ADB

Report and Recommendation of the President to the Board of Directors

Project Number: 43253
March 2014

Proposed Multitranche Financing Facility India: Karnataka Integrated Urban Water Management Investment Program

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 27 January 2014)

Currency Unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	$0.015942
$1.00	=	Rs62.72500

ABBREVIATIONS

ADB	–	Asian Development Bank
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
IT	–	information technology
IWRM	–	integrated water resources management
KUIDFC	–	Karnataka Urban Infrastructure Development and Finance Corporation Limited
MFF	–	multitranche financing facility
NRW	–	nonrevenue water
O&M	–	operation and maintenance
ULB	–	urban local body
UWSS	–	urban water supply and sanitation

NOTES

(i) The fiscal year (FY) of the Government of India and its agencies begins on 1 April and ends on 31 March. “FY” before a calendar year denotes the year in which the fiscal year starts, e.g., FY2008 begins on 1 April 2008 and ends on 31 March 2009.

(ii) In this report, "$" refers to US dollars.

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PROJECT AT A GLANCE

1. Project Name: Karnataka Integrated Urban Water Management Investment Program

2. Project Number: 43253-024

3. Country: India

4. Department/Division: South Asia Department/Urban Development and Water Division

5. Sector Classification:

Sectors	Primary	Subsectors
Water supply and other municipal infrastructure and services	√	Water supply and sanitation Urban sector development

6. Thematic Classification:

Themes	Primary	Subthemes
Environmental sustainability	√	Urban environmental improvement
Capacity development		Institutional development
Private sector development		Public sector goods and services essential for private sector development
Governance		Public administration

6a. Climate Change Impact

Adaptation	medium
Mitigation	low

6b. Gender Mainstreaming for Project 1

Gender equity theme (GEN)	
Effective gender mainstreaming (EGM)	√
Some gender benefits (SGB)	
No gender elements (NGE)	

7. Targeting Classification:

General Intervention	Targeted Intervention		
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level
		√ MDG7	

8. Location Impact:

Urban	High

9. Project Risk Categorization: Low Risk

10. Safeguards Categorization for Project 1:

Environment	B
Involuntary resettlement	B
Indigenous peoples	C

11. ADB Financing:

Sovereign/Nonsovereign	Modality	Source	Amount ($ Million)
Sovereign	MFF-Facility (Loan)	Ordinary capital resources	150.0

12. Cofinancing:

Financier	Category	Amount ($ Million)	Administration Type
Urban Environmental Infrastructure Fund under the Urban Financing Partnership Facility	Official-Grant	2.0	Full

13. Counterpart Financing:

Source	Amount ($ Million)
Government of Karnataka and ULBs	75.0

14. Aid Effectiveness:

Parallel project implementation unit	No
Program-based approach	Yes

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed multitranche financing facility (MFF) to India for the Karnataka Integrated Urban Water Management Investment Program.[1]

2. Karnataka is one of India's most water-stressed states. With approximately 39% of the state's population living in urban areas (against 31% for the country), Karnataka is the fifth most urbanized state in India, and this percentage is expected to increase to 50% by 2030. Karnataka's Vision 2020 anticipates increasing urbanization and industrialization, but without effective management of available water resources, water will constrain economic development. The investment program aims to improve water resource management in urban areas in a holistic and sustainable manner consistent with the principles of integrated water resources management (IWRM).[2] The investment program will (i) provide investment support to modernize and expand urban water supply and sanitation (UWSS); (ii) strengthen institutions to improve water use efficiency, productivity, and sustainability; and (iii) pursue innovative technologies and instruments, such as public–private partnerships or reform-oriented incentive funds. The investment program will support the greening and inclusiveness agendas of the Asian Development Bank (ADB) as it targets assistance to fragile water-scarce environments, often located in Karnataka's economically lagging regions. The investment program will also support ADB's climate change strategic priorities by promoting climate-resilient development and capacity development for adaptation.

II. THE INVESTMENT PROGRAM

A. Rationale

3. **Water scarcity.** Karnataka, India's eighth largest state, accounts for about 5.1% of the country's population, 5.8% of its surface area, and 6% of its surface water resources.[3] Karnataka's seven major river basins suffer from water over-abstraction and deteriorating river water quality. Major sources of pollution include untreated sewage, industrial discharges, pesticide runoff, mining, and degrading watershed soils. Water resources are distributed unevenly in both time and space, and there are multiple competing users. The impact of climate change, anticipated to exacerbate droughts and floods, may further reduce water availability. However, Karnataka's annual water demand is forecast to rise by up to 40% by 2025, threatening sustainable economic growth and poverty reduction. IWRM is therefore urgently needed. While there are constraints to IWRM (such as fragmentation of water resources management responsibilities among agencies and resistance to change), there are promising enabling factors (such as recognition of the scarcity and threats to the water resource, progressive policy statements, and a willingness to invest in and reform institutions).

4. **Urbanization and water.** Karnataka is one of India's most economically progressive states. As a result, the state economy is growing fast, with the annual gross state domestic product growth averaging 7.2% in FY2009−FY2012. Water is central to the state's future development. While in 2013 85% of the state's available water was allocated to irrigation, 2025 projections suggest a decline in the proportion used for agriculture to 73% and an increase in

[1] The design and monitoring framework is in Appendix 1.

