



1. Project Data

Project ID P121774	Project Name IN: Kerala RWSSP II	
Country India	Practice Area(Lead) Water	
L/C/TF Number(s) IDA-50270	Closing Date (Original) 30-Jun-2017	Total Project Cost (USD) 134,994,372.25
Bank Approval Date 15-Dec-2011	Closing Date (Actual) 28-Jun-2019	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	155,300,000.00	0.00
Revised Commitment	155,300,000.00	0.00
Actual	132,351,092.85	0.00

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2. Project Objectives and Components

a. Objectives

The first World Bank-funded Kerala Rural Water Supply and Environmental Sanitation Project (P055454) was implemented between 2000 and 2008. The project achieved its objective of changing water supply and sanitation services in the Kerala State of India from a supply-responsive approach—traditional top-down, engineering based approach—to a demand-responsive approach, which can be characterized as planning based on beneficiaries' preferences, capital cost contributions from beneficiaries, universal household connection provision and full operation and maintenance (O&M) cost recovery from user fees (PAD, pp.1-2; ICR, p.6). That project was named Jalanidhi, which means “water is treasure” in the Malayalam language.



The Second Kerala Rural Water Supply and Sanitation Project (P121774), which is the subject of this review, was a follow-on project with the aim to broaden and deepen the gains achieved by the former. The second project was named Jalanidhi II.

According to the Financing Agreement (p.4) dated February 15, 2012, and the Project Appraisal Document (PAD, p.5), the development objective of Jalanidhi II was “to increase the access of rural communities in Kerala to improved and sustainable water supply and sanitation services, using a decentralized, demand-responsive approach” (the PAD’s statement was the same except that “in Kerala” was inserted after “sanitation services”).

In this review, the achievement of the project development objectives will be assessed as composed of two objectives:

- Objective 1: to increase access to improved and sustainable rural water supply services; and
- Objective 2: to increase access to improved and sustainable rural sanitation services.

Although the project development objective was not revised during project implementation, the project scope was changed and the key associated outcome targets were revised at the first restructuring in June 2016 (see Section 2e. Comments on Project Cost, Financing, Borrower Contribution, and Dates below). Therefore, a split evaluation will be undertaken in this review.

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

No

c. Will a split evaluation be undertaken?

Yes

d. Components

The project had three components:

A. Institution Building. (*Appraisal cost: US\$26.8 million; actual cost: US\$14.9 million*)

The activities of this component were to support the Kerala Rural Water Supply and Sanitation Agency (KRWSA), the project implementing entity. KRWSA is a local governmental society established in 1999 with the responsibility to promote the long-term sustainability of the rural water supply and sanitation sector by assisting the Government of Kerala to identify and implement an appropriate policy framework and strategic plan (FA, p.12). The Project Management Unit (PMU) was maintained within KRWSA. This component had three sub-components:

1. Project Management: Provision of office equipment, vehicles, and a range of technical advisory services for project management to strengthen the PMU and set up regional project management units (RPMUs) and the Gram Panchayat (GP—village level local government, which is the basic unit of the decentralized governance system in India) support teams.



2. **Capacity Building of Sector Institutions and Support Organizations:** Carrying out short and long-term policy, strategy, and sector level training programs and capacity building initiatives to the staff of sector institutions and support organizations (SOs), such as non-governmental organizations.
3. **Statewide Sector Development Program:** Provision of technical advisory services for policy analysis, organizational studies and sector development, integrated water resources management, establishment of a state-level sector development unit and a project appraisal unit, development of a statewide rural water supply and sanitation management information systems, mapping based on geographic information system, operation and maintenance management pilots, and independent monitoring and evaluation, including consumer surveys.

B. Technical Assistance to Implementing Agencies. (*Appraisal cost: US\$27.2 million; actual cost:US\$11.9 million*)

The technical activities under this component were to support the Kerala Water Authority (KWA), KRWSA, GPs and Support Organizations (SOs—non-governmental organizations selected by KRWSA and participating GPs to provide support, on a day-to-day basis, in water supply and sanitation infrastructure investments). This component had three sub-components:

1. **Intra-GP Rural Water Supply Schemes:** Provision of support services through SOs and technical assistance for the implementation of schemes—rural water supply facilities to be planned and implemented in the participating GPs—to be carried out under the first sub-component of C below, including community development, engineering, and management support.
2. **Multi-GP Water Supply Schemes:** Provision of support services through SOs and technical assistance for the rehabilitation of multi-GP schemes—rural water supply schemes covering two or more GPs—to be carried out under the second sub-component of C below, including the common infrastructure facilities and the intra-GP storage and distribution infrastructure.
3. **Sanitation:** Provision of support services through SOs and technical assistance to participating GPs and Beneficiary Groups (BGs—any of the villages or neighborhood groups which were selected as a beneficiary of a rural water supply and sanitation scheme under the project) for the sanitation infrastructure investments to be carried out under the third sub-component of C below.

C. Infrastructure Development. (*Appraisal cost: US\$187.2 million; actual cost:US\$170.5 million*)

Under this component, intra-GP and multi-GP rural water supply schemes and sanitation facilities were to be constructed. There were three sub-components matching the technical assistance sub-components in B above:

1. **Intra-GP Rural Water Supply Schemes:** Construction of new rural water supply schemes and the upgrading, rehabilitation, extension and expansion of existing rural water supply facilities. These activities would be:
 1. About 3,300 new small water supply schemes covering around 40 households each.
 2. About 10 new large water supply schemes covering between 1,000 and 2,000 households each.
 3. Transfer and rehabilitation of about 580 existing small water supply schemes currently managed by Kerala Water Authority (KWA) to the participating GPs and/or BGs.
 4. A number of complementary components, such as groundwater recharge measures for source sustainability and source protection works, and individual water harvesting tanks, as required, for each water supply scheme.



2. **Multi-GP Water Supply Schemes:** Transfer of the intra-GP distribution network from KWA to respective participating GPs in about five existing schemes on a pilot basis and upgrading, rehabilitation, expansion and modernization of common infrastructure and intra-GP storage and distribution infrastructure of these schemes.
3. **Sanitation:** Civil works and provision of goods, equipment, and technical advisory services to address safe disposal of human excreta, solid waste, and liquid waste. Under this sub-component, solid and liquid waste disposal facilities would be constructed in 75 GPs, in addition to 115 toilets.

Revised Components

At the first restructuring in June 2016, the Kerala State's Sanitation Mission was added to the list of recipients of technical assistance support under Component B to contribute to the achievement of 100 percent Open Defecation Free (ODF) status under the Swachh Bharat Mission—the national “Clean India” campaign. Consequently, the sanitation subcomponent in C was revised to focus on the construction of toilets rather than solid and liquid waste facilities; this resulted in a decrease in the target number of GPs with a solid and liquid waste disposal facility from 75 to 10, while the target number of toilets significantly increased from 115 to 10,000. Originally five multi-GP schemes, each consisting of three GPs, were planned. However, the actual demand was higher than the demand estimated at appraisal, and 12 GPs were already covered under three multi-GP schemes. Therefore, as the project team informed IEG, due to concerns about the availability of funds, the implementation of two multi-GP schemes were put on hold. Yet, as a result of the savings achieved from the weakening of the Indian rupee against the US dollar, it was decided to implement the two multi-GP schemes, and the target for number of people in rural areas provided with access to improved water sources was increased by 225,000 people. However, in the later stages of project implementation, the US dollar depreciated against SDR, and available funding decreased by about US\$20.0 million. Consequently, the proposed rehabilitation of two multi-GP schemes and the planned construction of solid and liquid waste disposal systems in ten GPs could not be implemented. The project team considered these activities as cancelled without formally restructuring the project.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The total project cost was originally estimated at US\$241.2 million. Despite a change in the scope and the reallocation of funds among components at the first restructuring in November 2016, the estimated project cost did not change. In June 2019, the project closed with a total cost of US\$204.13 million, lower than the cost estimated at appraisal, because the amount of available funds in US dollars dropped and some activities had to be cancelled due to the depreciation of the US dollar against the SDR (see Revised Components above). The actual cost was 81.8 percent of the cost estimated at appraisal.

