Appraisal Note

for

Proposal on “Ganga Knowledge Centre”

Under

The Institutional Development Component of the World Bank Assisted NGRBA Programme

National Mission for Clean Ganga

Contents

Introduction

The Ganga basin accounts for over a quarter of India's land and water resources, 37% of human resources (more than 400 million people) and nearly half of its irrigated area. The five states on its main-stem (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal) are home to more than half of the poor people in the country.

In addition to its physical resource value, the Ganga is culturally very significant for India. On important holidays of the Hindu calendar, millions of people converge on the river in select cities to pray and bathe in the waters, and for them a clean Ganga holds great value. More than 60 million people came to the city of Allahabad for pilgrimage in January 2007, making it the largest gathering in the world.

Despite being highly revered and the primary water resource for the heartland of India, the Ganga river is today seriously polluted and under extreme environmental stress. The river suffers from high levels of organic and bacterial pollution, especially in its critical middle stretch, primarily as a result of inadequate municipal wastewater infrastructure and services, compounded by an increasing population and poor management of urbanization. At present, only one-third of the sewage generated in the main-stem towns and cities is treated before being discharged into the river.

Industrial pollution, accounting for about 20% of the total volume of wastewater inflows to the Ganga. Most of the pollution comes from small-scale industrial units from leather, paper, sugar, and brass industry clusters with little capacity to meet discharge standards.

Solid waste choke drainage networks and exacerbates pollution in the Ganga. Little is known about the extent of contribution from non-point sources, including those from livestock and agriculture, nutrient loading and pesticide contamination.

Inadequate in-stream flows: Almost 90% of the Ganga flows are abstracted for irrigation. This high abstraction results in very low in-stream flows, exacerbating the water quality problems, especially in the dry season and in the middle stretch which has the largest number of holy cities on the riverbank.

The current water quality monitoring system for the Ganga is inadequate for situation analysis and decision-making. There is no comprehensive inventory of municipal or industrial wastewater sources discharging into the Ganga. Establishing data collection and analysis systems for regular monitoring of pollution sources and river water quality is required for baseline information, development of an effective strategy for a sustainable river clean-up and adaptive management, and impact evaluation in the basin. NGRBA: Ganga Knowledge Centre

Inadequate wastewater infrastructure and sanitation service provision have a huge health cost. Recent studies have estimated the burden of water-borne diseases in the basin at 1.4 million per 100 million people, which amounts to health costs of almost $4 billion per year on a basin-wide level. Estimates of annual health costs related to inadequate water supply and sanitation in Kanpur (population 3.2 million) range from $111-279 million, with inadequate sanitation accounting for more than half of these costs in slum areas.

In peri-urban areas, the use of untreated or partially treated wastewater for irrigation is widely prevalent among farmers, and responsible for a variety of occupational health hazards and food safety issues. The poor water quality of the river also affects the health and livelihoods of the many marginal communities directly depending on it, such as fishermen, washer-men, and cremation grounds workers. In the cities along the main-stem, as much as 25% of the population lives in slums, and a similar fraction of households are below the poverty level. Nationwide, economic losses from inadequate sanitation are estimated at 6.4% of GDP and the benefits of safe management of wastewater amount to about $50 per person.

The Ganga basin is expected to be the most seriously affected by imminent water scarcities. Deficits are projected to reach 50% of the total implied demand by 20305, and effective water resources management remains the only way to address this challenge.

The Ganga's immense cultural and religious significance for India, supplemented by the growing recognition of the Ganga as an environmental resource, is contributing to a strong grassroots movement for its clean-up and conservation. One example is the campaign to save the threatened Gangetic dolphin, the river's flagship species, which has resulted in significant conservation efforts. Economic analyses consistently indicate a very high degree of willingness to pay for conservation of these aspects of the Ganga.

Project Details

Objectives and Scope

The GKC is being setup initially to undertake activities that would help enhance the quality of implementation of the NGRBA program. Planning and management decisions of NGRBA will be based upon system characterization, infusion of new knowledge and ideas and people's participation and perceptions. With a clear focus on these areas, the GKC will emerge as a premiere, and autonomous, knowledge institution for the Ganga basin in the long term.

The key objectives of the GKC will be to

i. *Create and manage knowledge resources*, including the analysis and modelling of diverse data sets relevant to management of the Ganga basin. This will enable the identification of sensitive hotspots/ critical reaches, along with selection of critical water quality parameters for monitoring;

ii. *Design and foster research and innovation*, including identification of knowledge gaps for research and need for new ideas, supporting targeted research and spurring and nurturing needed innovation (e.g. for low-cost and effective treatment technologies); and

iii. *Facilitate stakeholder dialogue*, by designing messages and programs for public involvement and building partnerships with Universities, Central, State, and Local Government Agencies, NGOs, and Private Sector/ Industry.

