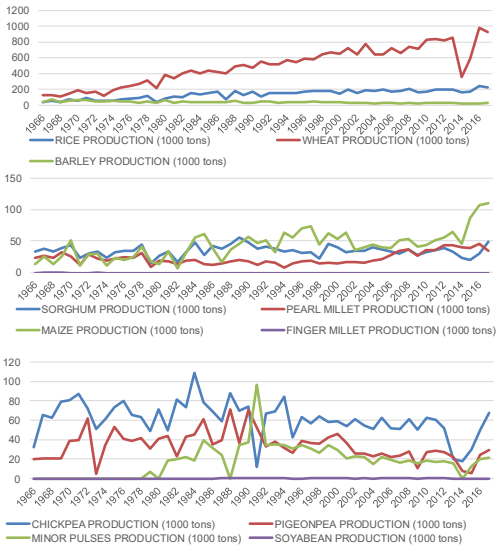
Seq No	Village Khatauni Code	Village Khatauni Name (Hindi)	चरागाह (पशुचर)	जलाने की लकडी की जगह	तालाब	झील	कुँआ	नदी+रेत+ बालू	नाला	पम्पनहर	नहर	बम्बा + बम्बी	नाली + पक्की नाली	खलिहान	खाद के गडढे	ऊसर	बंजर	बाँध	कुल योग खतौनी-
226	150316	सम्भरपुर	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.70
227	150426	सरनेतपुर	0.46	0	0.41	0	0	0	0	0	0	0	0.22	0.46	0	0	0	0	2.89
228	220403	सराय राम राम	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.44
229	150314	सिंहपुर कछार	4.69	2.67	0.60	0	0	0	0	0	5.35	0	0.41	0.29	0.14	0.49	0.02	0	46.72
230	150359	सिंहपुर कठार	5.97	1.38	0.55	0	0	0	0.28	0	0	0	0.16	0.45	0.05	0	0.57	0	94.54
231	150389	सीढी	38.18	8.15	4.15	0	0	0	0	0	0	0	0.56	0	0	61.85	5.77	0	159.60
232	150353	सुजानपुर	0.73	0.64	0	0	0	0	0	0	0	0	0.25	1.7	0.09	0.10	0	0	7.40
233	150343	सुरार	0	0	4.45	0	0	4.84	2.14	0	0	0	2.21	0.96	0.20	119.64	21.80	0	195.57
234	150416	सुरौली	2.47	1.14	0	0	0	0	0	0	0	0	0.66	0.47	0.12	0	0.51	0	9.35
235	150414	सुल्तानपुर	0.02	0	0	0	0	0	0	0.60	2.74	0	0.57	0.36	0.12	0	0	0	7.68
236	150386	सेन पश्चिम पारा	46.06	19.18	4.88	0	0	0	1.62	9.78	0	0	6.29	2.59	0	0	6.41	0	160.77
249	150301	हींगुपुर कछार	0.50	0	0	0	0	3.24	0	0	0	0	0	0	0	0	0	0	11.02
250	150295	हींगुपुर बांगर	0	0	0	0	0	0	1.01	0	0	0	0	0	0.15	0	0.72	0	7.71
251	150326	हीरा कछार	0	0.11	1.23	0	0	0	0.38	0	0	0	0.02	0	0.08	0.29	0.46	0	7.55
252	150330	हीरा बांगर	0	0	0.11	0	0	0	0.73	0	0	0	0	0	0.09	0.24	0.21	0	6.47
253	220395	हंसपुर	1.90	0	0.36	0	0	0	2.89	0	0	0	0.02	0.89	0	0	0	0	106.46
		Total	**1763.82**	**620.21**	**341.20**	**6.87**	**0.02**	**1142.29**	**142.12**	**22.83**	**65.53**	**8.30**	**165.38**	**189.51**	**38.01**	**1727.80**	**814.55**	**0.13**	**22102.12**
		Minimum	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
		Maximum	**92.98**	**31.58**	**29.79**	**4.41**	**0.01**	**231.83**	**8.93**	**9.78**	**15.44**	**2.36**	**6.29**	**14.25**	**10.21**	**119.64**	**46.40**	**0.13**	**4849.58**
		Average	**6.97**	**2.46**	**1.35**	**0.03**	**0.00**	**4.53**	**0.56**	**0.09**	**0.26**	**0.03**	**0.65**	**0.75**	**0.15**	**6.86**	**3.22**	**0.00**	**87.36**