Financing: At appraisal, the International Development Association (IDA) credit was estimated at US\$155.3 million (SDR98.0 million) and it was to finance 64.4 percent of the estimated total project cost. At project closing in June 2019, the IDA credit disbursed US\$134.99 (SDR97.11 million) and financed 68.42 percent of the actual project cost. The disbursed US dollar amount was lower than the estimated amount due to the depreciation of the US dollar against the SDR. At project closing, all project funds were accounted for.

Borrower contribution: At appraisal, the contribution of the Government of Kerala (GOK) was estimated at US\$46.2 million, the participating GPs' and BGs' contributions at US\$28.2 million and US\$11.5 million,



respectively. At project closing, the GOK’s actual contribution was US\$37.86 million; the GPs’ and BGs’ actual contributions were US\$20.9 million and US\$10.4 million, respectively.

Restructurings and Dates: There were two project restructurings.

- **First Restructuring (June 28, 2016):** The sanitation activities were revised shifting the focus from the construction of solid and liquid waste disposal facilities to the construction of toilets; related indicators were also revised (see Revised Components above). The targets of some other outcome indicators were revised, too (ICR, p.8): (i) the number of water supply beneficiaries increased from 1.15 million to 1.37 million due to the decision to re-instate the implementation of two multi-GP schemes that were put on hold due to concerns about the availability of funds (see Revised Components above); (ii) the anticipated number of sanitation services beneficiaries decreased from 0.69 million to 0.37 million due to the change in the activities mentioned above; (iii) the indicator “Number of operational water schemes for which KRWSA’s sustainability index is >80” was replaced by “Number of water supply schemes improved under the project that are delivering satisfactory services to all intended households by recovering full operational costs”; and (iv) the indicator “Number of GPs in the State that are implementing decentralized, demand responsive projects in RWSS” was rephrased as “Number of project-supported water supply schemes that are managed by BGs”.

Lastly, the project closing date was extended by 18 months from June 30, 2017 to December 31, 2018 to compensate for the slow progress at the early stages of project implementation due to the resistance of some KWA officers to the project, who perceived that “the project would undermine the role of KWA in rural water supply” and the frequent leadership changes at KRWSA (ICR, p.19).

- **Second Restructuring (November 26,2018):** Heavy rains and severe floods in the summer of 2018 damaged infrastructure built by the project and halted project implementation. In this restructuring, the project closing date was extended by another six months from December 31, 2018 to June 28, 2019 to allow the completion of the project activities and repair the damaged infrastructure. (Restructuring Paper, p.3).

- **Dates:** The project was approved on December 15, 2011 and became effective on April 17, 2012. The original closing date was June 30, 2017. In two restructurings, the closing date was extended by a total of 24 months. The project closed on June 28, 2019. The reasons for closing date extensions have been outlined in the first and second restructuring entries above.

Disbursement Percentages

The disbursement percentages shown in Table 1 will be used in deriving the weights to be applied to efficacy of the original and revised objectives in the split Outcome rating.

Table 1

Project Objective	Disbursed Amount	Disbursement Percentage
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Original	US\$62.85 million	46.56 %
Revised	US\$72.14 million	53.44 %
Total	US\$134.99 million	100.00 %

3. Relevance of Objectives

Rationale

The project objective was highly relevant to the country context in India. According to the 2018-2019 Annual Report (p.74) of the Department of Drinking Water and Sanitation (DDWS) of the Ministry of Jal Shakti (previously the Ministry of Drinking Water and Sanitation) of the Government of India (GoI), 44.4 per cent of rural habitations have access to piped water and it is estimated that only 34 percent of households have piped water connections, which is not always reliable or affordable (World Health Organization and UNICEF Joint Monitoring Program, 2017). Through the Jal Jeevan Mission under Swajal Project, which is a community demand-responsive, decentralized piped water supply program, the GoI aims at providing safe and adequate drinking water through individual tap connections to every household in rural India by 2024 (www.jaljeevanmission.gov.in). Additionally, as a result of the Swachh Bharat Mission (SBM) launched in 2014, all 29 states and 7 union territories in India achieved 100 percent Defecation Free Status by October 2, 2019, the 150th birthday of Mahatma Gandhi (www.swachhbharatmission.gov.in). However, only 63.3 percent of the rural population practices some level of solid and liquid waste management (National Annual Rural Survey, 2018-19).

The project objective is also highly aligned with the current World Bank (the Bank) strategy as defined in the Country Partnership Framework (CPF) 2018-2022. The third focus area of the CPF, i.e., Investing in Human Capital, includes the objective to “increase access to improved rural water supply and sanitation services”, as objective 3.3. The Bank’s goal is to contribute to the health and economic welfare of the rural population through the provision of improved water supply and sanitation services, which are “prerequisites to developing human capital to unleash the growth potential of rural areas” (CPF, p.75). The Bank strategy also focuses on strengthening institutions and building capacity to increase access to these services (CPF, p.76).

Over the two decades before the start of this project in 2011, the Bank had already become an important actor in the rural water and sanitation services sector through partnerships with a number of state governments in India (PAD, p.4). In the State of Kerala, the Bank started to play a pivotal role in 2000 with the implementation of the Kerala Rural Water Supply and Environmental Sanitation Project, Jalanidhi I. As a result of that project, the focus in rural water services shifted from supply-response approach to demand-responsive, decentralized approach with significant success—1.3 million gained access to improved water with a beneficiary satisfaction rate of 90 percent (PAD, p.4). The Second Kerala Water Supply and Sanitation Project, Jalanidhi II, which is the subject of this review, was designed to broaden and deepen the gains of the first project. Given the Bank’s prior experience in the rural water supply and sanitation sectors in India and the state of Kerala, the objective of the Jalanidhi II Project was adequately challenging.

One moderate shortcoming in the statement of the project’s was that it aimed to “increase the access of rural communities in Kerala to improved and sustainable water supply and sanitation services, using a decentralized, demand-responsive approach” without any indication of the extent of the increased access



expected. This shortcoming was, however, addressed in the project’s design by precise definitions of PDO outcome indicators which clarified the increase in access expected from the project.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To increase access to improved and sustainable water supply services.

Rationale

Theory of Change

The project’s theory of change indicates that the project’s key inputs—IDA credit, investment activities and technical assistance support—would directly lead to the achievement of project outputs, i.e., community-implemented small and large size water schemes to increase access to piped water, which qualifies as “improved water” (ICR, p.10). These would mainly be ground-water based schemes consisting of an open well, a pumping unit, a disinfection unit, a water tank, a piped network for distribution and metered connections to each household; large schemes would require more elaborate water supply arrangements and additional water treatment plants. Furthermore, about 160 existing small schemes would be transferred from the management of the Kerala Water Authority (KWA) to Gram Panchayats (GPs) and would be rehabilitated to increase improved water supply capacity. These investments would be complemented by inter alia groundwater recharge measures and protection works to ensure service continuity and sustainability by BGs. Technical assistance would support awareness creation, community mobilization, preparation of GP-wide rural water supply scheme development and cost estimates. These outputs were expected to lead to increased access to piped water at household level, to technical, institutional, and financial sustainability of water services through the adoption of demand-responsive approach, and to better monitoring and evaluation. The assumption that the water usage fees to be collected from consumers would cover normal operation and maintenance costs was realistic, but the theory of change did not address long-term sustainability of the schemes should there be a major repair requirement or deterioration in the quality of water sources. Overall, the causal links from project inputs to outcomes facilitated by various institutions were credible and sound, and the achievement of this objective could be attributed directly to the project, but the theory of change had shortcomings in how it could and would address the medium- to long-term technical and financial sustainability of the water supply delivery and distribution schemes.