[2] IWRM is a concept and process that promotes the coordinated development and management of water, land, and related resources to maximize economic and social welfare equitably and without compromising the sustainability of vital ecosystems and the environment.

[3] Karnataka has a population of 61 million, covers an area of 191,791 square kilometers, and has an inflow of 1,869,000 million cubic meters of surface water.

household drinking (from 4.4% in 2000 to 5.0% in 2025) and industrial water allocation (from 3.6% in 2000 to 6.8% in 2025). This is consistent with Karnataka's economic development agenda for 2020, which prioritizes the sustainability of the state's environment and natural resources and anticipates increasing urbanization and industrialization. Greater water share for urban use also calls for more responsible stewardship of scarce resources.

5. **Sector performance.** Urban water supply and sewerage service levels vary substantially across Karnataka. Although 92% of the state's urban households report access to drinking water, (i) six districts out of 30 suffer from acute shortages; (ii) household connections represent only a mere fraction of this value, as a large proportion of the population still relies on standposts for their daily supply; and (iii) rapid urbanization and densification beyond the administrative city boundaries do not always translate into service provision coverage to new areas. In addition to insufficient coverage, there are unmet demands: despite constant improvements, water supply services are generally intermittent, with inadequate service standards (pressure and quality) and insufficient metering. Available data for 213 urban local bodies (ULBs) in Karnataka suggests that only 38% of these provide water at normative levels (70–135 liters per capita per day, depending on population size).[4] While a few ULBs provide quasi-continuous water supply, average water supply services in most towns is 2–3 hours per day, requiring (mostly women) to fetch water from community taps. Causes for deficiency include inadequate water source availability, financing, or population increase, and also wastage and substantial system inefficiencies. While water meters are being introduced, water audits are uncommon. Nonrevenue water (NRW) estimates range from 30% to 50% across urban schemes in Karnataka, against the national service level benchmark of 15%. Water quality reports are seldom disclosed, and testing at the point of use is not frequently done.

6. Despite increasing attention by state authorities, sanitation still lags behind water supply throughout Karnataka. Overall, 42% of the urban population reports access to sewerage networks, but only 15% is attached to treatment systems and households have often not yet connected where sewers have been laid. Where sewerage networks are not available, black water and gray water is discharged into drains, much of which contributes to polluting Karnataka's water bodies. Meeting the steep demand for urban and industrial water, protecting water bodies, and effectively treating and discharging and/or reusing effluent remain critical challenges. In addition, 19% of the population is not covered by any sort of sanitation scheme. The lack of sanitation facilities forces people to resort to open defecation, exposing them (especially women and girls) to health and safety risks.

7. **Challenges and opportunities.** Gaps and opportunities are as follows:

(i) **City and regional water planning.** Many ULBs in Karnataka have prepared city development plans capturing current and future needs for water-related services. These are, however, neither updated nor linked to financing plans. Moreover, the development of water sources is generally on a scheme-by-scheme basis and seldom considers regional impacts and/or gains.

(ii) **Water use and performance monitoring.** In 2011, the state government issued an order making water metering compulsory. Most water schemes are in the

[4] Data suggests that in South Karnataka (106 ULBs), 44% of the ULBs supply water that matches or exceeds the norms. In North Karnataka (107 ULBs), this value is only 33% (ADB. 2011. *Integrated Water Resources Management and Sustainable Services Delivery in Karnataka—Component 3*. Consultant's report. Manila [TA 7418-IND]). A separate study suggests that (i) 47% of Karnataka's ULBs provide more than 70 liters per capita per day, 42% provide 40–70 liters per capita per day, and 11% less than 40 liters per capita per day; and (ii) 53% of all ULBs provide daily water supply, 28% on alternate days, and 19% every 3 or more days. The problem is particularly acute during the dry season (ADB. 2012. *Karnataka Integrated and Sustainable Water Resource Investment Program—Volume 1*. Consultant's report. Manila [TA 7954-IND]).

process of introducing bulk and household meters. However, most monitoring data concerning water abstraction and/or losses in the network is still inaccurate. Water quality testing and effluent discharge records are often incomplete.

(iii) **Insufficient interagency coordination.** Responsibilities for water issues have been traditionally fragmented and divided among departments, without a formal mechanism for coordination. Fragmentation in decision making results in suboptimal management of Karnataka's limited surface and groundwater resources. In 2010, the state government created an IWRM steering committee, and in 2011 it established the Advanced Centre for IWRM to provide advice and conduct research.

8. Service delivery challenges impacting water resource management in Karnataka are:

(i) **Inadequate asset planning and management.** In most ULBs, water-related infrastructure is neither integrated nor adequately phased. Some elements are overdesigned (e.g., intakes and treatment units) and run at suboptimal conditions, while others are not given sufficient attention (e.g., distribution networks), compromising technical and financial sustainability. ULBs often lack adequate technical staff to (a) operate and maintain, and (b) manage and plan water assets. Cognizant of the need to efficiently run and professionally manage water systems, Karnataka has partnered with the private sector in service delivery.

