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Improving Water Security in Water Stressed Bagmati River Basin, Nepal

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www.bagmati.gov.np



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Nepal

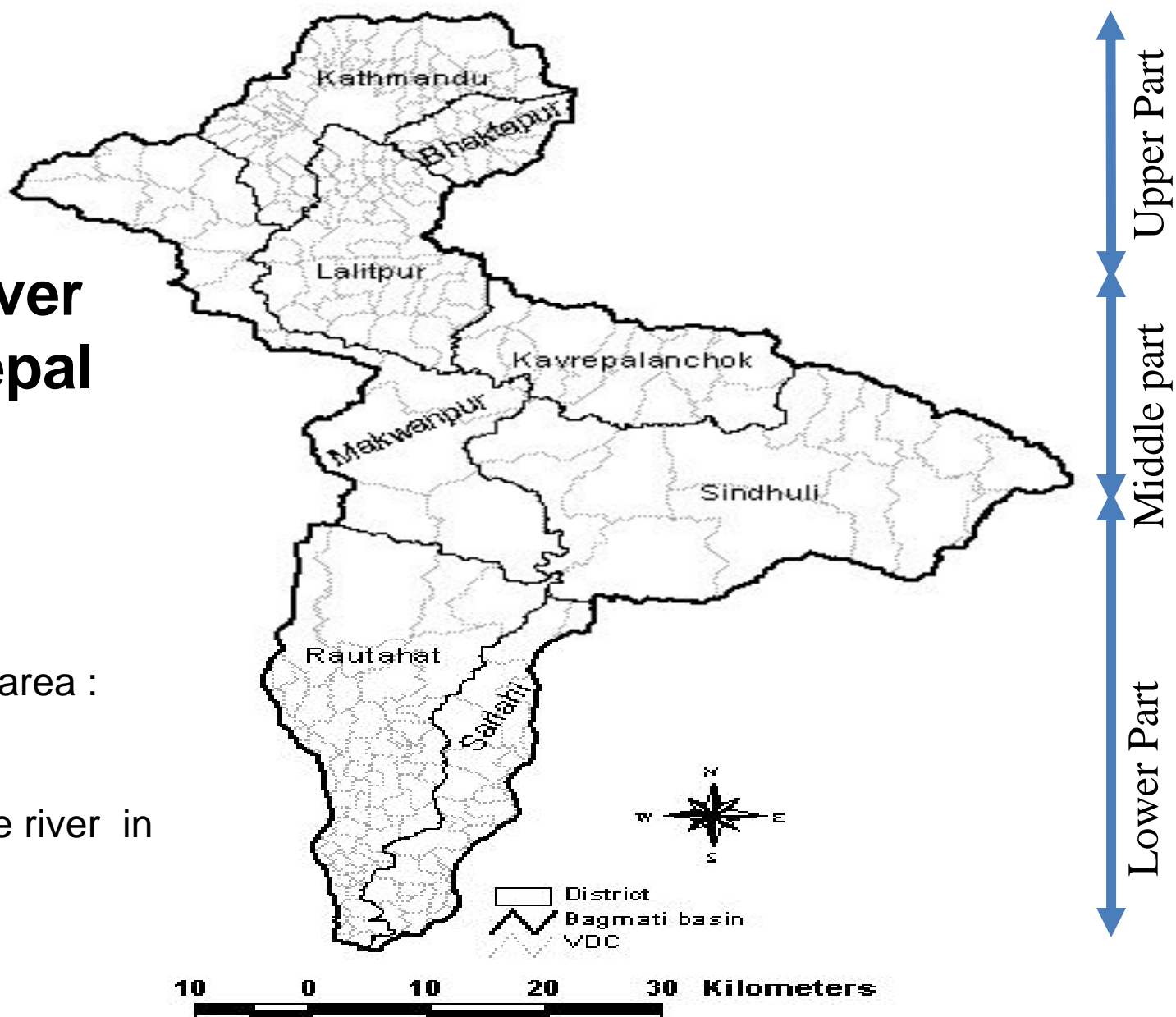
River Basins of Nepal



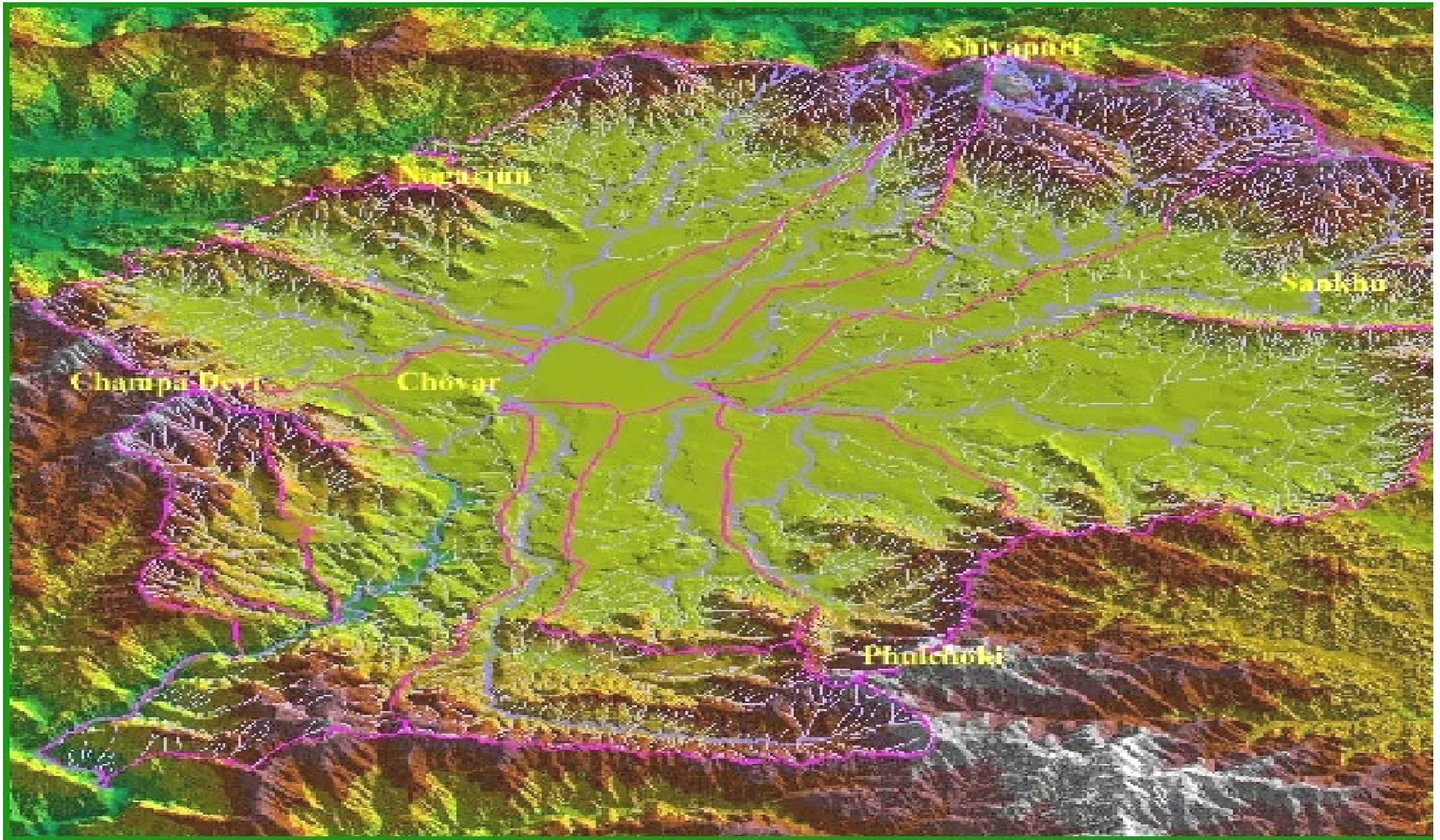
Bagmati River Basin in Nepal

Total Catchment area :
3750 sq. km.