Location

The GKC shall be located in Delhi, as an integral part of the NMCG setup, given its key function in supporting NGRBA. It will also have a physical presence on the Ganga main stem states in later phase to facilitate stakeholder engagements in a meaningful way through Thematic centres that may be developed on topics like dolphin conservation, ecological diversity, flora-fauna, industrial pollution, hydro-power generation etc.

Proposed Work

The primary functions of the GKC are (i) *collation* – of both historical and real-time documents and data – to function as a knowledge repository and a monitoring hub; (ii) *analysis* – through both modelling and targeted research – to facilitate decision-making; and (iii) *use* – through dissemination and communication products – to facilitate outreach, stakeholder engagement and demand-driven knowledge support.

The main set of activities of the Ganga Knowledge Centre (GKC), in concrete terms, will be *to create and maintain*

1. *a high-quality web portal for Ganga;*
2. *an integrated information base (MIS) on NGRBA projects;*
3. *a state-of-the-art e-library;*
4. *a comprehensive GIS-based mapping system of the Ganga basin;*
5. *Processes for supporting research, pilots and new ideas; and*
6. *Processes for engaging stakeholders through forums, events, publications, interactive models etc.*

Implementation Schedule

ACTIVITIES	Year One	Year Two	Year Three	Year Four	Year Five	Year Six	Year Seven	Year Eight
Staff recruitment								
Office infrastructure								
Procurement of GKC support consultancies								
Web-portal, GOWRI								
Intranet, NGRBA MIS								
Support SPMGs/ ULBs								
Promote targeted research								
Innovations program								
Institutional outreach								

Key Performance Indicators

Performance of the GKC will include following:

- Digitization/ Integration of legacy records
- Comprehensive spatial database
- System water quality model
- E-flows model
- Water quality investment Decision Support System
- Prioritized research and innovation needs
- Research's supported by the Research Fund
- Support to innovation projects
- Designs support
- Number of innovative ideas funded for scaling-up
- State of art Ganga website
- Online portal of Ganga basin monitoring data
- Crowd-sourcing interface for community monitoring
- Technical paper publications

Project Cost

Budget of GKC in Delhi has been estimated at Rs.71.6 crore approx. for a period of eight years as given below:

Summary of Budget	
Item	**Costs in INR crores**
Operating Cost (GKC New Delhi)	**46.74**
Staffing + Travel + Support staff (New Delhi)	17.14
Rental (New Delhi)*	-
Transport, utilities & consumables (New Delhi)	2.40
Small grants for pilots and design ideas	13.50
Research Fund	9.00
Publication/Communication	2.00
Annual Ganga Knowledge Forum, Workshops	2.70
Goods	**9.00**
Refurbishing + Furniture/Furnishings	-
IT Hardware/Software	3.37
Remote Sensing Data	3.37
Books/Journals/Library/E-Resources	2.25

Consultancies	15.84
GKC Support Consultancy	11.19
Short Term Consultancies/ Internships	4.65
Total Cost	**71.6**
Thematic sub centres (Preliminary cost)*	**30.0**

**Note: GKC will be housed in NMCG office. Refurbishing cost will be included in NMCG office setup*

***Detailed proposal for GKC thematic sub centre will be developed by SPMGs in agreement with NMCG and will be submitted to the ESC for approval separately*

The total cost of GKC in Delhi will be borne by the Centre under the institutional development component of the World Bank assisted NGRBA program.

It is expected that the SPMG will work with the NMCG to identify potential thematic subjects based on which the thematic sub-centres will be setup in their respective states. It will be the State's responsibility to develop a proposal for the sub-centre. It is expected that five sub-centres, could be setup. However the cost and financing pattern will be worked out in detail and presented to the Empowered Steering Committee for approval once the proposals for the thematic sub-centres are received from the states.

Conclusion and Recommendation

Ganga Knowledge Centre will act as a repository of knowledge and will provide desired impetus to research and innovation in the Ganga Basin. It is one of the sub-components of Institutional Strengthening component of the project with 100 % central share with approx cost of Rs. 71.6 crore. It is envisaged that it will create and manage knowledge resources, including the analysis and modeling of diverse data sets relevant to management of the Ganga basin. This will enable the identification of sensitive hotspots/ critical reaches, along with selection of critical water quality parameters for monitoring;

GKC will design and foster research and innovation, including identification of knowledge gaps for research and need for new ideas, supporting targeted research and spurring and nurturing needed innovation (e.g. for low-cost and effective treatment technologies); and

GKC will also facilitate stakeholder dialogue, by designing messages and programs for public involvement and building partnerships with Universities, Central, State, and Local Government Agencies, NGOs, and Private Sector/ Industry.

Hence, Ganga Knowledge Centre should be established considering the objectives of Mission Clean Ganga.