(ii) **Demand management and investment financing.** In 1996, Karnataka directed ULBs to adopt volumetric tariffs. Despite improvements, urban infrastructure funding and asset sustainability continue to be challenged by poor cost recovery mechanisms. In addition, unmetered supplies and public standposts have led to significant wastage. In response, in July 2011, Karnataka issued a government order making the introduction of sewerage tariffs compulsory and raising minimum tariff levels. Karnataka has also led a number of urban finance reforms, including accounting and property tax reforms.

9. **Road map and lending modality.** Karnataka's integrated urban water management road map will assist in establishing a process of coordinated planning, development, and management of urban water resources in a way that maximizes economic and social welfare without compromising environmental sustainability.[5] The physical component of the state's investment program is estimated at about $1.9 billion while the nonphysical component (reforms, management improvements, and capacity development) is estimated at $110 million. The policy and institutional framework will provide the enabling environment necessary to improve urban water management, enhance technical and environmental sustainability, and promote institutional and financial sustainability. The government has requested ADB to finance a fraction of the state's investment program through an MFF. The MFF is the modality of choice for this investment program as it is the most effective modality to (i) maximize and measure project results in localized geographical areas; (ii) provide efficiencies associated with economies of scale as additional municipalities join regional utilities; (iii) blend capacity development assistance with policy implementation and infrastructure provision, and phase it to maximize ULB commitment; and (iv) carry out the application of a long-term road map, which provides a structured framework to assist forecasting needs throughout the design process. The modality is appropriate given (i) the state's sound record in the sector, experience and willingness to undertake reforms; and (ii) the proven capacity of the Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC).

[5] Sector Assessment (accessible from the list of linked documents in Appendix 2).

10. **Strategic context.** The investment program is in line with (i) priorities outlined in India's 12th Five Year Plan,[6] (ii) policy directions outlined by the Ministry of Water Resources in the National Water Policy (2013), and (iii) service delivery reforms promoted by the Ministry of Urban Development (including service level benchmarks and the National Urban Sanitation Policy, 2008). The investment program has been designed in support of Karnataka's Vision 2020 (which envisages eliminating poverty in all areas and the achievement of the Millennium Development Goals by 2015), the State's Water Policy (2002), and Karnataka's Urban Drinking Water and Sanitation Policy (2002). The investment program complements the activities under the proposed Karnataka Integrated and Sustainable Water Resources Management Investment Program for irrigation modernization, IWRM, and river basin management.[7]

11. **ADB's sector strategy and lessons learned.** The road map's objectives are fully consistent with ADB's country partnership strategy for India, 2013–2017, which proposes to (i) pilot new approaches for sustainable urban development in small and mid-sized cities with high potential for growth, (ii) encourage technical advancement, (iii) strengthen governance and reforms for service delivery, and (iv) develop institutional capacity.[8] The road map and MFF design incorporate lessons from ADB's experience in India, especially in Karnataka, including the need to (i) incorporate low-cost sanitation facilities for poor households, (ii) provide house service connections for urban water and sewerage as part of the project scope, (iii) include targeted awareness campaigns for changing the behavior of urban residents, and (iv) implement institutional reforms through standardized systems and processes at the state level.[9]

B. Impact and Outcome

12. The impact will be improved sustainable water security in selected river basins in Karnataka. The outcome will be improved water resource management in urban areas in selected river basins in Karnataka.

C. Outputs

13. The investment program has three outputs, which are consistent with ADB's Water Operational Plan, 2011–2020 and ADB's Urban Operational Plan, 2013–2020:[10]

(i) **Output 1: Expanded and upgraded urban water supply and sanitation infrastructure.** The investment program will finance physical investments associated with (a) the rehabilitation and upgrading of inefficient water supply systems in subprojects that prioritize water efficiency (e.g., water loss minimization through NRW reduction programs) and water security (e.g., restoration of riverbank reservoirs); and (b) the expansion of sanitation (through an output-based toilet program), sewerage networks, sewage treatment capacity and effluent reuse infrastructure for subprojects that promote environmental protection and improvement of water bodies (e.g., preventing discharge of untreated sewage), and water productivity and financial sustainability (e.g., effluent reuse for industry).

(ii) **Output 2: Improved water resource planning, monitoring, and service delivery.** Output 2 will finance the following nonphysical investments:

[6] The plan calls for a paradigm shift in water resource management, which in the urban context involves (i) integrated urban water supply and sewerage systems; (ii) targets for recycling of water by industry; (iii) improved water data collection and management systems; (iv) demand management and planning at a regional scale.
[7] The investment program is scheduled for ADB approval in 2014.
[8] ADB. 2013. *Country Partnership Strategy: India, 2013–2017.* Manila.
[9] Lessons from Project Implementation in Karnataka (accessible from the list of linked documents in Appendix 2).
[10] ADB. 2011. *Water Operational Plan, 2011−2020*. Manila; ADB. 2013*. Urban Operational Plan, 2012–2020*. Manila.

(a) establishment and operationalization of the ULB incentive fund to finance reform activities among candidate ULBs;[11] (b) development and rollout of information technology-based ULB water modules for water audits, water tariffs, asset management, and water quality disclosure by the Karnataka Municipal Reform Cell; (c) drafting of state guidelines on public standposts; (d) assistance to manage and implement water utilities under public–private partnerships; and (e) development of improved communication and citizen participation strategies.