Outputs

Investments. The project financed the construction of 1,700 new water supply schemes and the rehabilitation of 467 schemes that were all operational at project closing—2,167 schemes cumulatively. The original target was 3,938 schemes including both new and rehabilitated schemes. Furthermore, the project completed the



transfer and rehabilitation of three multi-GP schemes covering 12 GPs, against the target of five multi-GP schemes, two of which had to be dropped due a decrease in project funds caused by the depreciation of US\$ against SDR resulting in. These investment activities included the construction of 1,766 groundwater recharging systems and installation of water meters at every household connections for the operational and financial sustainability of the water services.

Technical Assistance. The project supported 3,578 BGs against the target of 4,713. The project also financed a monitoring and evaluation (M&E) system to monitor the sustainable operation of the schemes. For water source sustainability, the project supported the preparation of water security plans for 115 GPs.

Outcomes

For the original objective the outcome indicators were (a) the number of GPs implementing decentralized, demand-responsive RWSS schemes; (b) the number of people with access to improved water sources under the project; and (c) the number of operational water schemes for which KRWSA's sustainability index is higher than 80 percent. Item (d) discusses the sustainability of the schemes based on the findings of the Sustainable Evaluation Exercises (SEEs) conducted in 2015, 2017, and 2019.

- 1. Number of GPs implementing decentralized, demand-responsive RWSS schemes.** As a result of project outputs, the number of GPs implementing decentralized, demand-responsive RWSS schemes increased by 115 against the target of 200. The reason for this lower achievement was the difference in the estimated and actual numbers of households per GP; at appraisal, it was estimated that 225,891 households would be covered in 200 GPs, whereas the actual number of households covered by 115 GPs was 257,918 because of the inaccurate baseline estimate of households in GPs.
- 2. Number of people with access to improved water sources under the project.** the number of people in rural areas provided with access to improved water sources through these demand-responsive schemes increased by about 1.16 million surpassing the target of about 1.15 million.
- 3. Achievement of sustainability of water services.** The Kerala Rural Water Supply and Sanitation Agency (KRWSA) developed the sustainability index based on indicators of the source, technical, institutional and financial assessments of the water supply schemes (ICR, p.50). At appraisal, the index was estimated that 3,150 operational water schemes (80 percent of the total targeted water schemes of 3,938) would achieve a score of 80 on the KRWSA's sustainability index. The findings of the SEEs showed that more than 80 percent of the schemes achieved an index score of 80 in the early years of their operation, but the average index score showed a downward trend as schemes moved into their third and fourth year of operation: in the SEE 2015, 85.5 percent of the operational schemes had an index rating of 80 or above, but in the SEE 2019, the proportion of operational schemes with an index rating of 80 or above dropped to 72.3 per cent. This is a significant decrease caused by the constraints the schemes faced in the medium and long run, such as shortages of funds for major repairs, water quality issues and the expansion of services, and weak technical capacity of the GPs to monitor and support the schemes (ICR, p.13). Furthermore, in 30 percent of the schemes, monthly user payments were either delayed resulting in funding shortage or not high enough to cover O&M costs (ICR, p.13).
- 4. SEE Sustainability Index and Consumer Satisfaction.** In addition to the KRWSA sustainability index, a more detailed sustainability assessment methodology was prepared under the SEEs (ICR, pp. 51-52). According to this methodology, the findings of SEE 2019 showed that 83 percent of schemes were potentially sustainable on technical, institutional, and financial aspects, and 82 percent of consumers were satisfied or highly satisfied with water quality, water pressure, and adequacy of supply. Although these were substantial achievements, they were lower than the achievements of



Jalanidhi I, namely 92 percent for sustainability and 90 percent for consumer satisfaction. The lower level of consumer satisfaction was consistent with the level of services. Only 62 percent of the schemes supplied water daily - one fifth of which was uninterrupted. But 16 percent of the schemes supplied water four to six days per week and 22 percent one to three days in a week. These findings add to the concerns raised above about the long-term sustainability of the schemes.

In conclusion, the project was successful in expanding the water supply infrastructure to more than the target number of people and the satisfaction of consumers with the improved water services was substantial.; However, the availability of water service varied among schemes—almost one quarter of the schemes supplied water three days or less in a week—and financial constraints in about one third of the schemes stand out as an important risk for the sustainability of water services in the medium- to long-term. Overall, the efficacy of the achievement of the first objective is rated Substantial, but barely so.

Rating

Substantial

OBJECTIVE 1 REVISION 1

Revised Objective

To increase access to improved and sustainable water supply services – with indicators as amended at restructuring.

Revised Rationale

Theory of Change for the Revised First Objective

At the first restructuring in June 2016 (see section 2e “Comments on Project Cost, Financing, Borrower Contribution, and Dates” above), some indicators capturing the achievement of the first objective were revised. They will be listed under “Outcomes” below. The revisions had no effect on the theory of change as presented for the original Objective 1.

Outputs

Investments. The project financed the construction of 1,700 new schemes and the rehabilitation of 467 schemes against the revised targets of 1,775 and 400, respectively (the original indicator with a target of 200 GPs operating decentralized, demand-responsive water schemes was deleted in the first restructuring). The number of households with piped connections under new water schemes increased by 155,5240 against the target of 152,330, and the number of households with rehabilitated piped water connection was 102,893 against the target of 112,370. There were no changes in other output indicators.

Outcomes

For the revised objective the outcome indicators were (a) the number of people in rural areas with access to improved water sources under the project; and (b) the number of water supply schemes improved under the project that are delivering satisfactory services to all intended households by recovering full operational



1. **1.38 million people provided with access to piped water supply.** At the first restructuring, the target number of people with access to piped water was increased from 1.15 to 1.38 million with the expectation that the implementation of two large multi-GPs schemes could be re-instated by utilizing the savings achieved due to the depreciation of the Indian rupee (INR) against the US dollar (ICR, p.20). However, the project could not finance these two schemes because their cost substantially increased from INR11 million to INR26 million “due to unforeseen cost elements such as road cuttings, the command area design approach, increase of construction cost, and the additional burden of goods and service tax” (ICR, p.20). Furthermore, the IDA credit amount decreased by about US\$20.0 million due to the depreciation of US dollar against SDR—currency used in the financing agreement. Therefore, although the number of people in rural areas provided with access to improved water sources through demand-responsive schemes substantially increased by about 1.16 million, it fell short of achieving the revised target of about 1.38 million people.
2. **At project closing, 2,030 schemes were delivering satisfactory services to all intended households and recovering full operational costs, against the target of 1,950 schemes out of 2,147 built under the project.** At the project restructuring, this new indicator was added to the results framework replacing the KRWSA’s sustainability index. The new indicator had a target of 1,950 schemes delivering satisfactory services to all intended households by recovering full operational costs (through user charges or by lowering operational costs or availing short-term loans if user charges were low), and the achievement was 2,030 schemes; this corresponds to about 94 percent of the schemes financed by the project. According to the finding of the SEE 2019, 70 percent of the schemes could cover their O&M costs from monthly user charges only without any subsidy from the state government.