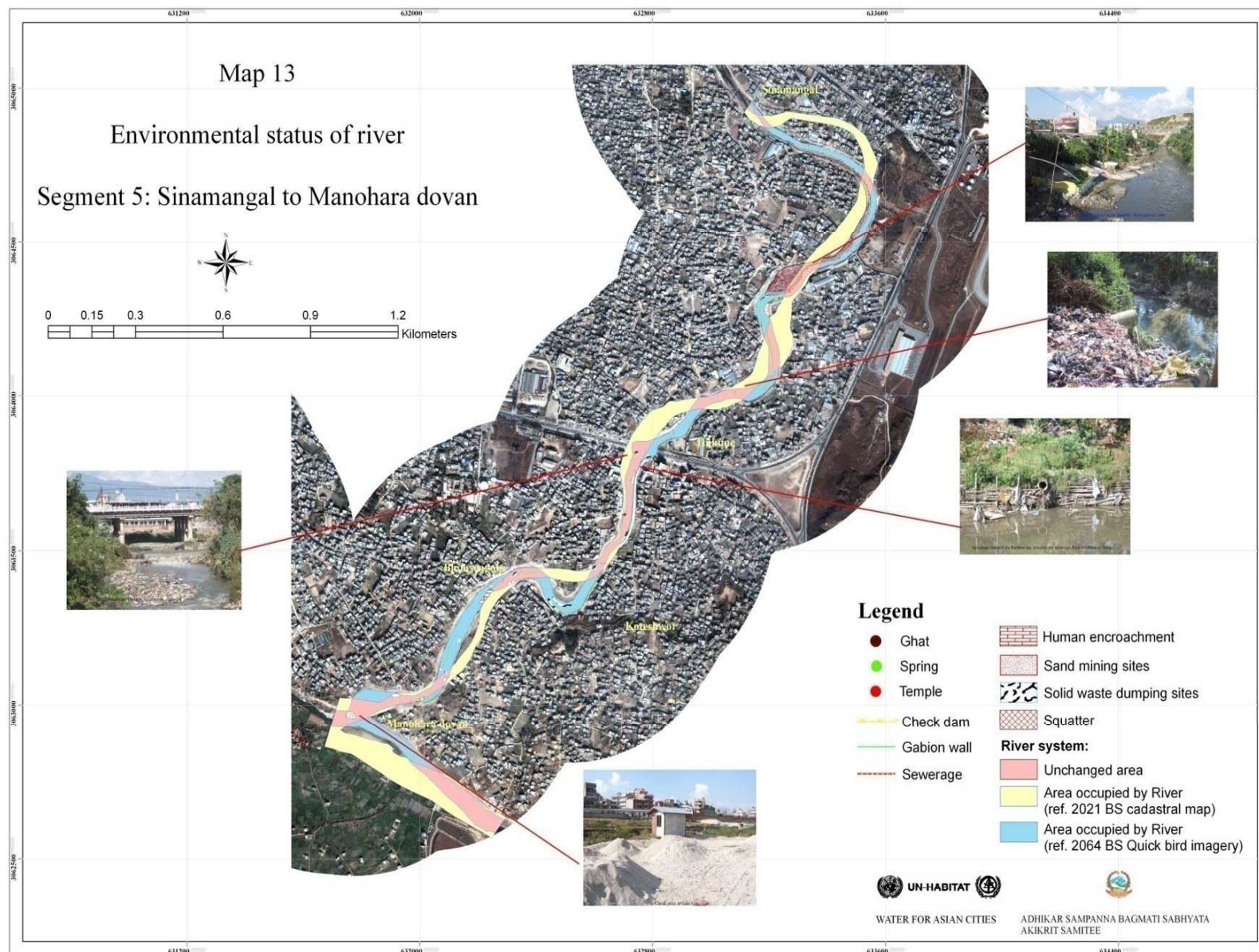
Total length of the river in
Nepal : 220km



Bagmati River in Kathmandu Valley



A few length of Bagmati River in KV



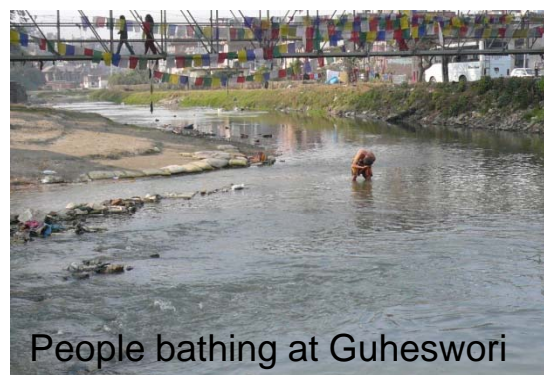
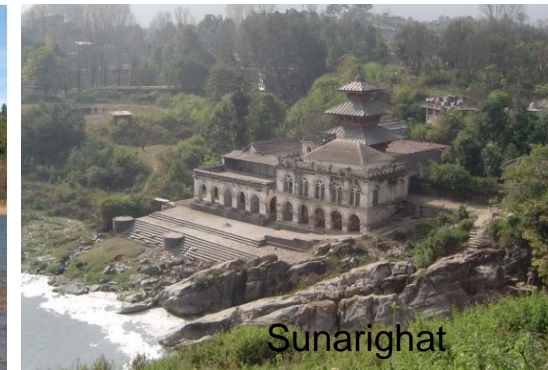
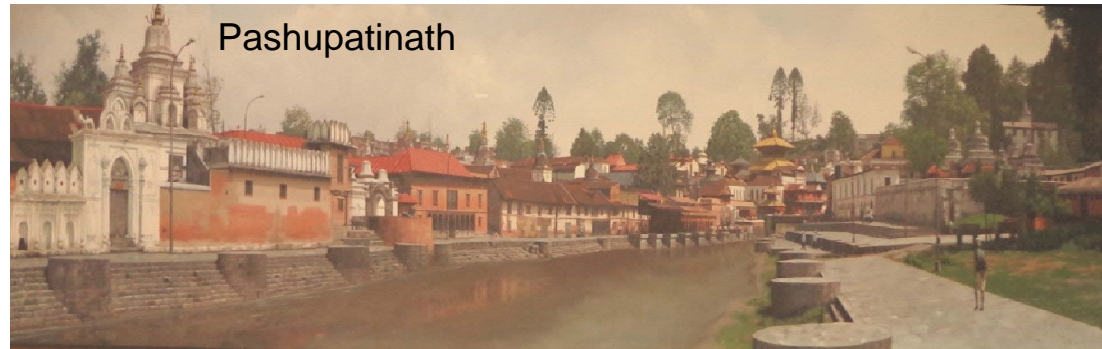
Sources: Field data 2064 BS, Cadastral map 2021 BS and 2044 45 BS, .65 cm Quick bird imagery 2006 AD and Aerial photo 1964 AD.