(iii) **Output 3: Strengthened operational and administrative capacity.** Output 3 will finance nonphysical investments associated with (a) project management, (b) capacity development and restructuring of the KUIDFC to strengthen its financial intermediary function, and (c) ULB administrative capacity building.

14. Project 1 is representative of subprojects to be financed under the investment program. Under output 1, project 1 will finance UWSS infrastructure in three towns of the Tungabhadra subbasin: Byadagi, Davangere, and Harihar, including (i) increased water treatment capacity (15,000 cubic meters per day) and improvements to water supply networks (1,065 km) to ensure comprehensive, efficient and continuous water supply; and (ii) increased wastewater treatment capacity (4 new sewage treatment plants with a total capacity of 48,000 cubic meters per day) and improvements to the sewerage networks (365 km of pipeline and 5,000 pro-poor toilets) to promote environmental protection. Output 2 will support reform implementation and will finance (i) a fraction of the ULB incentive fund, and services to (ii) draft the public standpost guidelines, (iii) prepare selected IT-based modules and pilot them in three selected towns, (iv) assist mainstreaming private sector participation through performance-based contracts in water schemes, and (v) develop and deliver a communication and awareness campaign. Under output 3, it will finance consultancies for project management and design and supervision, as well as capacity development activities to strengthen KUIDFC's financial intermediary mandate and ULBs' administrative functions (through training of over 75 officials). Subsequent projects will provide infrastructure in other towns in the state and nonphysical assistance to complete the intended program outputs.[12] Towns will be selected based on (i) the impact of IWRM improvements on Karnataka's water resources, (ii) ULBs' reform willingness, and (iii) the infrastructure gap.

D. Investment and Financing Plans

15. The investment program is estimated to cost $227.0 million (Table 1). The Government of India has requested an MFF in an amount up to $152.0 million equivalent from ADB's ordinary capital resources and other resources to help finance a part of the investment program. The MFF will consist of up to three tranches, subject to the government's submission of related periodic financing requests, execution of the related loan and project agreements for each tranche, and fulfillment of the terms and conditions and undertakings set forth in the framework financing agreement.[13]

16. Project 1 will be funded from the first tranche of the MFF ($75.0 million) which will have a 25-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan and project agreements. The Urban Environmental Infrastructure Fund under the Urban

[11] Urban Local Body Reform-Driven Selection Process (accessible from the list of linked documents in Appendix 2).
[12] Project 2 is expected in 2016. If cofinancing is secured, a third project may be processed in 2018. Town selection will be subject to criteria selection and reform compliance. Karnataka is tentatively considering assistance to coastal towns such as Mangalore, Puttur, Udupi, and Kundapura.
[13] Framework Financing Agreement (accessible from the list of linked documents in Appendix 2).

Financing Partnership Facility, an ADB administered trust fund, will provide grant cofinancing equivalent to $1.8 million, to finance specifically the output-based toilet program. The state government and ULBs will contribute $40.2 million. The financing plan is in Table 2. [14]

Table 1: Investment Program
($ million)

Item		Investment Program	Project 1[a]
A.	**Base Cost**[b]		
	1. Output 1: Expanded efficient urban water supply and sanitation infrastructure	**152.0**	**75.4**
	2. Output 2: Improved water resource planning, monitoring, and service delivery	**13.5**	**5.8**
	3. Output 3: Strengthened capacity	**17.0**	**9.7**
	Subtotal (A)	**182.5**	**90.9**
B.	**Contingencies**[c]	**32.5**	**20.0**
C.	**Financing Charges during Implementation**[d]	**12.0**	**6.1**
	Total (A+B+C)	**227.0**	**117.0**

[a] Includes taxes and duties of $12.2 million to be financed from government resources.
[b] In early-2014 prices.
[c] Physical contingencies computed at 7.9% for civil works and 5% for equipment. Price contingencies computed at 2% on foreign exchange costs and 8.65% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
[d] Includes interest and commitment charges. Interest during construction for ADB loan(s) has been computed at the 5-year forward London interbank offered rate plus a spread of 0.6%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.
Source: Asian Development Bank estimates.

Table 2: Financing Plan

	Investment Program		Project 1	
Source	**Amount** ($ million)	**Share** (%)	**Amount** ($ million)	**Share** (%)
Asian Development Bank				
Ordinary capital resources (loan)	150.0	66.1	75.0	64.1
Urban Environmental Infrastructure Fund under the Urban Financing Partnership Facility (grant)[a]	2.0	0.9	1.8	1.5
Government of Karnataka and Urban Local Bodies	75.0	33.0	40.2	34.4
Total	**227.0**	**100.0**	117.0	**100.0**

[a] Contributor: the Government of Sweden. Administered by ADB.
Source: Asian Development Bank estimates.

E. Implementation Arrangements

18. The implementation arrangements are summarized in Table 3 and described in detail in the facility administration manual.[16]

Table 3: Implementation Arrangements

Aspects	Arrangements
Implementation period	March 2014–March 2024 (investment program); March 2014–March 2019 (project 1)
Estimated completion date	31 March 2024 (investment program); 31 March 2019 (project 1)
Management	
(i) Oversight body	The IWRM steering committee will provide policy direction on matters relating to IWRM in Karnataka. The committee, chaired by the chief secretary, will comprise senior representatives of relevant line agencies. The State Empowered Committee will provide project guidance and policy direction for all other aspects. It will be chaired by the additional chief secretary and will include representatives from the urban, water, environment, planning, and finance departments.
(ii) Executing agency	State of Karnataka acting through the KUIDFC.