Despite falling short of achieving the revised target of number of people with access to piped water, the project was successful in substantially expanding the water supply infrastructure; however, there were moderate shortcomings in the availability of water supply and financial sustainability of the water supply schemes (see Objective 1 above). Overall, the efficacy of the achievement of the revised first objective is also rated Substantial, but barely so.

Revised Rating

Substantial

OBJECTIVE 2

Objective

To increase access to improved and sustainable sanitation services.

Rationale

Theory of Change

The project was originally designed to support the increase in second generation sanitation services such as collection of fecal sludge from pit latrines and septic tanks, solid and liquid waste management (SLWM) in rural areas, improving local drainage, through investment activities and technical assistance. The investment activities were intended to produce three outputs: (i) the installation of latrines in waterlogged and other difficult areas, the installation of pay-and-use public latrines, and regional septage treatment facilities; (ii) installation of household level composting and biogas units, bio-methanation of market waste, and processing



units for plastic waste; and (iii) drainage systems in critical areas to protect GPs' raw water sources. The technical assistance activities would not only support the GPs and BGs in the implementation of the investment activities and in building institutional capacity for service delivery under more complex, community-centric sanitation solutions, but in knowledge and skills sharing, facilitating desired attitudinal change at every stakeholder level. These outputs were expected to result in a higher number of people with access to improved sanitation services. On the other hand, the theory of change did not fully address the financial or technical sustainability aspects; it was assumed that user charges would fully cover the O&M costs of solid and liquid waste management and sullage drainage systems (PAD, p.36) or in the case of plastic waste management facilities, the sale of shredded plastic would generate revenue (ICR, p.31). Overall, a broad causal link was established among the project inputs, outputs, and the expected outcomes, and the achievement of the second objective that would be attributable to the project; however, there were major shortcomings in how the project could and would address the sustainability of second generation sanitation services.

Outputs

At appraisal, it was planned that the project would implement 100 community septic tanks, 100 pay-and-use public latrines, 100 community biodegradable waste management systems, and 15 latrine solutions with new technologies. There were no targets set for septage treatment facilities, household biodegradable waste systems, plastic waste management systems, or liquid waste drainage systems; but provisions were decided for each unit of these systems, such as US\$11,700 for one plastic shredder with a 50-100 kilogram per hour shredding capacity, US\$6,500 per 1 kilometer of drainage channel, and US\$450,000 for septage treatments (PAD, pp.30-31). There was no target set for sanitation related information, education and communication (IEC) activities. The project would finance these activities in 75 GPs and consequently,

At project closing, the number of the project-financed small SLWM units was 9,562 in 93 GPs, such as composting units, plastic recycling units and biodegradable waste units at schools. Due to the revision of the project activities at the first restructuring shifting the focus on household toilets, large SLWM units and septic tanks were not constructed. The project also financed the construction of 36,376 household toilets. The target set at appraisal was 15, but it was increased to 10,000 at the project restructuring.

Outcomes

For the original objective the outcome indicator was the number of people with access to improved facilities for safe disposal of solid and liquid waste (cumulative). As a result of project outputs, a total of 225,939 people gained accesses to these facilities against the original target of 691,000. Additionally, 36,376 households gained access to toilets, benefitting 163,962 people.

The original results framework did not include any indicator to monitor the sustainability of sanitation services addressing second generation issues. As the ICR (p.13) states "it was assumed that people would maintain and use sanitation facilities." Therefore, there is not sufficient information provided in the ICR to assess the sustainability of the small SLWM units supported by the project. On the other hand, according to the findings of National Annual Rural Sanitation Survey (NARSS) 2018-19, solid waste was not visible in any of the 2,960 households surveyed in Kerala, and liquid waste was visible only in a negligible number of households (0.2 per cent); litter and waterlogging was visible in two villages out of 178 surveyed (NARSS, p.147). Despite these achievements, there was a decline in the percentage of rural population practicing SLWM from 91.8



percent at the time of first national survey in 2016 to 88.9 percent when NARSS 2018-19 was conducted (NARSS, p.149).

In conclusion, the project's achievement was limited in expanding access to sanitation services addressing second generation issues, which was partially compensated by a sizable increase in the number of household toilets in the project area. On the other hand, due to lack of evidence, it is not possible to conclude whether the project was successful in achieving the sustainability of these sanitation services in terms of both physical and attitudinal sustainability. Overall, the efficacy of the achievement of the original Objective 2 is rated Modest.

Rating

Modest

OBJECTIVE 2 REVISION 1

Revised Objective

To increase access to improved and sustainable sanitation services – with indicators as amended at restructuring.

Revised Rationale

Theory of Change for the Revised Second Objective

At the first restructuring in June 2016, the project's focus shifted from community level solid and liquid waste management (SLWM) systems to improved household sanitation. This change did not have a material impact on the theory of change; the project objective remained the same, but the type of sanitation services shifted from those addressing second generation issues to first generation issue of eliminating open defecation. The Government of Kerala requested this change to achieve 100 percent Open Defecation Free (ODF) status in the state by October 2019. After the revision of the project activities, the causal pathways from inputs to outcomes remained broadly the same, and the potential achievement of the revised second objective could be attributed to the project's design; however, there were major shortcomings in the prospects that the theory of change would address the sustainability aspect of second generation sanitation services (see Objective 2 above for a detailed discussion of the theory of change for the second objective).

Outputs

The project financed the construction of 36,376 household toilets against the target of 10,000 set at the first restructuring. Furthermore, the number of small SLWM units financed by the project stood at 9,562 in 93 GPs, such as composting units, plastic recycling units and biodegradable waste units at schools; a target was not set for this output.

Outcomes

For the revised objective the outcome indicator was the number of people with access to improved sanitation facilities under the project. As a result of the construction of 9,562 small SLWM units and 36,376 household



toilets, a total of 389,631 people gained access to improved sanitation services against the revised target of 370,000.

According to the revised targets, the project was highly successful in expanding people’s access to sanitation services, however, a conclusive assessment could not be made about the sustainability of these services due to lack of evidence (see the narrative on the original Objective 2 above). Overall, the efficacy of the achievement of the revised second objective is rated Substantial, but barely so.

Revised Rating
Substantial

OVERALL EFFICACY

Rationale

Efficacy of the Achievement of the Original Objectives

The project was highly successful in expanding physical infrastructure for improved water services to a larger number of people than targeted, but service availability varied among schemes; about 22 percent of the schemes could supply water one to three days in a week. Additionally, survey findings showed that the percentage of schemes that could provide sustainable services decreased in the medium-term because some schemes could not generate sufficient funds from user charges for major repairs, water quality issues and expansion of services. The achievement of the first objective is rated Substantial, but barely so.

With respect to sanitation, at the restructuring in June 2016, the project’s focus shifted from community- wide solid and liquid waste management to household toilets. This resulted in a lower number of people benefiting from sanitation services compared to the original target set at appraisal. Furthermore, there was not sufficient evidence to make an evaluative assessment of the sustainability of sanitation services. Hence, the achievement of the second objective is rated Modest.

Overall, the efficacy of the achievement of the original project objectives is rated Modest.