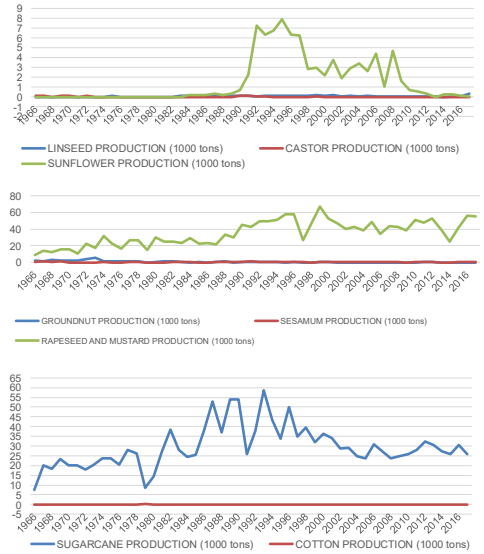
Source: Bhulekh, UP

7. Economic Datasets

7.1 Crop Production

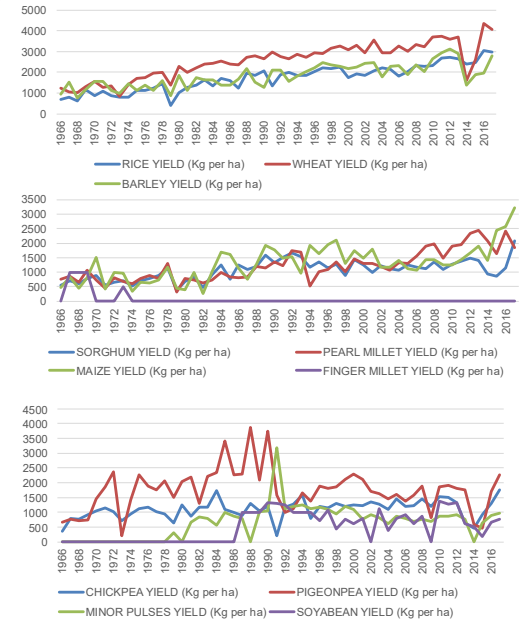
Cropwise Production

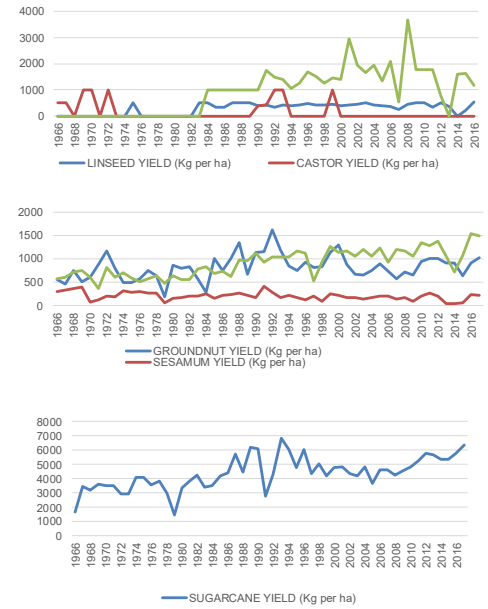




7.2 Crop Yield

Cropwise Yield





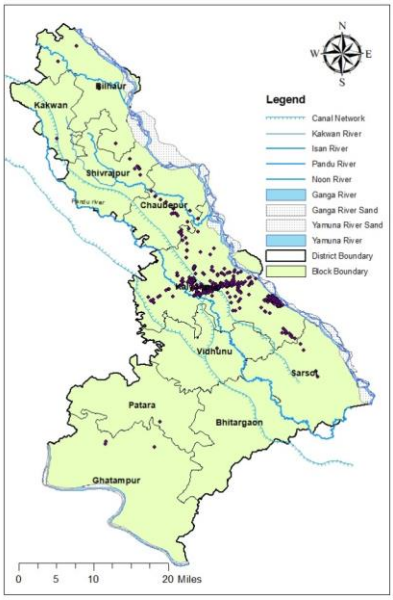
7.3 Location and Type of Industries

Industries

Location and Type of Major Industries			
N	E	Industry Name	Product
26.44	80.18	Propene Products Ltd., Kalpi Road, Post Office Chakkarpur Bhauti, Kanpur	Dairy
27.37	79.61	Madan Mohan Fertilizer, Brewer Road, Farrukhabad	Fertilizer
26.53	80.23	Artificial Limbs Manufacturing Corporation Of India, G. T. Road Naramau, Kanpur	Artificial Limbs (Electroplating)
26.46	80.27	Anod Plasma Spray Ltd., E 20, Uptorn Estate, Site 1, Panki, Kanpur	Metal Surface Treatment
26.45	80.29	Quality Pumps, 1-B/1 A dada nagar, Kanpur	Galvanizing
26.46	80.30	Roto marc System Pvt. Ltd., 123/355, Fazal Ganj, Kanpur	Electroplating
26.45	80.27	Saraswati Engineering, Panki Industrial Area Site-1, Kanpur	Metal Surface Treatment
26.45	80.30	U.P. Pump Pvt Ltd. Dada Nagar Kanpur.	Galvanizing