Key Areas on Water Security in Bagmati River Basin

Upper Bagmati River Basin	Water Resource Development and Management	Water Use – Drinking, Irrigation and others
		Water Resource – surface & Ground water
		Water Quality
	River Area Management	Flood Control
		Riverfront environment
		Solid waste
		squatter and encroachment of the river
		illegal sand mines
Middle and Lower Bagmati River Basin	Water Resource Development & Management	Irrigation
	Water Disaster Mitigation	Flood Control
		Debris flow
		Watershed conservation

Importance of Bagmati River

- Bagmati River and its watershed is very important for Nepal, Strategically, religiously, culturally, economically, socially and environmentally.
- Kathmandu, the capital city, situated on the banks of Bagmati.
- The length of Bagmati within Kathmandu Valley is 45 km.



Issues/Problems of Bagmati in Kathmandu



Decrease in river flow



Disposal of untreated waste water



Encroachments of river regime



Solid waste dumping on river bank



sand extraction

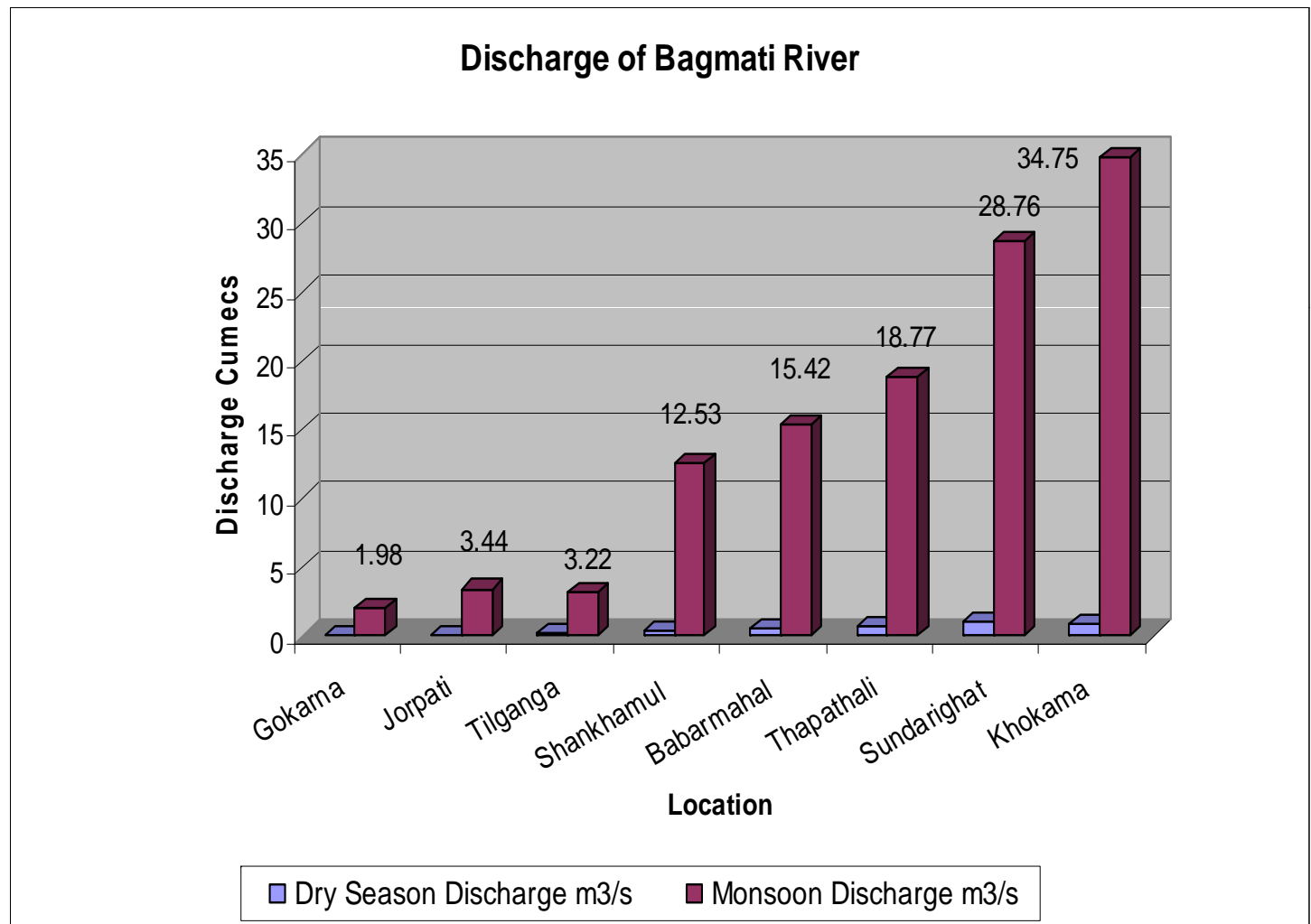


Haphazard urbanization and rapid population growth

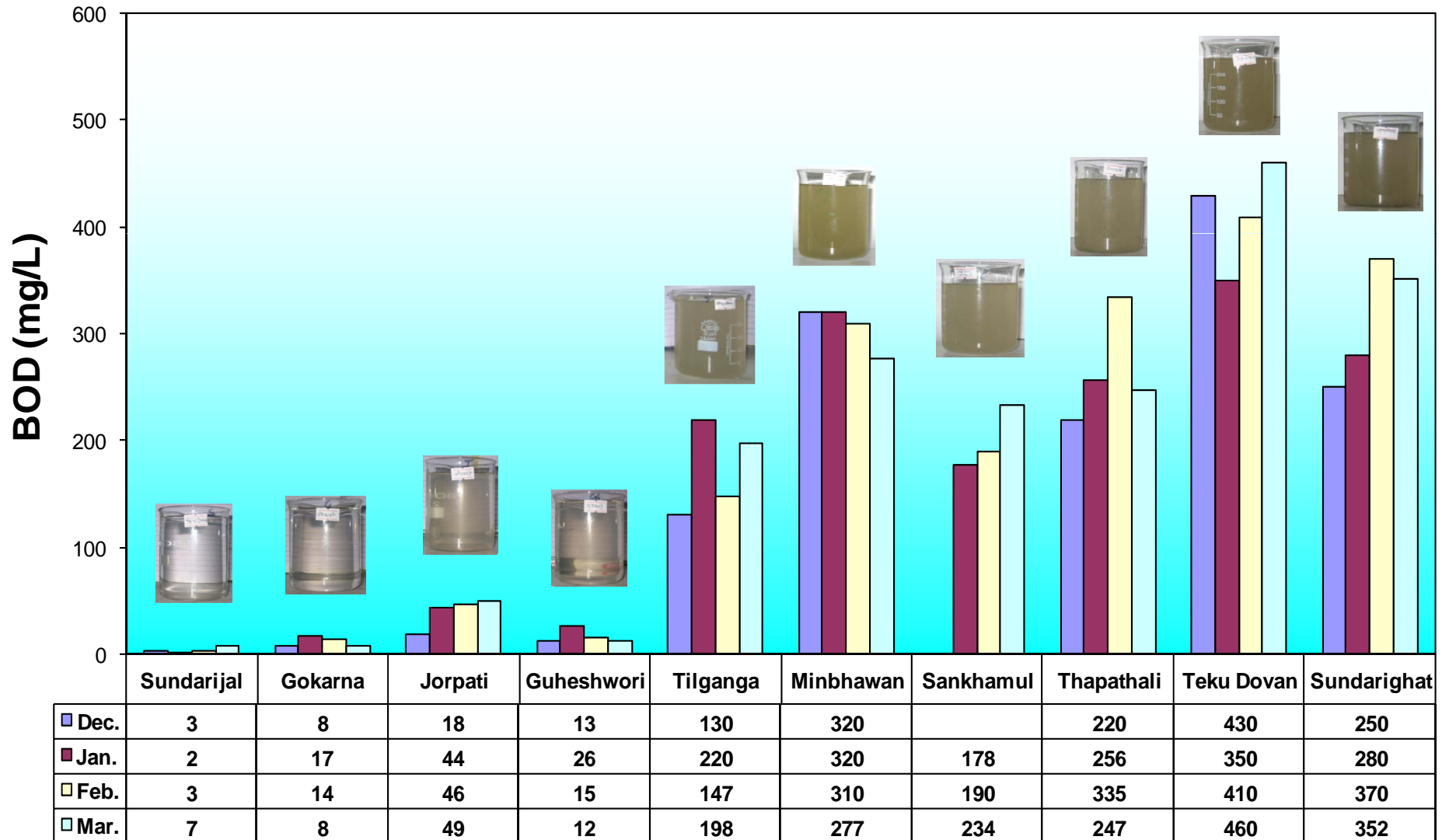


Discharge of Bagmati River

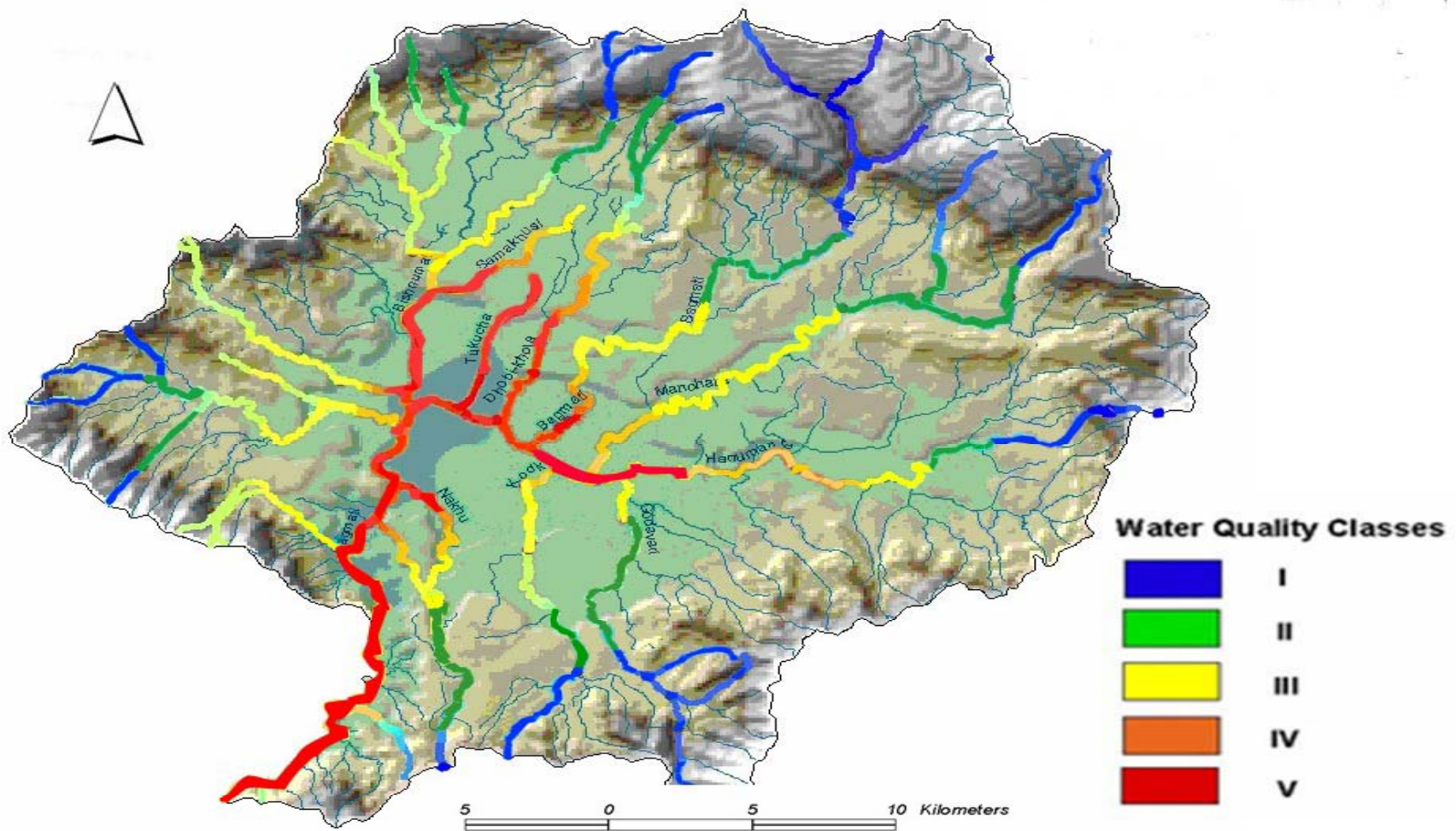
- High difference in dry and wet weather flow
- Water shortage in dry season



Variation of BOD along Bagmati River



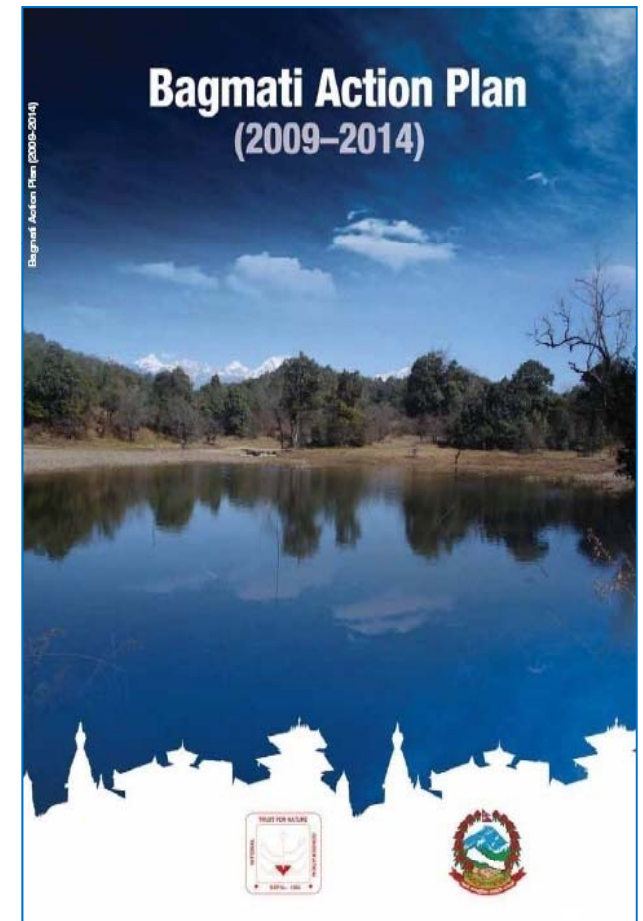
Water Quality of the Bagmati and its Tributaries





Bagmati Action Plan

- ❑ Bagmati Action Plan has been developed by HPCIDBC & NTNC with the financial support of UNEP and UNHABITAT.
- ❑ Bagmati Action Plan was approved by the Government of Nepal in August 2009.
- ❑ It envisages HPCIDBC as the lead implementing agency for river system environment improvement in Kathmandu.