Overall Efficacy Rating
Modest

Primary Reason
Low achievement

OVERALL EFFICACY REVISION 1

Overall Efficacy Revision 1 Rationale

Efficacy of the Achievement of the Revised Objectives

The project was substantially successful in expanding physical infrastructure for improved water services after restructuring, but to a lower number of people than the revised target at the restructuring in June 2016 because the project could not support two large multi-GP schemes since costs had more than



doubled. Service availability also varied among schemes; about 22 percent of the schemes could only supply water one to three days in a week when the project closed. Additionally, survey findings showed that the ratio of the schemes that could provide sustainable services decreased in the medium-term since some schemes could not generate sufficient funds from user charges for major repairs, water quality issues and expansion of services. The achievement of the first objective is rated Substantial, but barely so.

At the restructuring in June 2016, the project's focus shifted from community wide solid and liquid waste management to household toilets. This resulted in a higher number of people benefiting from sanitation services compared to the revised target set at the restructuring. However, there was not sufficient information or evidence to make an evaluative assessment of the sustainability of sanitation services. The achievement of the second objective is rated Substantial, but again barely so.

Overall, the efficacy of the achievement of the project objectives after restructuring is rated Substantial.

Overall Efficacy Revision 1 Rating

Substantial

5. Efficiency

Economic Analysis

At appraisal, a cost-benefit analysis was conducted for piped water activities. The economic analysis included quantifiable benefits from non-incremental water consumption, incremental water consumption, and other time and resource savings (PAD, p.10). Potential benefits from improved sanitation services were not included in the economic analysis. The analysis estimated an economic internal rate of return (EIRR) of 19.4 percent and a net present value (NPV) of US\$90.0 million at a discount rate of 12 percent. However, the economic analysis conducted at project closure resulted in a much lower EIRR and NPV: 13.4 percent and US\$9.3 million, respectively.

The methodologies for the economic analysis at appraisal and at project closure were the same for each of the project's two objectives. On the other hand, there were some important differences in the critical assumptions in the economic analysis at appraisal and at project closure (presented in the ICR) for the two objectives. The efficiency with which this project was implemented will be reviewed for each objective.

Water Source Improvement. At appraisal, it was assumed that increased access to piped water would result in a water fetch-time saving of two hours and 40 minutes—160 minutes—per person. This was a rather ambitious assumption because even before the start of the project, 66 percent of households already had access to a water source inside their premises, mostly from a well (ICR, p.40). Moreover, although access to piped water increased the quantity and quality of water, 38 percent of the schemes could not supply water on a daily basis, which created dependence on other water sources. Therefore, the project did not have the expected impact on decreasing the water fetch-time; at project closure time saving per person was estimated at only 52 minutes compared to 160 minutes at appraisal. The opportunity cost of time spent for fetching water was assumed at INR8.5 per hour at appraisal—nationwide average wage for unskilled non-agricultural female labor in the national time series for 2009-2010. However, the economic analysis at project closure used the State of Kerala



rural wage rate of INR26 from the same time series, which was considerably higher than the assumption at appraisal. When INR8.5 per hour is used in the project closure economic analysis, the EIRR drops to negative 2.5 percent and the NPV to negative US\$71.3 million. Even at an hourly wage rate of INR20, the EIRR increases to only 9.5 percent and the NPV is negative US\$11.9 million. These calculations are based on the discount factor for fetch-time assumption that opportunity income was generated from only 50 percent of the saved-time. If this discount factor is assumed to be 30 percent with an hourly wage of INR26, the EIRR decreases to 6.1 percent and the NPV to minus US\$34.0 million. As the ICR (p.41) notes the large impact of the discount factor on the estimated project viability is “a significant factor of uncertainty as empirical data on how much of saved fetch-time is monetized is scarce.” Overall, these calculations show that the economic analysis is extremely sensitive to the assumptions on time savings, hourly wage and the discount factor for fetch-time, and highly optimistic assumptions are needed in order to show the economic viability of the project’s improvement of water sources improvement. Hence, the robustness of the economic analysis on this objective was questionable.

Cost Effectiveness of Water Delivery. The actual project costs for water delivery were higher than the estimates at appraisal. The actual investment cost of piped water person was US\$136, whereas the estimate at appraisal was US\$116. The main reason for this increase was the focus on higher quality connections to households. The decrease in the number of project beneficiaries due to the cancellation of two multi-GP schemes contributed to the increase in per capita project cost, too. Nonetheless, by comparison the actual cost per capita was in the range from US\$92 to US\$144 calculated by using the data from United Nations Children’s Fund (UNICEF) and World Health Organization (WHO) Joint Monitoring Program 2000.

Cost-Effectiveness of Sanitation Services. The actual cost of sanitation services per beneficiary was 44 percent higher than the appraisal estimate: US\$27 compared to US\$18.75. However, it was comparable to a recent project completed in Bangladesh where the actual cost per person was US\$23.6 (ICR, p.42).

Financial Analysis

Sustainability. According to the financial analysis at appraisal, project investments are sustainable when BGs and GPs contribute to the investment costs and the BGs are responsible for full operation and maintenance (O&M) cost recovery through user charges (PAD, p.10). The PAD did not provide the details of the financial analysis nor did the ICR offer any information on whether a project financial analysis was conducted at project closing or not. Since financial analysis is directly linked to the sustainability of services, the sustainability analysis under efficacy can be used as a proxy for a financial assessment.

The findings of the three independent Sustainability Evaluation Exercises (SEEs) conducted in 2015, 2017, and 2019 were used to calculate the sustainability index score of the water schemes. At appraisal, it was estimated that at least 80 percent of project-financed water schemes would achieve a score of 80 on the sustainability index showing that the schemes were technically and economically sustainable. The findings of the SEEs show that despite more than 80 percent of water schemes could achieve an index score of at least 80 in the early years of their operation, the average index score shows a downward trend as schemes move into their third and fourth year in operation—from 85.5 percent to 72.3 percent of the schemes. Additionally, in 30 percent of the schemes, monthly user payments are either delayed or not high enough to cover O&M costs (ICR, p.13).

Operational and Administrative Efficiency

After the closure of the first project, Jalanidhi I, negotiations for the preparation of the second project, Jalanidhi II, took three years. Thus, when the project implementation started, there were serious staff capacity challenges,



because most of the experienced staff contracted by Kerala Rural Water Supply and Sanitation Agency (KRWSA) for Jalanidhi I had already left the organization. Hiring and training new staff who would oversee numerous subprojects resulted in implementation delays (ICR, pp.17-18). Furthermore, the perception of some of the Kerala Water Authority officers that the project would undermine the role of KWA in rural water supply delayed the development of a partnership model for bulk water supply and initiating multi-GP schemes (ICR, p.19). The frequent changes at KRWSA was another reason for implementation delays: The Executive Director of KRWSA was replaced a surprising 12 times during the seven years of project implementation, which was against the legal covenant that mandated a minimum three-year term. The turnover of the regional directors was also very frequent (ICR, p.19). These delays required the extension of project closing by 18 months. The project closing was extended by another six months mostly because of works needed to repair schemes damaged by floods in the summer of 2018.

The project complied with the Bank’s procurement guidelines, but a key challenge in procurement was slow decision-making processes at some BGs and implementing agencies, which reduced the project’s efficiency (ICR, p.23). Furthermore, average construction of a small scheme took three and a half years, longer than the expected construction time of two years. Delayed processing of road cutting permissions by Public Works Department, introduction of goods and service tax, recurring local elections and poor performance of some contractors contributed to this longer construction time. Although this is reflected in the EIRR and NPV calculations, it nevertheless had an adverse impact on the quality and sustainability of the water schemes: the Support Organizations (SOs), which were contracted for two years to support the BGs in project implementation and whose payment schedules were based on subproject milestones, decreased their number of staff or employed less experienced staff beyond the two-year contract period. The achievement of 83 percent for sustainability and 82 percent for customer satisfaction by Jalanidhi II, which are lower than the achievement of Jalanidhi I by 92 percent and 90 percent, respectively, could partly be linked to the decrease in the SOs’ technical assistance support to the BGs—both in terms of staff number and quality (ICR, p.19).