S No.	Category	No. of Industries
1	Green	472
2	Orange	43
3	Red	420
Total number of Industries		935

Source: CPCB

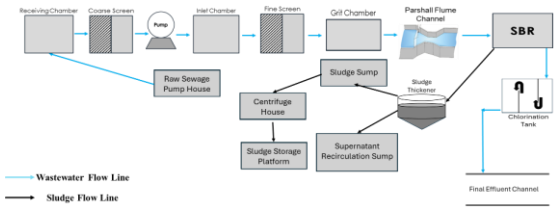


8. Environmental Datasets

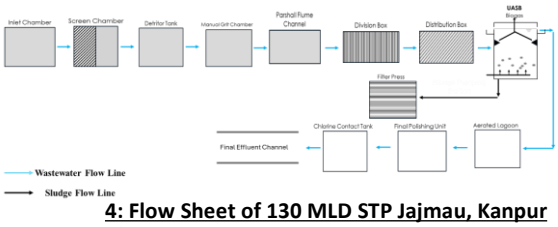
8.1 Flow Sheets of Waste Water Treatment Facilities

Kanpur Nagar: Treatment Facilities

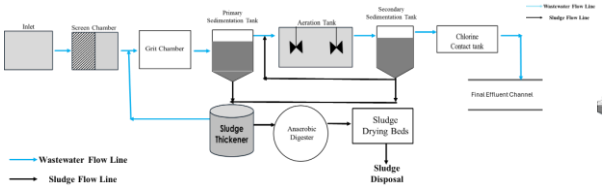
1: Flow Sheet of 30 MLD SBR Pankha STP



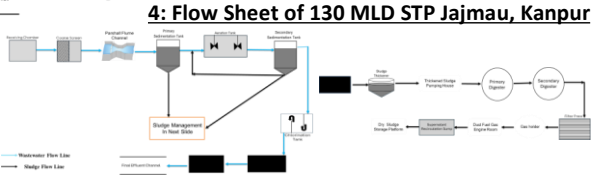
2: Flow Sheet of 210 MLD UASB Bingawan STP



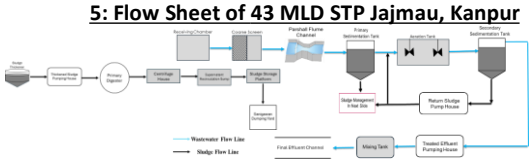
3: Flow Sheet of 42 MLD ASP SRP Sajari, Kanpur



4: Flow Sheet of 130 MLD STP Jajmau, Kanpur



5: Flow Sheet of 43 MLD STP Jajmau, Kanpur



8.2 Capacity and Utilization of Pankha STP

30 MLD SBR Based STP AT Pankha, Kanpur

STP capacity (MLD)	Utilization capacity (MLD)
30	30

Catchment Area

S No.	Wards	Ward No.
1	Govind Nagar Harijan Basti	2
2	Maswanpur	8
3	Naramau	17
4	Kalyanpur	19
5	Kalayanpur – A.V.	23
6	Naveen Nagar, Kakdeo	25
7	Nankari	27
8	Khyora	44
9	Panki	50
10	Saraimeeta	53
11	Vinayakpur	54
12	Swaraj Nagar, Panki	57
13	Rawatpur	60
14	Dabauli	72

S.NO.	UNITS	QUANTITY
1	Receiving Chamber	1
2	Coarse Screen Channel - Mechanical	3
3	Coarse Screen Channel - Manual	1
4	Raw Sewage Sump	1
5	Inlet Chamber	1
6	Fine Screen Channel - Mechanical	2
7	Fine Screen Channel - Manual	1
8	Grit Chamber - Mechanical	2
9	Grit Chamber - Manual	1
10	Parshall Flume Channel	1
11	Splitter Box (With 4 Compartments)	1
12	SBR Basins	4
13	Chlorination Tank	1
14	Sludge Thickener	1
15	Supernatant Recirculation Sump	1
16	Sludge Sump	1