Zoning of the Kathmandu Valley

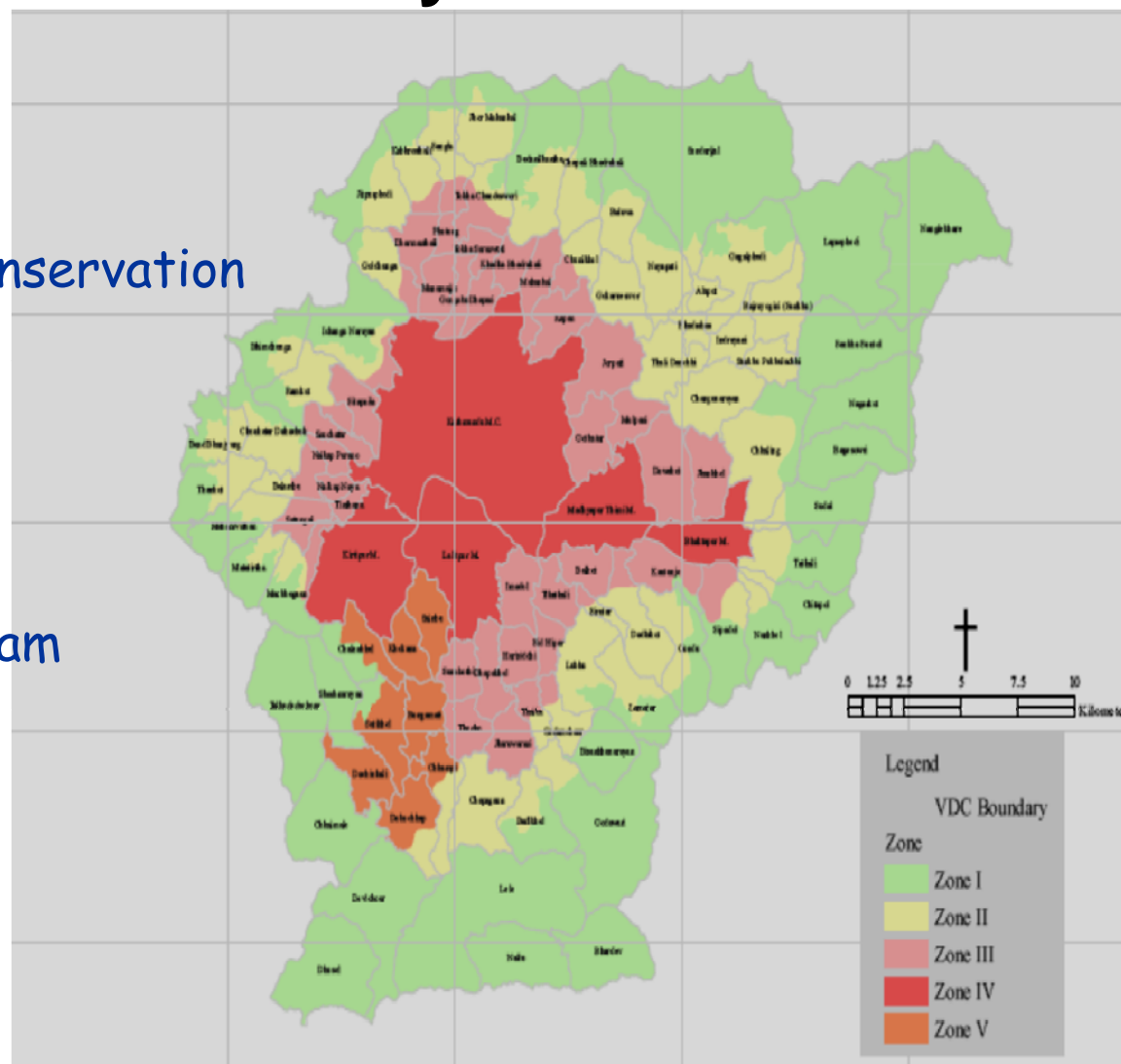
Zone 1  Natural Conservation

Zone 2  Rural

Zone 3  Peri Urban

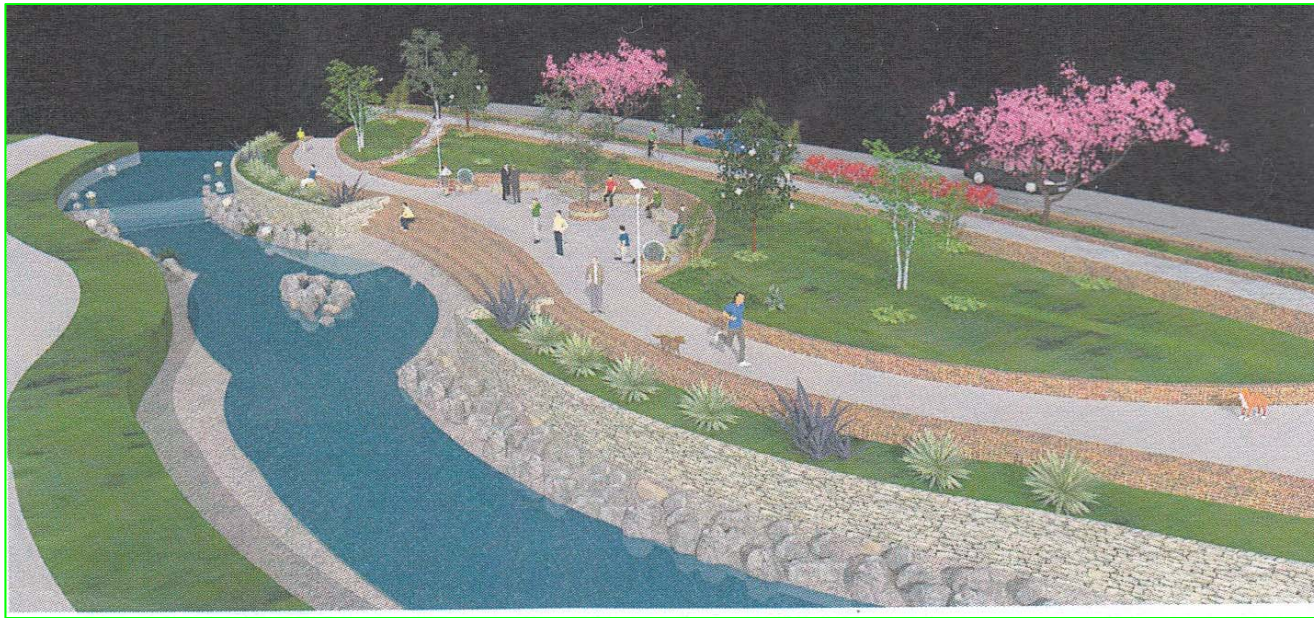
Zone 4  Urban

Zone 5  Down Stream



Vision

Clean, green and healthy river system in Kathmandu valley; that is full of life and valued by all.