Due to the shortcomings in the robustness of the economic analysis methodology, significant decrease in economic returns and delays in overall project implementation and subproject implementation, the latter of which manifested itself in lower sustainability and customer satisfaction rates, the overall efficiency of the project is rated Modest.

Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	19.40	0 <input checked="" type="checkbox"/> Not Applicable
ICR Estimate	✓	13.40	0 <input checked="" type="checkbox"/> Not Applicable



* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The Government of India (GoI) aims at providing safe and adequate drinking water through individual tap connections to every household in rural India by 2024 and the second-generation sanitation issues, such as solid and liquid waste management, still need to be addressed. The Bank strategy supports the GoI's efforts in rural water and sanitation services under the third focus area of Investing in Human Capital. Therefore, the relevance of project objectives is rated High. Before the restructuring, the overall efficacy is rated Modest due to the underachievement of the second objective to increase access to improved sanitation services through solid and liquid waste management interventions. The project was restructured to focus on the construction of household toilets; the overall efficacy after restructuring is rated Substantial. However, there are some concerns about the sustainability of the schemes and sanitation services in the medium- to long-term. Efficiency is rated Modest due to lower than estimated economic returns, shortcomings in the robustness of the methodology used in economic analysis, and shortcomings in operational and administrative efficiency. Since the project scope was changed, a split rating is applied (see Table 2 below). The overall outcome rating is barely Moderately Satisfactory with serious questions about sustainability.

Table 2

	Original objectives	Revised Objectives
Relevance of Objectives	High	
Efficacy	Modest	Substantial
Efficiency	Modest	
Outcome Rating	Moderately Unsatisfactory	Moderately Satisfactory
Outcome Rating Value (a)	3	4
Amount Disbursed (US\$ million)	62.85	72.14
Disbursement (%) (b)	46.56%	53.44%
Weight Value (a)x(b)	1.3968	2.1376
Total weights	3.5344 (rounds up to 4)	
Overall Outcome Rating	Moderately Satisfactory (4)	

- a. **Outcome Rating**
Moderately Satisfactory

7. Risk to Development Outcome

The low operation capacity of the Beneficiary Groups (BGs) and the absence of oversight mechanism pose as a major risk to the sustainability of the water schemes. Through technical assistance, the project supported both the BGs and the Gram Panchayats (GPs) in building institutional capacity to successfully operate the water schemes. At project closing, 83 percent of the customers were satisfied with the water service, which could be used as a proxy for the successful operation of the schemes. However, as the ICR (p.24) notes most of the water committees set up under the BGs do not properly maintain records of



water supply, tariff collection, and water quality. An oversight mechanism to support and monitor BG-managed schemes could mitigate such shortcomings, but the GPs, which are expected to assume this role, do not have a clear mandate and lack skilled employees to function as an oversight body (ICR, p.24).

Fees collected from consumers for water use may fall short of covering the operation and maintenance (O&M) costs, thus adversely affecting the sustainability of the water schemes in the medium- to long-term. It was expected that the fees collected from consumers would be high enough to cover O&M costs. The findings of the surveys conducted in 2015, 2017 and 2019 showed that in the early years of their operation, about 86 percent of the schemes had a high sustainability score, but this percentage dropped to about 72 percent after couple of years of operation (ICR, p.13). One of the major reasons for this drop is the absence of funds for major repairs, in addition to the issues related to water quality, expansion of services, and the low operation capacity of the BGs, which is discussed in the paragraph above. To remedy fund shortages, the Kerala Water Authority allocates additional funds to Kerala Rural Water and Sanitation Agency to support Jalanidhi schemes, but to better monitor and support these BG-managed water schemes, it is imperative that institutional roles are better defined and sufficient funds are regularly allocated (ICR, p.13). If the sustainability of water schemes worsens, this may result in poor hygiene behaviors with long-term negative repercussions on public health.

Natural disasters, frequency of which has been steadily increasing, pose a risk to the outcomes achieved by the project. A major flood and a series of landslides in the summer 2018 damaged the water schemes. This was followed by a drought in the spring of 2019 and another flood in August 2019 (ICR, p.24). The frequency of these climatic extremes has increased recently, and they pose a threat not only to the sustainable operation of the schemes, but also source security and water quality.

8. Assessment of Bank Performance

a. Quality-at-Entry

The objectives were strategically relevant to the country conditions. The project design was based on the demand-responsive approach (DRA), which was successfully implemented in the Jalanidhi I. The lessons learned in that project were incorporated in the design of Jalanidhi II, such as shifting the personnel of the regional project management units to the GPs, enhanced delegation of administrative and financial approval authority to Kerala Rural Water Supply and Sanitation Agency (KRWSA), and modification of GP selection criteria (PAD, pp.40-41). The project activities to increase access to improved water and sanitation services were adequate to achieve these objectives. Although the sustainability of the water services was assumed to have been addressed through DRA, the project design did not address the sustainability of sanitation services. This shortcoming continued after the restructuring of the project in June 2016 when the focus of sanitation services shifted from solid and waste management services to household toilets. The monitoring and evaluation (M&E) framework was robust to capture the implementation of the project activities and the achievement of project objectives except the achievement of the sustainability of sanitation services. The project implementation capacity of the implementing agencies was adequately assessed; however, as mentioned earlier, the lengthy project preparation time of three years after the closure of Jalanidhi I resulted in most of the experienced contractual staff engaged by KRWSA for Jalanidhi I leaving the organization. This caused serious staff capacity challenges when the implementation of Jalanidhi II started (ICR, p.18). Based on the experience from Jalanidhi I, the risk assessment was very detailed (PAD, pp.68-77). It correctly included the Kerala Water



Authority's (KWA) lack of alignment with the project as a low impact and high likelihood risk; some of the KWA's staff perceived the project as a threat to the role of KWA in rural water supply and this prevented the development of partnership for bulk water supply and the start of the multi-GP schemes, causing delays in project implementation.

Implementation arrangements were adequately defined based on the experience of Jalanidhi I. In the absence of any interest from private sector to provide rural water services, the project's proven technical aspects were strong to achieve the project objective to increase access to improved water services. However, the demand responsiveness of sanitation services was not sufficiently appraised during project preparation; at the time of the first restructuring, the sanitation activities were "thinly spread over a large number of subareas that are not in demand; hence limited progress" (Restructuring Paper, June 23, 2016, p.7). The economic analysis supported the viability of the project, but there were shortcomings in the robustness of the methodology; the economic internal rate of return (EIRR) and the net present value (NPV) calculations were extremely sensitive to the assumptions on time savings, hourly wage and discount factor for water fetch-time, moderate changes in which may result in large EIRR and NPV swings. The environmental and social aspects of the project were defined in detail; the Project's safeguard issues were well appraised (PAD, pp.14-15). Although the project had complex financial arrangements, it was consistent with the Bank's fiduciary role; the Government of Kerala would pre-finance the project, and the Bank would reimburse the funds after approving the Interim Financial Statements.

Overall, the Bank sufficiently identified, facilitated the preparation of, and appraised the project in order to achieve the planned development outcome, but there were shortcomings in how to achieve the increased and sustainable access to improved sanitation services, the robustness of the methodology of economic analysis and mitigating the weakness in institutional capacity due to the loss of experienced contractual staff. Therefore, the Bank performance in ensuring quality at entry is rated Moderately Satisfactory.