8.3 Capacity and Utilization of Bingawan STP

210 MLD UASB BINGAWAN STP

STP capacity	Utilization capacity (MLD)
210	135

Catchment Area

S No.	Wards Name	Ward No.	S No.	Wards Name	Ward No.
1	Jawahar Nagar	5	30	Naubasta East	63
2	Bhanna Purwa	6	31	Sarvodaya Nagar	64
3	Nirala Nagar	7	32	Naubasta West	65
4	Ravidas Puram	9	33	Pashupati Nagar	66
5	Benajhabar	10	34	Barra West	67
6	Sabzi Mandi Kidwai Nagar	14	35	Sarojini Nagar	69
7	Mcrobert Ganj	15	36	Karrahi	70
8	Juhi Parampurva	16	37	Sisamau South	71
9	Usmanpur	18	38	Naseema Bad	72
10	Fazal Ganj	20	39	Munshi Purwa	75
11	Ambedkar Nagar, Kakadeo	30	40	Barra East	77
12	Rai Purva	32	41	Prem Nagar	78
13	Vijay Nagar	33	42	Babupurwa Colony	80
14	Ratan Lal Nagar	34	43	Kaushal Puri	81
15	Bakarganj	36	44	Jarauli	82
16	Ashok Nagar	37	45	Juhi Lal Colony	84
17	Juhi Hamirpur Road	38	46	Lajpat Nagar	85
18	Transport Nagar	39	47	Kakdeo	86
19	Hanspuram	41	48	Bingawan	87
20	Yashoda Nagar East	46	49	Basant Vihar	88
21	Govind Nagar South	48	50	Harihar Nath, Shastri Nagar	91
22	Gandhi Nagar	49	51	Kidwai Nagar South	92
23	Barra	51	52	Govind Nagar North	93
24	Nehru Nagar	51	53	Yashoda Nagar West	95
25	Geeta Nagar	52	54	Bekan Ganj	97
26	Gujaini Colony	55	55	Kidwai Nagar North	100
27	Sisamau	59	56	Begumpurwa	102
28	Tilak Nagar	61	57	Babupurwa	105
29	Barra Gaon	62	58	Chaman Ganj	107

S No.	UNITS	QUANTITY
1	Inlet Chamber	1
2	Mechanical Screen Channel	3
3	Manual Screen Channel	2
4	Detritor Tank	4
5	Manual Grit Chamber	6
6	Parshall Flume	1
7	Division Box	32
8	Distribution Box	32
9	Aerated Lagoon (F.P.U. I)	2
10	Final Polishing Unit (F.P.U. Ii)	2
11	Filter Press Building	4
12	Gas Holder	1
13	Valve Chamber	1
14	Flaring Unit	1
15	M E P Room	1
16	Sludge Pumping Station	1
17	UASB Reactor	2 SETS OF 8 REACTORS

8.4 Capacity and Catchment Area of 130 MLD & 43 MLD STP, Jajmau, Kanpur

Catchment Area of 130 MLD and 43 MLD STP

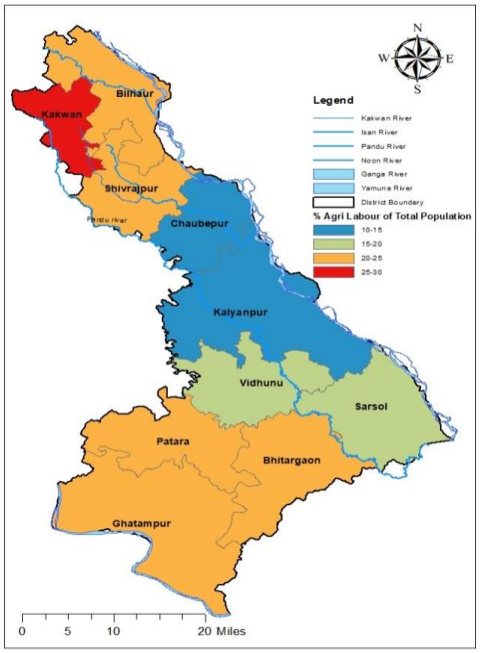
S No.	Wards Name	Ward No.	S No.	Wards Name	Ward No.
1	Laxmi Purwa	1	18	Harbans Mohal	76
2	Chunni Ganj	3	19	Civil Lines	78
3	Gwaltoli	4	20	Chatai Mohal	79
4	Safipur	11	21	Dalelpurwa	83
5	Purana Kanpur	13	22	Cooper Ganj	89
6	Khalasi Line	13	23	Dana Khori	90
7	Krishna Nagar	24	24	Patkapur	94
8	Gandhi Gram	26	25	Jajmau North	96
9	Harjender Nagar	28	26	Maheswari Mohal	98
10	Om Purwa	29	27	Chandari	99
11	Vishnupuri	40	28	Chauk Sarafa	101
12	Parmat	42	29	Parade	103
13	Nawab Ganj	43	30	General Ganj	104
14	Anwar Ganj	56	31	Collector Ganj	106
15	Tiwaripur	58	32	Talaq Mohal	108
16	Jajmau South	73	33	Nazirbagh	109
17	Sutter Ganj	75	34	Colonel Ganj	110