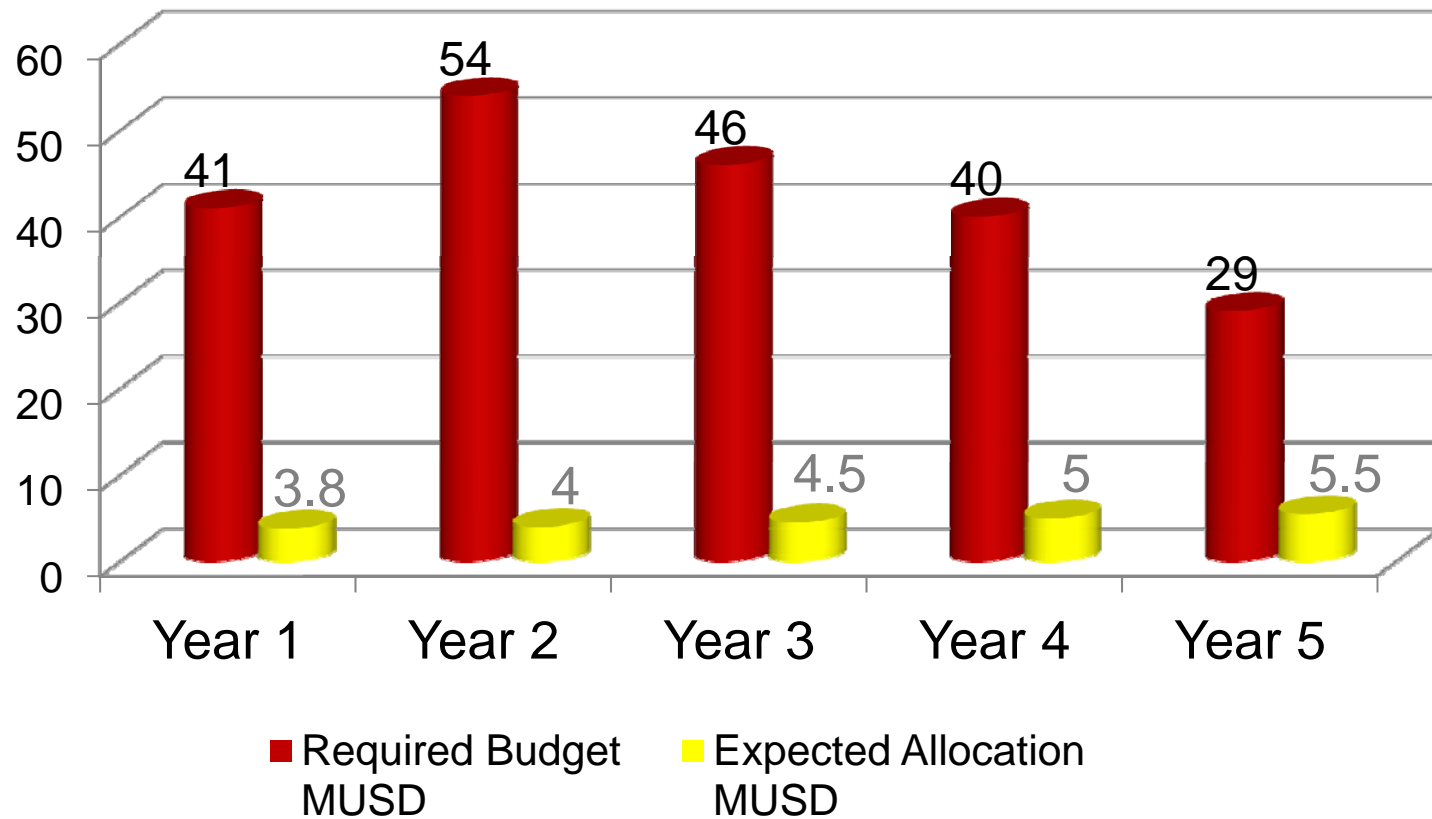




Mandate/Responsibility to HPCIDBC

- ❖ Policy formulation and Planning for restoration of River system in the capital city, Kathmandu Valley
- ❖ Construction of infrastructure to protect and restore the Bagmati River System
 - Construction of sewer system
 - Construction of waste water treatment plant
 - Construction of access road and green belt
- ❖ Defining the river alignment and width of flow regime
- ❖ Monitor and regulate the activities along the river side area

Financial Status





Activities Carried out by HPCIDBC

Conservation of water recharge areas, Dhap (origin of Bagmati)



B
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Activities Carried out by HPCIDBC

Construction of sewer lines, green belts, access roads along the river, river demarcation and bank protection work



Activities Carried out by HPCIDBC

Operation of Waste Water Treatment Plant at Guheswori



Capacity: 16.3 MLD



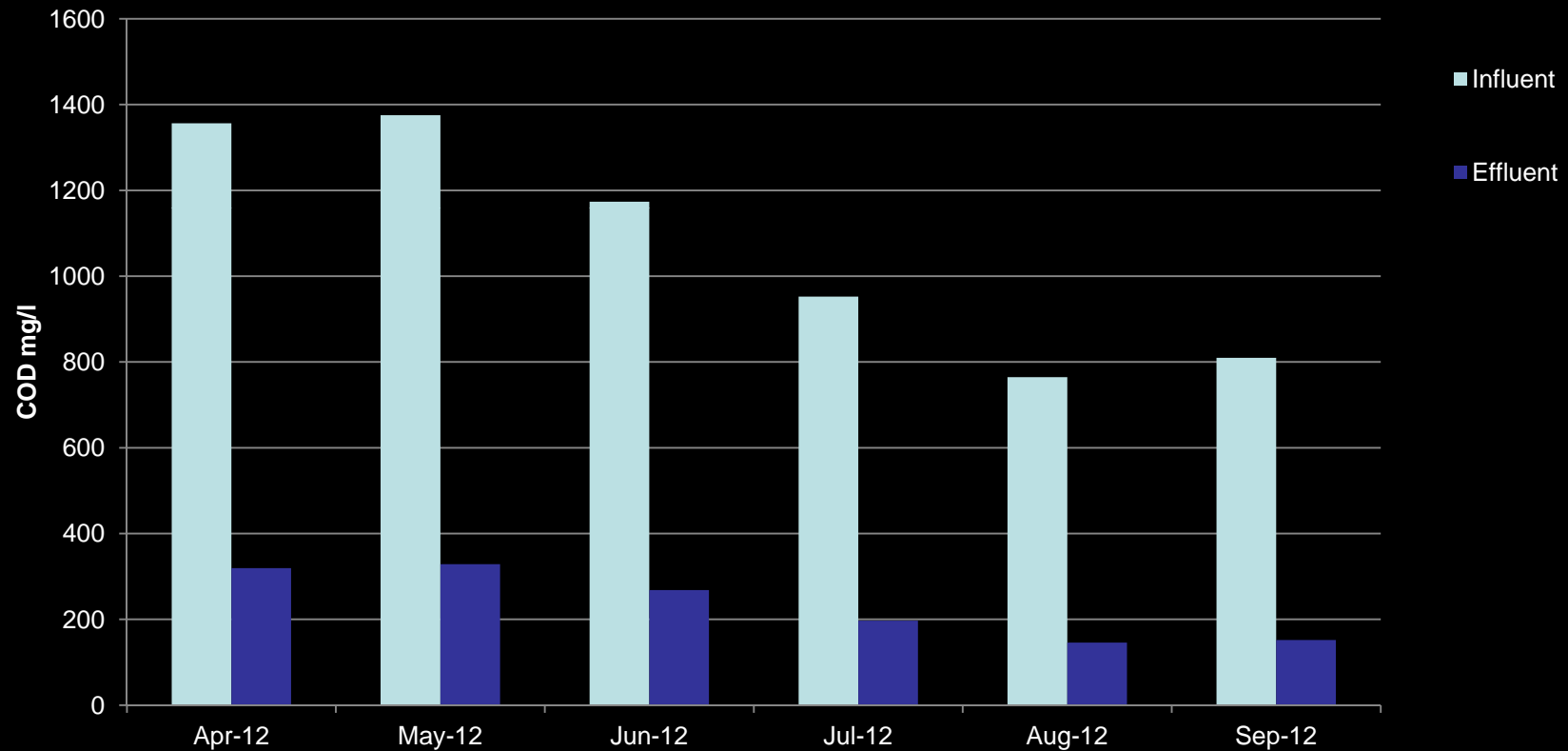
**Guheswori to Tilganga Tunnel
length : 572 m Dia: 2m**



Drying Bed



Monthly average COD of influent and effluent of the Waste Water Treatment Plant, HPCIDBC





Activities Carried out by HPCIDBC

Bagmati River Bank Protection work/River training



Now



Before

Towards a Bagmati River Basin Road Map

4 Lanes

Where we are?