Quality-at-Entry Rating Moderately Satisfactory

b. Quality of supervision

According to the ICR there were 15 supervision missions and several technical missions, which produced 17 Implementation Status and Results Reports (ISRs). The ISRs were detailed and candid in performance reporting. The Bank's Task Team Leader (TTL) and most of the members of the project team were stationed in New Delhi. There were three TTL turnovers. Almost until the Mid-Term Review (MTR), which was conducted in March 2015 about one year behind schedule, the project team's focus had been mostly on overcoming administrative challenges, such as frequent changes in staff in charge of project implementation, prolonged vacancies in key administrative positions. As noted in the ICR (p.24) the project team successfully used the MTR to revamp project performance: By introducing strict deadlines for procurement, such as June 2015 for multi-GP schemes, the project implementation gained pace in critical project activities; following the MTR all administrative bottlenecks were addressed (ISR 9, December 2015); there were progress in the implementation of small water schemes. The project team's close monitoring of the project performance resulted in a project restructuring after which the revised sanitation



activities were successfully completed. The project team's supervision of safeguard and fiduciary aspects was adequate (ICR, p.23).

Since Jalanidhi I and II introduced a new development model for rural water and sanitation services, i.e., schemes constructed and operated by beneficiary groups under a demand-responsive approach, ensuring financial and operational sustainability of the schemes is an important aspect of the intervention. The project team brought this issue to the authorities' attention through discussions on the Sector Development Study, the establishment of a monitoring and evaluation (M&E) strategy for the Jalanidhi schemes, and transformation of KRWSA into a fully functioning sectoral entity. Nevertheless, the Bank's supervision to ensure the sustainability aspect of the development outcome was not adequate, which manifested itself after the floods in the summer 2018: As the ISR 15 (October 2018) noted "while GoK-managed (KWA) schemes were quickly put back into operation through temporary repairs, those supported under Bank-funded projects were not operational as these schemes were managed by beneficiaries themselves." This could partly be attributed to the shortcoming in the project design or even in the development model, but there is no evidence that the project team took proactive action to mitigate this risk. A detailed assessment of the Jalanidhi schemes could provide invaluable insights to the benefits and shortcomings of this development model.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The objectives were clearly defined. The theory of change was broadly sound, but there were shortcomings in ensuring the long-term sustainability of the water and sanitation services. The first three outcome indicators simply measured the total number of project beneficiaries and increase in the number of people with access to improved water and sanitation services. The fourth indicator measuring the number of GPs implementing demand-responsive rural water and sanitation services was not relevant to the achievement of the project objectives. Despite adequately encompassing the technical, institutional and financial sustainability of water services, the last outcome indicator, i.e., the Kerala Rural Water and Sanitation Agency's (KRWSA) index, did not capture the sustainability of water quality and quantity (ICR, p.50). Additionally, the results framework did not include any indicator to capture the achievement of the sustainability of the sanitation services, nor did it capture how the technical assistance activities would contribute to the achievement of the project objectives. On the other hand, the intermediate results indicators were adequate to monitor the implementation of investment activities (PAD, pp.16-19). Overall, the monitoring and evaluation (M&E) framework consisted of counting the activities or number of beneficiaries, rather than capturing the development impact on the target groups, except the KRWSA's index measuring sustainability. Due to this overall simplicity of the indicators, they were easily measurable and time-bound.



The M&E arrangements would benefit from and further improve the M&E tools developed under Jalanidhi I, such as baseline surveys, time use analyses, healthy home surveys, management information system (MIS), process assessment, and sustainability evaluation exercise (PAD, p.64). KRWSA would be responsible for the management of the M&E system with inputs from Support Organizations (SOs) and GPs. Impact evaluations were planned during and after the project.

b. M&E Implementation

At the first restructuring in June 2016, the M&E framework was revised in line with the changes to the project scope. During the project lifetime, three Sustainability Evaluation Exercises (SEEs) were conducted by an independent organization; the sustainability index used in the SEEs included additional parameters for water quality and quantity, customer satisfaction, and tariff, and it replaced the KRWSA index to measure the sustainability of the water schemes (ICR, p.51). However, the M&E framework's shortcoming in capturing the sustainability of sanitation services was not addressed, nor were there any changes in the framework to evaluate the impact of technical assistance activities.

The M&E implementation was effective. Baseline surveys covering about 684,000 households were undertaken to capture demographic socioeconomic status, and access-to-water data (ICR, p.20). All indicators were measured during project implementation. Jalanidhi Information Management System (JIMS) was launched to monitor subproject implementation; the BGs and SOs entered data into the system, which was verified by GP support groups and regional project management units (ICR, p.20). Advanced technologies, such as Geographic Information System (GIS) and Supervisory Control and Data Acquisition (SCADA), were introduced to better monitor the water schemes. The reliability and quality of data improved after the upgrading of JIMS in 2016 (ISR 10, May 2016).

During project preparation, it was planned that an impact evaluation would be conducted at project closing and a sector-wide M&E system covering all rural water and sanitation services, including Jalanidhi subprojects, would be established; these activities were not implemented due to absence of political commitment and institutional models, and shifting of priorities (ICR, p.21).

c. M&E Utilization

The M&E findings were regularly communicated to the authorities, the project team and other stakeholders (ICR, p.21). The project team utilized the M&E findings to address barriers in project implementation in early stages of the project. The M&E findings led to a successful Mid-Term Review, after which the project implementation markedly improved, and to a strategic change in the scope of sanitation services from solid and liquid waste management systems to household toilets as requested by the Government of Kerala (ICR, p.21 and 24). The detailed findings of the SEEs provided evidence for the achievement of outcomes and potential issues with this demand-responsive development model, such as the decline in the sustainability of the water schemes in the medium- to long-term.

Despite some shortcomings in the M&E design and implementation, the M&E findings were successfully used to improve project implementation after a long period of slow progress, and to complete the project activities. Additional surveys, i.e., Sustainability Evaluation Exercises, were conducted to gather more



detailed and qualitative data about the project impact and the achievement of the project objectives. Overall, the M&E quality of the project is rated Substantial.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was classified as Category B under Environmental Assessment (OP/BP 4.01) and triggered Natural Habitats (OP/BP 4.04), Indigenous Peoples (OP/BP 4.10), and Forests (OP/BP 4.36). There was no involuntary land acquisition planned under the project; hence, Involuntary Resettlement (OP/BP 4.12) was not triggered.

Environmental Assessment (OP/BP 4.01): Due to potential adverse impact of the project on water source sustainability, water contamination, water quality, and improper waste disposal, an Environmental Assessment (EA) was undertaken and an Environmental Management Framework (EMF) was prepared in consultation with stakeholders at field visits and focus group discussions. The EMF set out detailed procedures to be implemented by the GPs and contained institutional arrangements, capacity building plans and monitoring mechanisms to enable effective implementation of the measures (PAD, p.14). The EMF was disclosed in the State of Kerala and the Bank's InfoShop in June and July 2011, respectively.

Environmental Management Plans were prepared for each scheme. One scheme out of 2,176 supported by the project was listed as high risk due to the construction of a regulator—a check-dam to ensure water availability during dry months—across the Kadalundi River (ICR, para 72); a detailed Environmental Impact Assessment was prepared for that scheme and disclosed in December 2015. Furthermore, the project supported capacity building in environmental safeguard policy implementation through trainings and implementation of Geographical Information System (GIS). Permits required for construction were obtained from relevant departments. Site visits were carried out twice a month by environmental specialists located at the regional project management units (ICR, para 73). The ICR did not report any issues related to compliance with the implementation of the environmental safeguard policy.