9. Agricultural Datasets

9.1 Percentage of Agricultural Labor

Agriculture

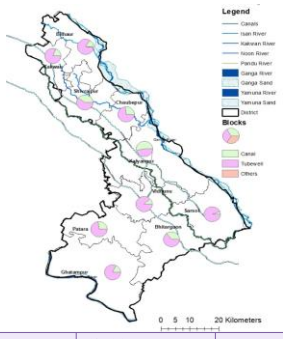
S.No.	Blocks	% of Agri Labour of the Total Population	Number of Live Stock /1000 Population	% of Forest Area to the Total Reported area	Consumption of Fertilizer per Hect Gross Swon Area
1	Bhitargaon	20.11	562.71	0.81	455.85
2	Bilhaur	22.85	381.4	3.49	709.33
3	Chaubepur	14.94	318.12	2.99	409.21
4	Ghatampur	21.97	683.73	0.61	237.56
5	Kakwan	25.75	376.45	3.97	479.53
6	Kalyanpur	13.7	538.63	1.98	736.68
7	Patara	21.08	959.65	0.75	325.29
8	Sarsol	18.68	585.93	2.79	439.2
9	Shivrajpur	21.94	511.45	3.1	419.82
10	Vidhunu	16.73	424.77	0.64	372.06



9.2 Irrigation Datasets

Irrigation

S No.	Blocks	% net Irrigated area to Net sown area	% Area of Net Irrigated Area by the Sources		
			Canal	Tube wells	Others
1	Bhitargaon	75.07	34.9	65	0.12
2	Bilhaur	42.9	16.5	81.5	2.02
3	Chaubepur	89.45	26.6	73.2	0.23
4	Ghatampur	79.79	17.7	82.2	0.12
5	Kakwan	86.63	18.5	81.1	0.44
6	Kalyanpur	75.75	53.2	46.2	0.61
7	Patara	39.09	26.8	72.7	0.45
8	Sarsol	90.82	6.11	93.7	0.16
9	Shivrajpur	104.4	39.8	60.1	0.15
10	Vidhunu	51.57	11.8	88	0.3



Blocks & Years	Net Area Sown (Ha) [A]			Area sown more than Once (Ha) [B]			Net Irrigated Area (Ha)			Gross Irrigated Area (Ha) [C]			Total cropped area (Ha) [D]=[A]+[B]			% of Gross Irrigated Area over Cropped Area [C]*100/[D]			Cropping Intensity (%) [D]/[A]*100		
	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000
Kalyanpur	8570	12560	12239	23050	1657	6238	10044	11221	10017	13914	13820	14319	31620	14217	18477	44.00	97.21	77.50	368.96	113.19	150.97
Vidhanu	20600	19969	18647	9698	5634	9617	8358	15708	14076	15234	20117	21571	30298	25603	28264	50.28	78.57	76.32	147.08	128.21	151.57
Sarsaul	18770	21142	19492	10805	6373	10064	9058	14792	15713	23952	21890	19135	29575	27515	29556	80.99	79.56	64.74	157.57	130.14	151.63
Bilhaur	19332	15834	18106	15321	14771	13246	8630	11750	13481	16959	16820	22818	34653	30605	31352	48.94	54.96	72.78	179.25	193.29	173.16
Kakwan	9007	6706	7327	18609	6624	5901	9623	6171	6275	14047	8750	11395	27616	13330	13228	50.87	65.64	86.14	306.61	198.78	180.54
Shivrajpur	14537	10826	13894	15838	13509	10005	13786	10045	12334	22525	19700	19271	30375	24335	23899	74.16	80.95	80.64	208.95	224.78	172.01
Chaubeypur	14127	10943	12041	14090	8197	7725	14931	8652	17759	20519	14320	14114	28217	19140	19766	72.72	74.82	71.41	199.74	174.91	164.16
Patara	19072	20417	20395	13644	4211	8822	13459	13864	17535	15138	15715	16548	32716	24628	29217	46.27	63.81	56.64	171.54	120.62	143.26
Bhitargaon	21258	21466	25429	8167	28	16096	14865	15515	16889	24997	16410	21834	29425	21494	41525	84.95	76.35	52.58	138.42	100.13	163.30