Where do we get there?

Where do we want to go?

Lane 1

Water resource development dangerously unsustainable in the upper Watershed

Develop & implement a sustainable Water resource Mgt. system for deep GW use

Socially, environmentally & economically sustainable WS & WWTP in the valley

Lane 2

River environment management almost out of control

Develop and implement comprehensive River Environment Mgt. system (Bagmati Action Plan)

Clean, green & healthy river system that is full of life & valued by all

Lane 3

Rapid and unsustainable urban development in lower basin

Sustainable Water Resource development & Irrigation Water use Management

Infrastructure in the lower basin and disaster mgt. creating opportunities outside KV

Lane 4

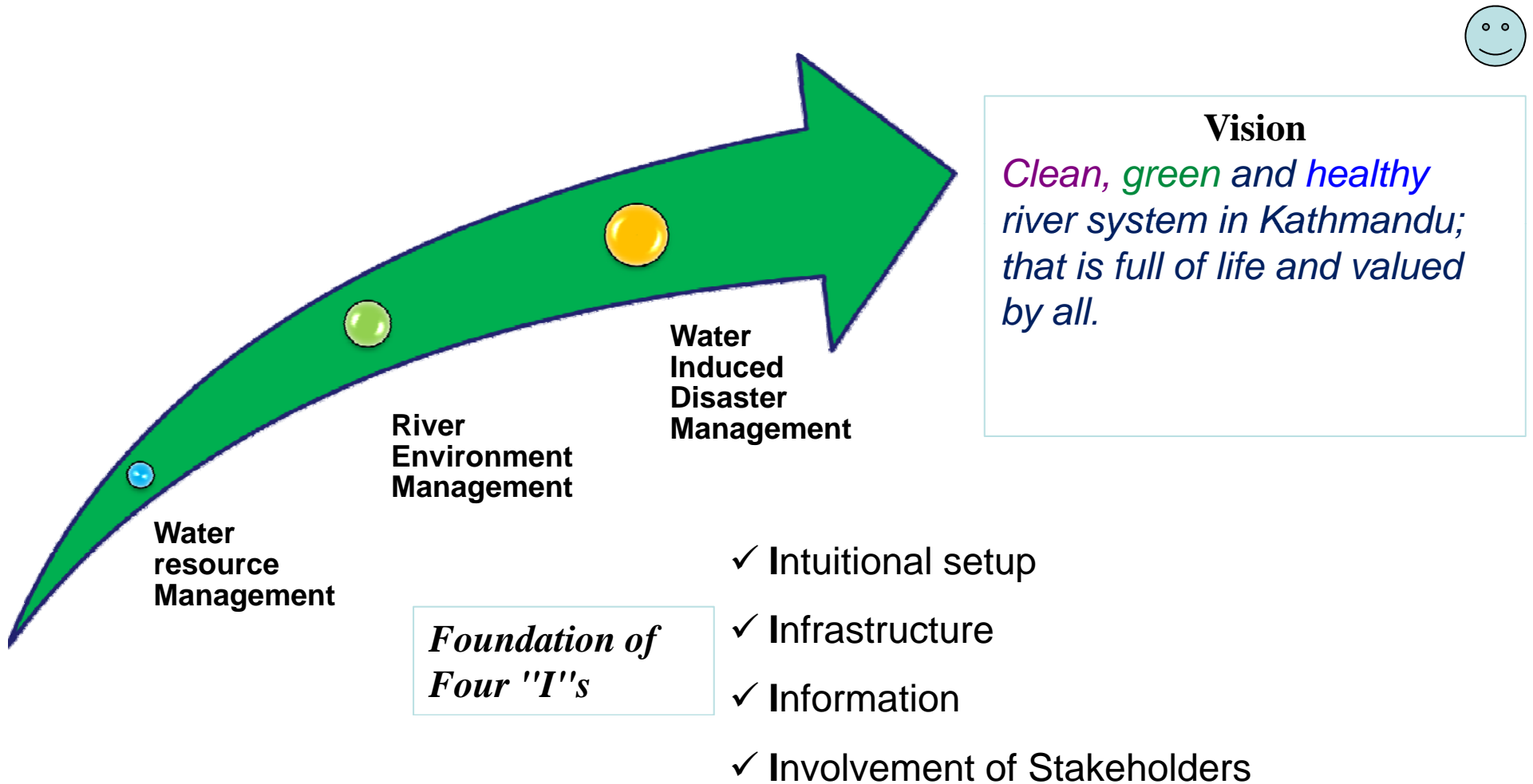
Limited capacity and resources from Governmental institution & civil society to bring adequate response to basin

support a step wise approach for bldg. inter-sector collaboration, awareness & appr. Decision

Multi-stakeholders mechanisms for integrated management of water resources in the basin

issues

IWRM Implementation on Bagmati (principle)