Indigenous Peoples (OP/BP 4.10): Indigenous people constituted just over one percent of about 33.4 million people living in Kerala in 2011 and some of them lived in the project area. Therefore, the Indigenous Peoples safeguard policy was triggered. An Indigenous Peoples Plan was prepared and disclosed in the Bank's InfoShop in July 2011. Schemes were implemented in 19 GPs with significant tribal population after having ensured informed consent and acceptance. Tribal development plans were prepared and implemented covering 321 schemes. The project supported the tribal communities through lower beneficiary contribution to the schemes ensuring ownership and affordability, extended scheme cycle to provide more time for consultations, extensive communication campaigns to increase participation, and adaptation of the schemes designs to meet the needs of the communities (ICR, pp.22-23). According to the information provided in the ICR, the project complied with the Indigenous Peoples safeguard policy.

Natural Habitats (OP/BP 4.04) and Forests (OP/BP 4.36): At the time of project preparation, the State of Kerala had 32 designated natural habitats consisting of two biosphere reserves, six national parks, 14



wildlife/bird sanctuaries, one reserve forest, one tiger reserve and eight mangrove sites (PAD, p. 59). Additionally, 29 percent of the state was under forest cover. By regulation, the project activities were not allowed in these areas. Nonetheless, due to the high concentration of natural habitats within a small geographical area, the high-pace of development, the possibility of damage to these areas by villages or indigenous habitations in the vicinity, and the potential adverse impact of project activities on forest ecosystem unless carefully planned, Natural Habitats (OP/BP 4.04) and Forests (OP/BP 4.36) safeguard policies were triggered. The ICR did not provide any information about the implementation of these two safeguard policies.

b. Fiduciary Compliance

Financial Management

The project's financial management arrangements benefited from the experience gained during the implementation of the Jananidhi I. During project preparation, the financial management capacity of the Kerala Rural Water Supply and Sanitation Agency (KRWSA) and the Gram Panchayats (GPs) was found to be adequate for fiduciary oversight and controls. On the other hand, the assessment of the Kerala Water Authority (KWA) indicated significant weaknesses in the financial management capacity and internal control system of the authority (PAD, p.12). In order to mitigate KWA's high financial management risk, a closely-monitored ring-fenced financial management was agreed with the KWA.

During the first half of project implementation period, absence and high turnover of key staff, weaknesses in financial reporting, and delays in internal and external audits adversely affected project's financial management. At the time of the Mid-Term Review, staffing of key positions at the project implementation unit was complete and the Financial Management Information System (FMIS) that was used during Jananidhi I was updated according to the needs of Jananidhi II; these resulted in a significant improvement in the financial management of the project, such as timely submission of accurate Interim Financial Reports, which were required for Bank credit reimbursement. There were no issues reported in counterpart funding. External audits did not report any major shortcomings or accountability issues, yet, their submission was occasionally delayed (ICR, p.23). At the time of project evaluation, all Bank funds were accounted for.

Procurement

Project procurement complied with the Bank's guidelines. The project followed the procurement arrangements developed under Jananidhi I. The Beneficiary Groups (BGs) were in charge of the small water scheme procurement. However, a key challenge in procurement was slow decision-making processes at some BGs resulting in delays, which affected the project's efficiency as noted in section 5. Efficiency. There were longer delays in the procurement of multi-GP schemes, which were implemented by KRWSA and KWA; this was mostly because of the absence or high turn-over of key staff and the resistance of some KWA officers to the project, who perceived that "the project would undermine the role of KWA in rural water supply" (ICR, p.19). The disbursement was almost negligible after about three years of project implementation. The project team closely followed the slow progress in procurement and took necessary actions to accelerate project implementation, such as setting firm deadlines for procuring multi-GP schemes and technical assistance support to BGs in procurement. Due to the large number of contracts, i.e., minimum three contracts per each of the 2,167 schemes completed, there were delays in



entering the procurement details in the Systematic Tracking and Exchange in Procurement (STEP), which was introduced towards the end of the project (ICR, p.45).

c. Unintended impacts (Positive or Negative)

None.

d. Other

None.

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

This review has drawn three lessons based on the ICR incorporating material on lessons listed on page 25 of the ICR.

Relying only on demand-responsive approach can fall short of ensuring long term sustainability of small-scale rural water schemes. In a demand-responsive approach, rural communities are responsible for the construction and operation of water schemes. They contribute to the construction cost and user charges are expected to cover the operation and maintenance costs. The findings of independent studies show that the sustainability of community-operated water schemes tend to decrease in the medium and long term. Furthermore, if there is a major repair needed or a breakdown caused by natural disasters, as was the case in Jalanidhi II, the communities may not have sufficient funds to cover these high costs or technical capability to repair the system. Therefore, a well-defined government-supported mechanism may be needed for financial, technical and institutional sustainability of the community-operated schemes.

Government agencies can perceive community-operated water schemes as a threat to their role in rural water supply and resist to such interventions resulting in slow project progress and jeopardizing the achievement of the development objective. The Kerala Water Authority (KWA) had an important role in providing bulk water for the operation of multi-GP schemes and



some small-scale water schemes operated by Beneficiary Groups. However, some KWA officers resisted developing this partnership perceiving that it would undermine the role of KWA in rural water supply. This was one of the main reasons for project implementation delays, especially in multi-GP schemes.

Achieving the objective to provide services to address “second generation” sanitation issues cannot be possible without properly determining the level of demand for such services and the priorities of beneficiaries and government authorities. The project was designed to finance solid and liquid waste management (SLWM) systems and the construction of septic tanks which were classified as “second generation” sanitation technologies. These project activities, especially multi-GP SLWM systems, did not progress at all due to low demand. Furthermore, access to improved water had a higher priority for the Beneficiary Groups than sanitation and the local government’s priority was to achieve 100 percent Open Defecation Free Status in Kerala through the construction of household toilets. Consequently, the project was restructured in June 2016 and the focus of the sanitation services shifted from SLWM systems and septic tanks to the construction of household toilets.

13. Assessment Recommended?

Yes

Please Explain

Jalanidhi projects promoted the demand-responsive approach. The main goal of this approach is to ensure the sustainability of water services. Currently, there are more than 16,000 such schemes in Kerala including those built under Jalanidhi I and II. However, surveys show that sustainability of these community-operated schemes decreases in the medium- to long-term, and according to anecdotal evidence most of them are either performing under their capacity or not operating at all. A Project Performance Assessment Report (Report No.78786) was prepared for Jalanidhi I in June 2013. With the completion of Jalanidhi II, a second report is recommended to assess the long-term sustainability of these schemes and their social development impact on local communities. Such an assessment would also provide more evidence whether the demand-responsive approach is an appropriate service delivery model as a first step for increasing access to improved water and sanitation services in rural areas.

14. Comments on Quality of ICR

The ICR is concise and candid about the shortcomings of project implementation and achievement of the project objectives. It provides a detailed overview of this complex project. The narrative is internally consistent. It follows the Bank guidelines. The discussion of efficacy is detailed, and the achievements of the project are supported by a robust evidence base not restricted to the indicators only. The quality of analysis is high; there is sufficient interrogation of evidence and clear linking of evidence to findings. The discussion on monitoring and



evaluation (M&E) was detailed. Two lessons follow the narrative in the ICR and are supported by evidence—the other two are suggestions. The economic analysis is adequately presented.

On the other hand, the discussion on the Quality of Supervision is weak and does not support the rating. The efficiency section does not provide information about financial analysis. There is no information about the project's compliance with the safeguards for Natural Habitats and Forests.

a. Quality of ICR Rating

Substantial