9.3 Fish Production and Fertilizer Consumption

Kanpur Nagar District: Fish Production

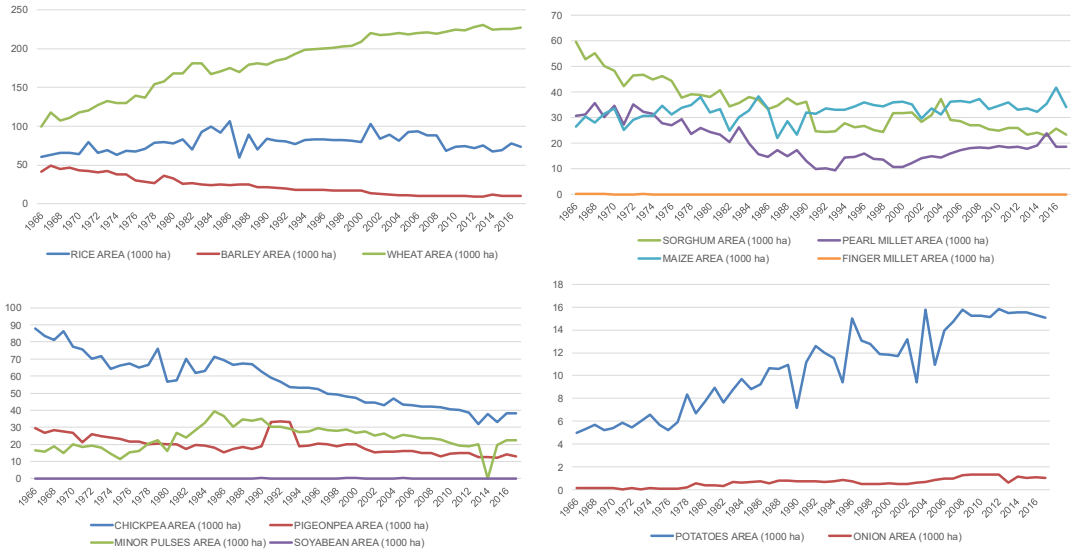
Blocks & Years	Departmental Reservoir									Private Sector Reservoir								
	Number			Area (Ha)			Fish Production (quintals)			Number			Area (Ha)			Fish Production (quintals)		
	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000	2020	2010	2000
Kalyanpur	1	1	1	11.64	11.64	11.00	30.00	0.00	10.00	6	8	0	8.71	9.00	0	424.00	350.00	0
Vidhanu	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	2	8	0	1.10	9.00	0	53.54	370.00	0
Sarsaul	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	5	9	0	4.00	10.00	0	194.72	400.00	0
Bilhaur	1	1	1	48.48	48.48	59.00	153.00	15.00	12.00	5	10	0	2.50	11.00	0	121.70	560.00	0
Kakwan	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0	8	0	0.00	10.00	0	0.00	410.00	0
Shivrajpur	2	2	2	43.39	43.39	52.00	132.00	90.00	20.00	1	8	0	0.50	10.00	0	24.34	430.00	0
Chaubeypur	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	1	8	0	0.50	9.00	0	24.34	370.00	0
Patara	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	1	9	0	0.80	10.00	0	39.00	400.00	0
Bhitargaon	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	7	11	0	5.80	11.00	0	282.34	450.00	0
Ghatampur	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	21	11	0	19.59	11.00	0	954.02	460.00	0

Kanpur Nagar District: Fertilizer Consumption

Blocks & Years	Nitrogen (MT)			Phosphorus (MT)			Potash (MT)		
	2020	2010	2000	2020	2010	2000	2020	2010	2000
Kalyanpur	9422	6464	2765	3028	3277	1611	306	629	143
Vidhanu	9823	6397	3470	3078	2010	1629	336	511	143
Sarsaul	9850	7271	3486	3162	2277	1800	364	542	144
Bilhaur	9680	7476	4639	3116	2737	3093	384	701	180
Kakwan	5938	3924	865	2029	1497	642	223	456	21
Shivrajpur	9454	7496	3976	3078	2280	2203	368	779	143
Chaubeypur	9596	7504	4010	3094	2182	2287	388	630	174
Patara	9416	3476	2629	3084	2060	1661	337	486	156
Bhitargaon	9624	7076	2503	3126	3125	1514	342	575	143
Ghatampur	9310	6655	3096	3012	3036	1667	336	669	146