[14] Agence Française de Développement and German development cooperation through KfW have expressed interest in cofinancing subsequent tranches on a parallel basis .
[16] Facility Administration Manual (accessible from the list of linked documents in Appendix 2).

Aspects	Arrangements		
(iii) Key implementing agencies	ULBs (assisted by the KUIDFC) will implement output 1. For project 1, the ULBs are Byadagi, Davanagere, and Harihar. The Karnataka Municipal Reform Cell will develop and roll out IT-based reform modules and train ULB staff. The State Institute for Urban Development will implement training, and the KUIDFC all other activities.		
(iv) Implementation unit	A central project management unit responsible for coordination, management, monitoring, and supervision of the facility will be established by the KUIDFC with a minimum of 10 staff. Regional project management units at the subbasin level for each tranche will assist project implementation. ULB-level project implementation units will monitor day-to-day construction works.		
Procurement (project 1)	International competitive bidding	1 contract	$38.15 million
	National competitive bidding	5 contracts	$32.62 million
	Shopping	To be determined	<100,000 each
Consulting services	Consulting services (around 1,250 person-months under 5 major packages) to support project 1 will be financed by the government and recruited in line with Clause 1.8 of ADB's Guidelines on The Use of Consultants (2013, as amended from time to time).		
Retroactive financing and/or advance contracting	Retroactive financing will be allowed for eligible expenditures incurred for consulting services and procurement of goods, services and civil works, project management, and project administration up to 12 months before the loan signing date, and not exceeding 20% of the relevant loan amount.		
Disbursement	The loan and grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

IWRM = integrated water resources management, KUIDFC = Karnataka Urban Infrastructure Development and Finance Corporation, ULB = urban local body.
Source: Asian Development Bank.

III. DUE DILIGENCE

A. Technical

19. The investment program has been conceptualized to address water security problems accentuated by climate change and designed to incorporate IWRM benefits.[17] Technical priorities outlined in the framework financing agreement are consistent with this approach. All three towns in project 1 are in close proximity (within the Upper Tungabhadra subbasin) and draw drinking water from the same polluted river section. Achieving full sewerage coverage and connecting all households are expected to result in important river quality improvements. Effluent reuse is possible for agricultural purposes in the three towns, and reuse by small industry is being evaluated in Davangere. All towns have significant levels of NRW, which may increase after continuous water is supplied. As water loss management is essential, performance-based management contracts for water will be utilized in the project towns after establishing baselines and targets for NRW reduction.

B. Economic and Financial

20. **Economic analysis.** The economic rationale for government intervention is sound as the investment program supports the improved provision of basic civic services, a public good provided by the government. As a result of improved public services, positive externalities in public health, human capital development, environment protection, and resource management will be created and better managed. The economic analysis evaluated the economic viability of the six water supply and sewerage subprojects under project 1. The economic internal rate of return (EIRR) of 12.9%–23.6% for the six subprojects is higher than the economic opportunity cost of capital at 12%, indicating sufficient economic benefits. The results are robust against downside risks, including (i) capital cost overrun by 10%, (ii) operation and maintenance (O&M) cost overrun by 10%, (iii) benefits reduced by 10%, and (iv) delay in project implementation by 1

[17] Climate Change Risk Screening (accessible from the list of linked documents in Appendix 2).

year. The EIRRs range from 10.7% to 19.8% in the sensitivity analysis; the minimum EIRR is 10.7% when all risks are assumed to occur at the same time, which is improbable. The sensitivity analysis shows that EIRRs are relatively more sensitive to a reduction in benefits. Given Karnataka's rapidly increasing urbanization rates (to over 50% by 2030), the risk for unrealized economic benefits from project 1 is minimal.

21. **Financial analysis.** The financial internal rate of return (FIRR) of 0.9%–2.9% for the three water subprojects exceeds the weighted average cost of capital (WACC) of 0.68%, indicating reasonable financial return. This is based on the assumptions that volumetric water tariffs will be set and adjusted over time to recover O&M costs and capital investments. Potential revenue streams from the water supply subprojects can be utilized to subsidize the O&M costs of the sewerage subprojects at the ULB level. Though FIRRs for sewerage do not meet the hurdle rate, the towns will fully recover the O&M costs from incremental revenues over the analysis period.[18] In the initial 5-year period, other municipal resources will be required to support O&M for the combined subprojects in case of one ULB (Byadagi). Sensitivity analyses revealed that the water supply subprojects' FIRRs are most sensitive to a reduction in revenues, indicating that improved collection efficiency and implementation of volumetric tariffs will be crucial to ensuring financial viability.