Future Plan

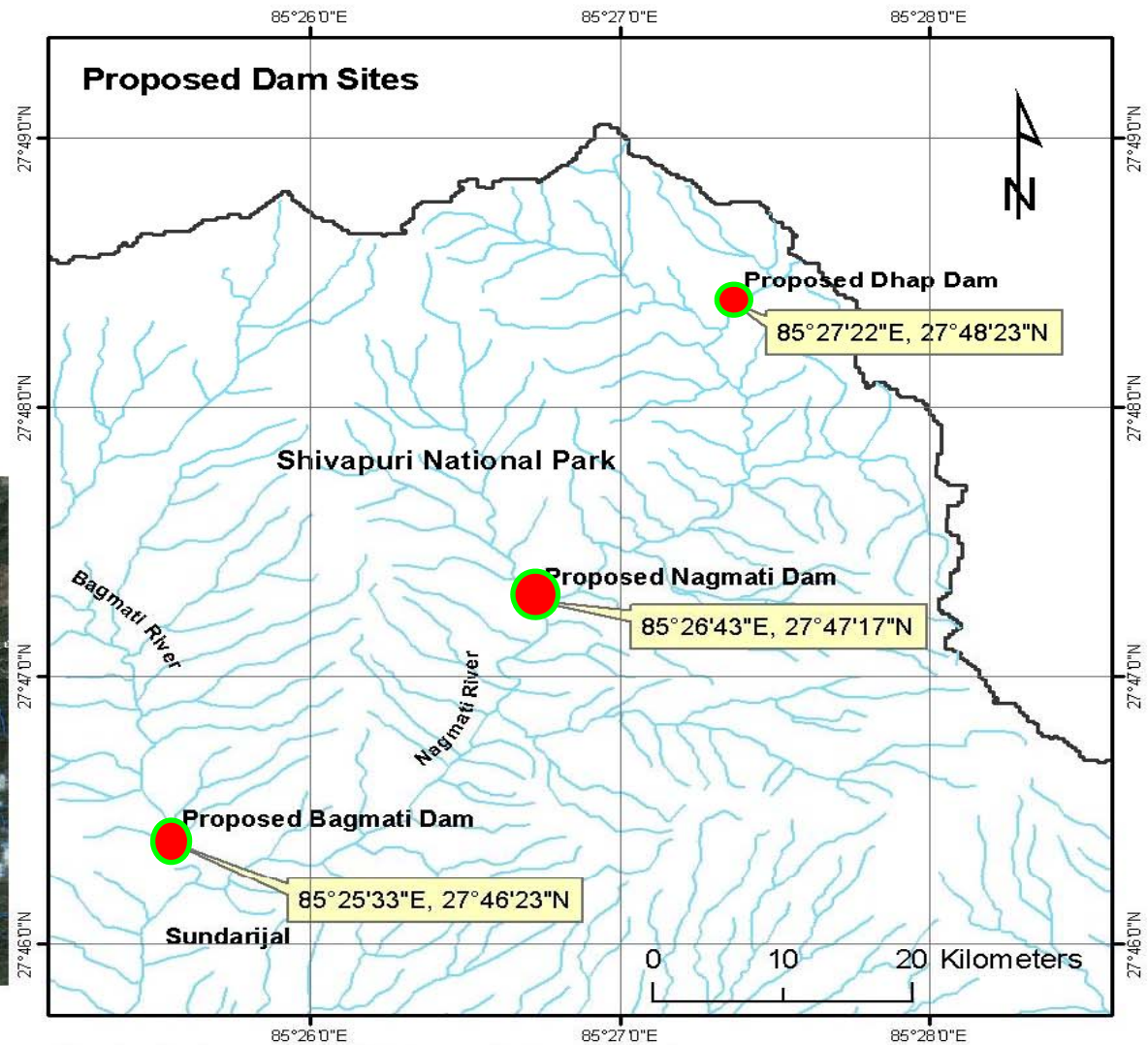
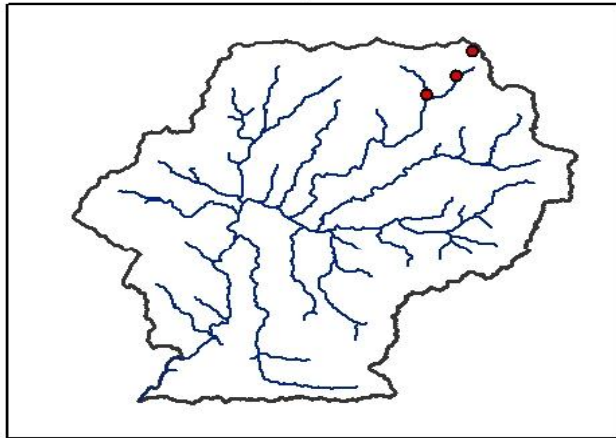
- Rainwater harvesting, Ground water recharge and livelihood development in buffer zone.
- Augmentation of river discharge by constructing dam in upper Bagmati.
- Watershed Management activities in upper Bagmati. (*ADB/PPTA/8050*)

Dam	Height	Storage	Yield
Nagmati Dhap	18 m	0.7 mcm	24 l/s
Nagmati	60 m	5.0 mcm	230 l/s
Bagmati	50 m	3.4 mcm	200 l/s

Future Plan

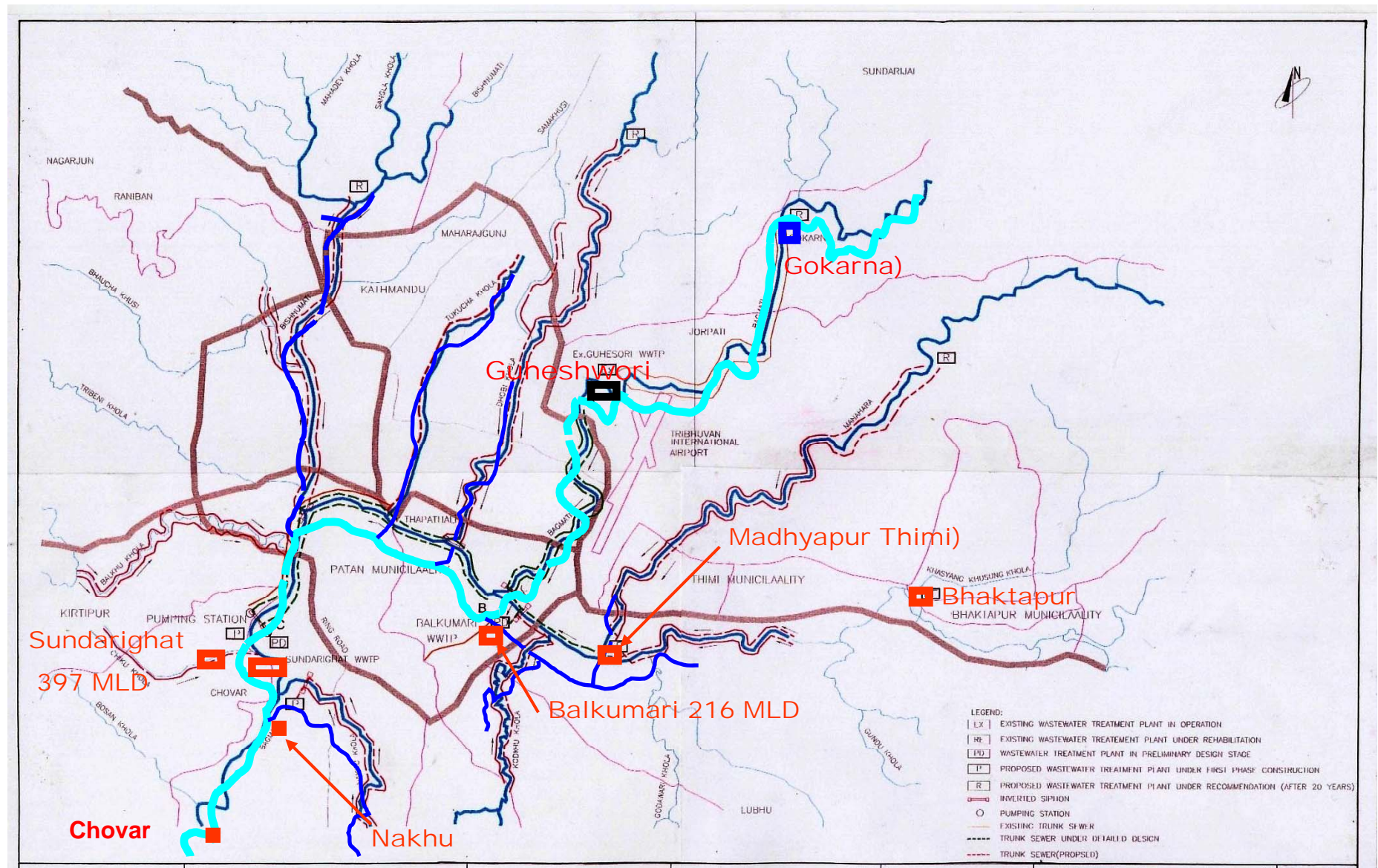
Contour Photograph of proposed Dam site

Kathmandu Valley



Note: Coordinates are in WGS 1984 Geographic Coordinate System

Proposed WWTP in Kathmandu



The Way Forward

- Developing HPCIDBC as a subsidiary **River Basin Organization (RBO)** for Kathmandu Valley.
- Institutional Strengthening and capacity development of HPCIDBC.
- Defining organization for Bagmati Basin.





Conclusion

- Bagmati River and its tributaries environmental situation has not deteriorated IRREVERSIBLY. It can be regenerated environmentally with support from Development Partners, Donor Agencies, Civil Society, NGOs and INGOs etc.
- As Bagmati attaches spiritual and emotional significance to the Nepali people (most of the important temples, shrines, ghats, etc. are located along the river banks and are used for different cultural and ritual purposes), conservation of rivers is very important for the protection of both natural resources and rich cultural heritage of the Valley.



Thank You !

For your kind attention....

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