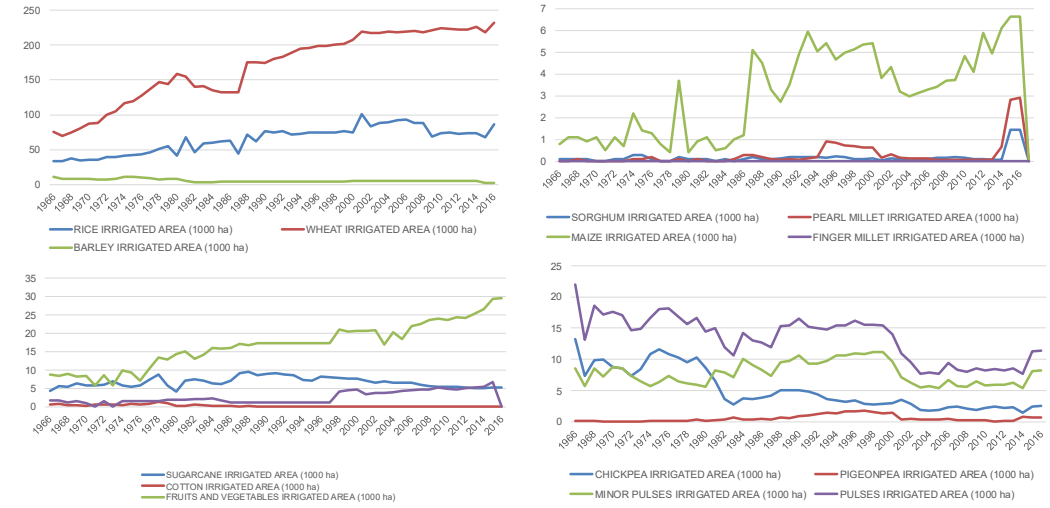
9.4 Crop-Wise Geographical Area

Cropwise Area



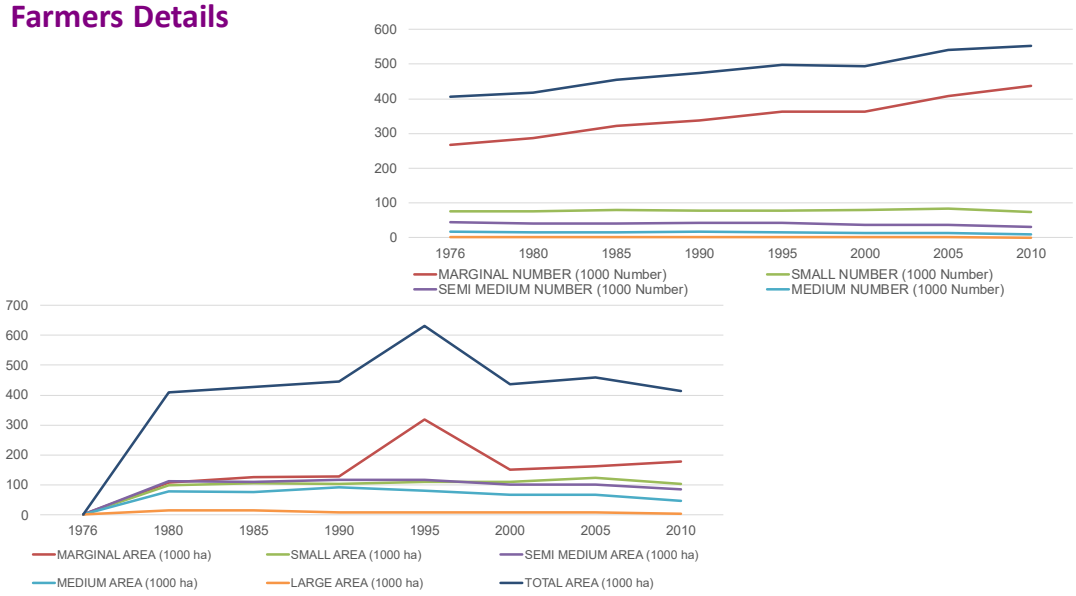
9.5 Crop-Wise Irrigated Area

Cropwise Irrigated Area



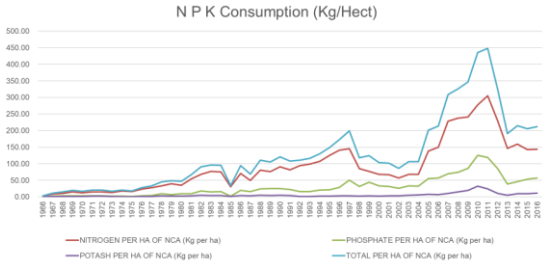
9.6 Farmers' Details

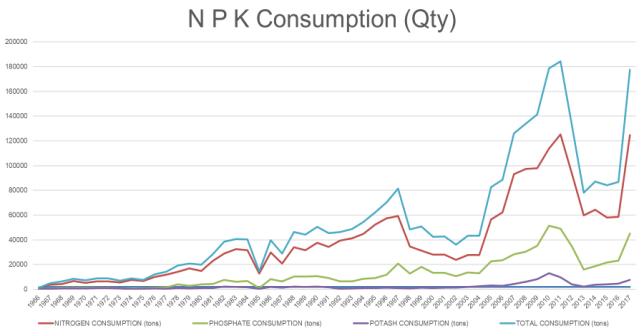