C. Governance

22. Karnataka and project 1 towns offer opportunities to test new approaches to reform, contractual models fostering shared responsibility and accountability within the public sector, and public–private partnerships. Institutional arrangements proposed under the investment program are consistent with state and ULB mandates. The KUIDFC's procurement and project management capacity is appropriate. The financial management assessment did not identify any significant concerns. To ensure proper recording and management of account transactions, designated accounting and finance staff for the investment program should be engaged at the right time, especially at the project implementing unit level. ADB's Anticorruption Policy (1998, as amended from time to time) was explained to and discussed with the central and state governments and KUIDFC. Specific policy requirements and supplementary measures are described in the facility administration manual. Anticorruption and governance measures under the North Karnataka Urban Sector Investment Program remain appropriate and will be extended to this investment program.[19]

D. Poverty and Social

23. The investment program will implement socially inclusive and gender-focused interventions.[20] Under project 1, data, disaggregated by sex, ethnicity, and social and economic background will be collected at regular intervals to help establish baseline figures to track social and gender equality results as the project progresses. A gender action plan has been prepared for project 1 to ensure that social and gender equality activities are implemented and monitored at regular intervals. The project will target poor, disadvantaged, and female-headed households through improved water supply, sewerage, and sanitation, as well as implementation of existing

[18] A 10-year forecast based on ULBs' past 4-year financial performance showed that incremental O&M costs arising from water and sewerage subprojects could be absorbed in their budget without creating any major fiscal burden.

[19] Measures include (i) public disclosure on the KUIDFC's project webpage of physical and financial progress, and results of tenders; (ii) public disclosure of annual project accounts audits; and (iii) ULB web-based platforms to promptly redress public grievances (ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to India for the North Karnataka Urban Sector Investment Program*. Manila).

[20] Key initiatives include (i) new or improved water and sewerage connections for poor, socially disadvantaged, and female-headed households; (ii) a communication program to bring about attitudinal changes to health, hygiene, and sanitation; (iii) capacity development to sensitize government staff on social inclusion and gender; (iv) participation from disadvantaged groups in project implementation, and monitoring activities; (v) awareness raising.

government policies that ensure affordability of water user rates and installation of household toilets in accordance with the "Bharat Nirman Abhiyan" total sanitation scheme. Information and communication materials will be developed to educate communities on social, economic, and health-related impacts of improved hygiene and sanitation conditions.

E. Safeguards

24. **Resettlement (category B) and indigenous peoples (category C).** Temporary impacts on loss of income to shop owners, street vendors, and hawkers are envisaged due to construction and rehabilitation of water supply and sewerage networks in project towns. A total of 9.09 hectares of private agricultural land will need to be acquired for the construction of sewage treatment plants in Byadagi and Davengere, impacting 12 landowners. The new service reservoirs, sewage treatment plants, lift stations, and community toilets will be located within existing facilities or in government and/or community lands. One voluntary land donation for a sewage lift station in Harihar has been identified. Independent third party validation of the donated land was done and the report is included in the final Harihar resettlement plan. The draft resettlement plans of Byadagi and Davengere were prepared in consultation with affected persons during the preparation stage in accordance with ADB's Safeguard Policy Statement (2009). The final resettlement plans will be prepared upon the completion of detailed design and submitted to ADB for review and approval prior to implementation. The Indian Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act is in effect since 1 January 2014. Based on socioeconomic surveys, no indigenous people reside in project sites. Improved water supply and sewerage networks will benefit all households equally. Meaningful and widespread consultations with communities will continue throughout implementation. Resettlement and indigenous peoples' frameworks have been prepared and disclosed on ADB's webpage. They provide guidance and outline requirements to prepare mitigation plans for involuntary resettlement and/or indigenous people impacts for project 1 and projects under future tranches of the investment program.[21]

25. **Environment (category B).** An environmental assessment and review framework was prepared to guide the preparation of future tranches, and three initial environmental examinations with environmental management plans were prepared for project 1 in accordance with ADB's Safeguard Policy Statement and government laws. The initial environmental examinations conclude that no significant adverse impact is anticipated as a result of UWSS infrastructure expansion and rehabilitation works proposed in the project 1 towns. It is envisaged that the net environmental benefits to the population of the three towns will be positive and significant as a result of improved (i) water efficiency and security through the implementation of NRW reduction programs; and (ii) river water quality through the expansion of sewerage networks, treatment capacity, and sanitation coverage. The initial environmental examinations outline a grievance redress mechanism to ensure easy and quick redress of any complaints or concerns during project implementation. The environmental management plans provide adequate mitigation measures to address temporary construction impacts, including traffic management, to ensure limited disruption to traffic flow and access.[22]

[21] The resettlement plans outline objectives, policies, principles, procedures for resettlement and compensation, and assistance to affected persons. They will be updated upon completion of the engineering designs. The KUIDFC has adequate capacity for preparing and implementing social safeguard measures. An updated resettlement framework and Harihar resettlement plan were endorsed by the KUIDFC and disclosed on ADB's website in February 2014.

[22] Construction impacts also include adequate gravel, sand, and aggregate sourcing; dust and noise generation; and construction waste runoff. Environmental management plans will be included in all bid documents, and the KUIDFC will monitor their implementation and submit periodic progress reports on environment safeguards to ADB.

F. Risks and Mitigating Measures

Table 4: Summary of Risks and Mitigating Measures[23]

Risks	Mitigating Measures
Beneficiaries do not connect to sewerage system	Information and communication campaigns on hygiene and sanitation to change behavior, and provision of toilet programs for economically disadvantaged households, including connections to sewers. The service tariffs are also affordable, even for poor and disadvantaged households.
ULBs are slower at adopting IWRM pre-project reforms as described in selection process	ULB incentive fund resources will be made available to prospective ULBs upon signing reform commitment agreement. Consultants will assist and guide ULBs in procuring services and will monitor the results.
Tariff set at insufficient levels	Karnataka issued in 2011 an order making sewerage tariffs and volumetric tariffs compulsory. Financial improvement plan to progressively replace other resources.
Water resources may deteriorate due to upstream states' abstraction or pollution	Water allocations across states are predetermined. IWRM–Advance Center will model river basin hydrology in selected sub-basins to project sustainable levels of abstraction. Karnataka SPCB regulates and monitors industrial discharge.

IWRM = integrated water resource management, SPCB = State Pollution Control Board, ULB = urban local body.
Source: Asian Development Bank

IV. ASSURANCES

26. The central and state governments and the KUIDFC have assured ADB that implementation of the investment program shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the facility administration manual and loan documents.

27. The central and state governments and the KUIDFC have given ADB certain undertakings for the MFF, which are set forth in the framework financing agreement. Specific covenants agreed by the central and state governments and the KUIDFC with respect to individual tranches under the MFF are set forth in the loan and project agreements for the respective tranches.

V. RECOMMENDATION

28. I am satisfied that the proposed multitranche financing facility would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the provision of loans under the multitranche financing facility in an aggregate principal amount not exceeding $150,000,000 to India for the Karnataka Integrated Urban Water Management Investment Program, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, and such other terms and conditions as are substantially in accordance with those set forth in the framework financing agreement presented to the Board.

Takehiko Nakao
President

4 March 2014

[23] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK FOR THE INVESTMENT PROGRAM

Design Summary	Performance Targets and Indicators with Baselines[a]	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Improved sustainable water security in selected river basins in Karnataka	By 2026 Surface water quality indicators reduced or maintained at statutory standards of </=30 milligrams/liter biochemical oxygen demand level and total coliforms <5,000 most probable number /100 milliliter coliform count in critical watersheds (2012 baseline: noncompliant). Waterborne disease incidence decreased by at least 10% in program ULBs.	Central and State Pollution Control Board and KUIDFC reports Program ULB hospital reports, socioeconomic surveys pre and post project completion	**Assumptions** No extreme natural calamities within the benefit monitoring period (2025). **Risks** Water resources deteriorate due to upstream states' abstraction and/or pollution.
Outcome Improved water resources management in urban areas in selected river basins in Karnataka	By 2024 Improved water use efficiency with nonrevenue water reduction from average 40%–50% to <20% in program ULBs. 90,000 households with new or improved water supply and 76,000 households with new or improved sanitation. Medium-term (15 year) drinking water quantity demand forecasted for selected river subbasins (baseline: no planning or forecasts). National wastewater effluent quality discharge and reuse standards met in program ULBs (baseline: no treatment).	KUIDFC and Karnataka Municipal Reform Cell annual reports and ULB statistics ULB statistics and census data Advanced Centre for IWRM annual reports Karnataka State Pollution Control Board and ULB reports	**Assumptions** IWRM reforms implemented on schedule. No significant change in hydrological regime and basin water availability.
Outputs 1. Expanded and upgraded UWSS infrastructure	By End 2024 **1.1 Inefficient water supply systems rehabilitated and upgraded** – >95% of households with metered water connection in program ULBs (from 21% average for Karnataka), including slums. – Average hours of water supply extended to 24x7 (including poor female-headed households) in program ULBs (baseline: average 2 hours daily). – Water supplied meets national standards (target: 95% of tests). – Water treatment capacity increased by about 30,000 m^3/day in program ULBs. **1.2 Wastewater networks, treatment and effluent reuse infrastructure expanded** – >80% household coverage	PPMS, KUIDFC, and ULB reports PPMS, KUIDFC, and ULB reports Karnataka State Pollution Control Board, Urban Development Department, and ULB reports PPMS, KUIDFC, and ULB reports PPMS, KUIDFC, and ULB	**Assumptions** Beneficiaries are willing to connect and pay for water supply and sewerage networks. **Risks** Insufficient demand for recycled treated effluent. Sewerage tariff set at insufficient levels to recover operation and maintenance costs.