Farmers Details

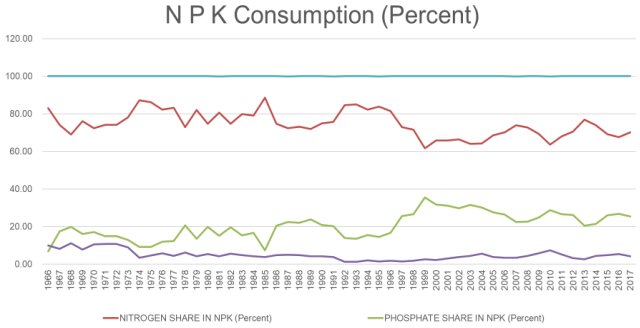


9.7 Fertilizer Consumption

Fertilizer Consumption

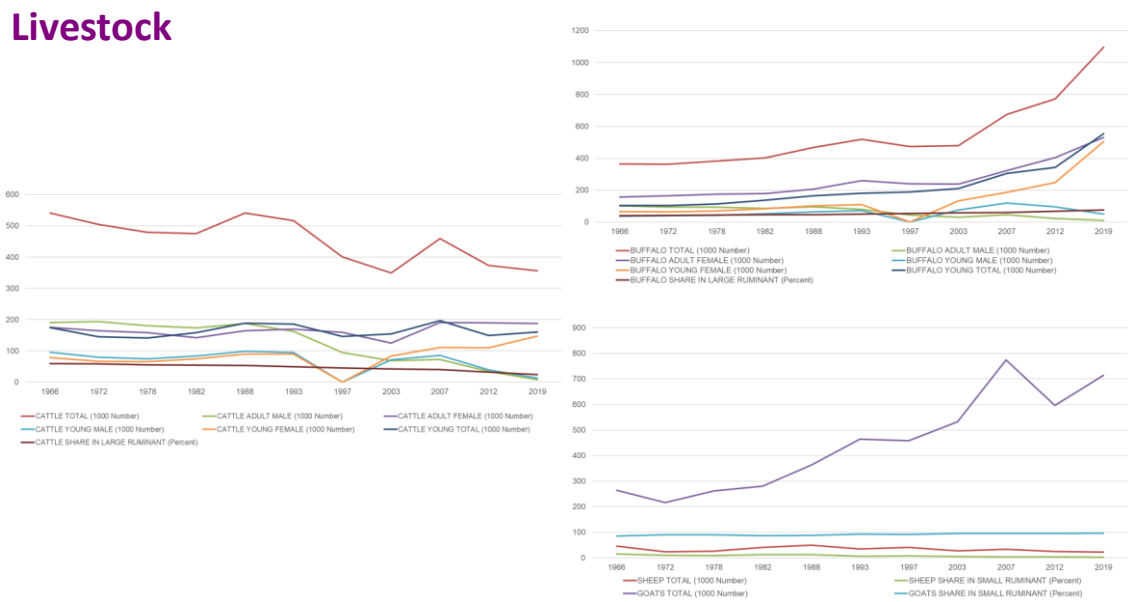






10. Livestock Datasets

10.1 Livestock Statistics



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