Design Summary	Performance Targets and Indicators with Baselines[a]	Data Sources and Reporting Mechanisms	Assumptions and Risks
	sewerage connection in program ULBs, from 25% average for Karnataka (including vulnerable and poor female-headed households). – Wastewater treatment capacity increased by 70,000 m^3/day, with 30% effluent reused and/or recycled (baseline: 0%). – Sanitation program implemented for poor and vulnerable households (target: increase toilet coverage and use in program ULBs from the state's average of 85% to >90%).	reports PPMS, KUIDFC, and ULB reports PPMS and NGO reports	
2. Improved water resource planning, monitoring, and service delivery	By End 2024 **2.1 ULB Incentive Fund operationalized** – ULB Incentive Fund established. – >80% revenue collection efficiency in program ULBs (baseline: 50% state average). **2.2 State and ULB Reform Program implemented** – ULB IT-based modules for (i) volumetric tariff setting, water accounting and effluent discharge (all new), and (ii) improved management information systems and asset management systems developed. – State guidelines on public standposts approved. – Performance-based water supply contracts mainstreamed (at least 2 contracts). **2.3 Improved communication and citizen participation** – Campaign for improved community understanding of (i) water management, (ii) water-sanitation-health nexus, (iii) volumetric tariffs, and (iv) standpost metering and phase out conducted (target: female–male facilitator ratio 50:50). – Water data sharing system for river basin managers and agencies.	 PPMS and ULB reports PPMS and ULB reports Karnataka Municipal Reform Cell web page and promotional materials Urban Development Department circular instruction PPMS, project contractual documents PPMS and NGO reports Advanced Centre for IWRM and KUIDFC reports	**Assumptions** State remains committed to use public–private partnerships to improve service delivery. **Risks** ULBs are slower at adopting pre-project reforms as described in selection process.
3. Strengthened operational and administrative capacity of KUIDFC and ULBs	By End 2024 **3.1 Improved KUIDFC financial intermediation capacity** – KUIDFC adopts business and financial strategy including capital adequacy, asset quality, liquidity, and profitability programs. – Credit and risk management policies, operating systems, and procedures adopted. – Corporate and financial governance and management systems developed and	 PPMS, KUIDFC annual reports PPMS, KUIDFC annual reports PPMS, KUIDFC annual reports	

Design Summary	Performance Targets and Indicators with Baselines[a]	Data Sources and Reporting Mechanisms	Assumptions and Risks
	organization restructured. – Procedures to assess and monitor the economic, social, and environmental impact of subprojects developed – Staff capacity assessment conducted and recommendation implemented. **3.2 Improved ULB administrative capacity** – Six Capacity development programs developed and delivered to water sector staff (target: >150 officials, of which 33% women). **3.3 Project management system operational** – The project is implemented on time and within budget. – Effective IWRM coordination mechanism at state level operationalized.	PPMS, KUIDFC annual reports PPMS, KUIDFC annual reports PPMS, State Institute for Urban Development reports PPMS and Tripartite Portfolio Review Meeting Minutes of steering committee meetings	

Activities with Milestones	Inputs
1. Output 1: Expanded and upgraded UWSS infrastructure	
1.1 Prepare detailed designs and bid documents (July 2013–June 2014 for project 1; June–October 2015 for project 2).	ADB: $150 million
1.2 Award civil work contracts (June–December 2014 for project 1; January–July 2016 for project 2).	Government of Karnataka and ULBs: $75 million
1.3 Construct and commission UWSS systems (2014–2019 for project 1, 2016–2023 for project 2).	
2. Output 2: Improved water resources planning, monitoring, and service delivery of selected ULBs	Urban Environmental Infrastructure Fund under the Urban Financing Partnership Facility: $2 million
2.1 Prepare design (2013–April 2014), evaluate proposals (2014) and implement (January 2015–April 2016) pool incentive fund for service delivery reforms.	
2.2 Design and encode IT modules (projects 1 and 2, July 2014–July 2016), roll out and provide ULB training (project 2, July 2015–July 2017).	
2.3 Award of performance-based contracts (February–October 2014 for project 1; January–July 2016 for project 2).	
2.4 Draft (by December 2014), consult (by June 2015), and approve (by December 2015) the state guidelines on standposts.	
2.5 Recruit communications consultant and NGO (end 2014). Launch of communications campaign (April 2015) with inputs from community members, including women and vulnerable groups.	
3. Output 3: Strengthened operational and administrative capacity of KUIDFC and ULBs	
3.1 Conduct ULB assessments and training modules in projects 1 and 2 (2014–2024).	
3.2 Establish central and regional project management unit offices (September–December 2013) and project implementation unit offices (June 2014) with core staff. Engage and mobilize consultants and contractors (April 2014).	
3.3 Conduct regular monitoring, reporting, and evaluation (2014–2024). Undertake surveys for project 1 (2014 and 2019) and project 2 (2019).	
3.4 Prepare and implement communications strategy on project benefits, especially for women and vulnerable groups (2014-2024).	
3.5 Conduct beneficiary perception surveys (2014, 2019 for project 1; 2016, 2014 for project 2)	

ADB = Asian Development Bank, IT = information technology, IWRM = Integrated Water Resource Management, KUIDFC = Karnataka Urban Infrastructure Development and Finance Corporation, m^3 = cubic meter, NGO = nongovernment organization, PPMS = project performance monitoring system, ULB = urban local body, UWSS = urban water supply and sanitation.
Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://adb.org/Documents/RRPs/?id=43253-024-3

1. Framework Financing Agreement
2. Periodic Financing Request for Project 1
3. Sector Assessment (Summary): Water Supply and Other Municipal Infrastructure Services
4. Facility Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Gender Action Plan
12. Initial Environmental Examination
13. Environmental Assessment and Review Framework
14. Resettlement Plan
15. Resettlement Framework
16. Indigenous Peoples Planning Framework
17. Risk Assessment and Risk Management Plan

Supplementary Documents

18. Comparison of Financing Modality
19. Lessons Learned from Project Implementation in Karnataka
20. Output-Based Toilet Program (Summary)
21. Urban Local Body Reform-Driven Selection Process
22. Climate Change Risk Screening