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PROJECT PERFORMANCE ASSESSMENT REPORT

WHAT WORKS

NEPAL

Second Rural Water Supply and Sanitation Project

Report No. 114286
JUNE 16, 2017

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SECOND RURAL WATER SUPPLY AND SANITATION PROJECT

LOAN/CREDIT NO. C3911; CH369

June 16, 2017

Financial, Private Sector, and Sustainable Development
Independent Evaluation Group

Currency Equivalents (annual averages)

Currency Unit = Nepalese rupees (NPR)

2004	US$1.00	NPR 73.00
2005	US$1.00	NPR 72.00
2006	US$1.00	NPR 72.00
2007	US$1.00	NPR 70.00
2008	US$1.00	NPR 63.98
2009	US$1.00	NPR 77.47
2010	US$1.00	NPR 74.59
2011	US$1.00	NPR 71.44
2012	US$1.00	NPR 84.99

All dollar amounts are U.S. dollars unless otherwise indicated.

Abbreviations and Acronyms

ADB	Asian Development Bank
DFID	U.K. Department for International Development
ERR	economic rate of return
FINNIDA	Finnish International Development Agency
Fund Board	Rural Water Supply and Sanitation Fund Development Board
ICR	Implementation Completion and Results Report
IDA	International Development Association
IEG	Independent Evaluation Group
M&E	monitoring and evaluation
MIS	management information system
NPR	Nepalese rupees
PDO	project development objectives
PPAR	Project Performance Assessment Report
RWSS	Rural Water Supply and Sanitation
UNICEF	United Nations International Children's Fund
VDC	Village Development Committee
VMW	Village Maintenance Worker
WSUC	Water and Sanitation Users Committee
WTSS	Women's Technical Support Services

Fiscal Year

Government: July 16–July 15

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This report was prepared by Arun Arya, task manager, with support from Madhu Sudan Gautam, consultant, who assessed the project in November–December, 2016. The report was peer-reviewed by Rasmus Heltberg and Victor Vergara; and panel-reviewed by Ridley Nelson, consultant. Carla Fabiola Chacaltana, Sushila Rai, and Romayne Pereira provided administrative support.

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Principal Ratings

	ICR*	ICR Review*	PPAR
Outcome	Satisfactory	Satisfactory	Moderately satisfactory
Risk to development outcome	Negligible to Low	Negligible to Low	Significant
World Bank performance	Satisfactory	Satisfactory	Moderately satisfactory
Borrower performance	Satisfactory	Satisfactory	Moderately satisfactory

* The Implementation Completion and Results Report (ICR) is a self-evaluation by the responsible World Bank global practice. The ICR Review is an intermediate IEG product that seeks to independently validate the findings of the ICR.

Key Staff Responsible

Project	Task manager or leader	Sector director	Country director
Appraisal	Tashi Tenzing	Sonia Hammam	Kenichi Ohashi
Completion	William Kingdom	Ming Zhang	Ellen Goldstein

IEG Mission: Improving World Bank Group development results through excellence in independent evaluation.

About this Report

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the World Bank's self-evaluation process and to verify that the World Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20–25 percent of the World Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or World Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, interview World Bank staff and other donor agency staff both at headquarters and in local offices as appropriate, and apply other evaluative methods as needed.

Each PPAR is subject to technical peer review, internal IEG Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible World Bank country management unit. The PPAR is also sent to the borrower for review.

About the IEG Rating System for Public Sector Evaluations

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: http://ieg.worldbankgroup.org).

Outcome: The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current World Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, and Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension is not applied to development policy operations, which provide general budget support. *Possible ratings for outcome:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, highly unsatisfactory.

Risk to Development Outcome: The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for risk to development outcome:* high, significant, moderate, negligible to low, not evaluable.

World Bank Performance: The extent to which services provided by the World Bank–ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for World Bank performance:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, highly unsatisfactory.

Borrower Performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for borrower performance:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, highly unsatisfactory.

Preface

This Project Performance Assessment Report (PPAR) assesses the Nepal Second Rural Water Supply and Sanitation Project, which was approved on June 1, 2004 and closed on August 31, 2012. The objectives of the Project were to: (a) improve rural water supply and sanitation sector institutional performance and mainstream the Rural Water Supply and Sanitation Fund Development Board approach within the Borrower's governmental system; and (b) support communities to form inclusive local WSUGs that can plan, implement and operate drinking water and sanitation infrastructure that delivers sustainable health, hygiene and productivity benefits to rural households.

This report was prepared Arun Arya, IEG senior evaluation officer, with support from Madhu Sudan Gautam, consultant. It presents findings based on the review of the project appraisal document, the Implementation Completion and Results Report, laws of Nepal government of Nepal's policies, strategies, action plans, progress reports, and other relevant materials. Information for this assessment was also obtained from stakeholder interviews conducted during an IEG mission in Nepal in November–December 2016. Interviews were also conducted with Washington, DC-based World Bank staff.

The IEG team would like to acknowledge the cooperation and support provided by staff of the project implementation unit, World Bank staff in the country office and in Washington, DC, and all interviewees. Special thanks to Mr. Bhupendra Aryal, executive director, Rural Water Supply and Sanitation Fund Development Board (Fund Board); Mr. Sanjay Misra, Deputy Executive Director, Fund Board; Mr. Takuya Kamata, Country Manager, World Bank, Nepal; Ms. Silva Shrestha, Water Supply and Sanitation Specialist, World Bank Office in Kathmandu; and Mr. Tashi Tenzing, former Task Team Leader of the project for providing valuable information necessary to conduct this assessment. Special thanks also to Mr. Siddhi Shreshtha of UNICEF for providing valuable inputs in evaluating the rural water supply and sanitation sector in Nepal.

Following standard IEG procedures, the report was sent to the government officials and agencies in the government of Nepal for review and comments. Their comments are attached in Appendix L.

Summary

This Project Performance Assessment Report (PPAR) reviews the World Bank's Nepal Second Rural Water Supply and Sanitation (RWSS) Project, which was approved on June 1, 2004 at an original cost in special drawing right (SDR) right terms of SDR17.00 million ($41.5 million equivalent). The project became effective on January 17, 2005 and the expected closing date was August 31, 2009. The project was restructured twice: (i) on May 6, 2008 (IDA-H6930) with an Additional Financing of SDR16.4 million ($32.1 million) to finance the increased project costs and an extension of the closing date to December 31, 2010; and (ii) on December 16, 2010 to extend the closing date to August 30, 2011 and to reallocate financing across various categories to match the latest cost projections. The revised cost of the project became $73.6 million (77 percent more than at original appraisal). The project closed on August 31, 2012, disbursing SDR31.08 million ($47.93 million) from IDA resources.

The project was prepared as a follow-on to the First Rural Water Supply and Sanitation Project, which closed in December 2003, at the government's request. The first project's overall outcome was rated *satisfactory*; the project had demonstrated that demand-driven and community-managed schemes are likely to be more sustainable than supply-driven schemes that are led by the government without extensive community participation.

The development objectives of the second project, the subject of this PPAR, were to (i) improve the institutional performance of the rural water supply and sanitation sector and mainstream the Rural Water Supply and Sanitation Fund Development Board (Fund Board) approach in the government's system, and (ii) support communities to form inclusive local water supply and sanitation user groups that could plan, implement, and operate drinking water and sanitation infrastructure to deliver sustainable health, hygiene, and productivity benefits to rural households. The project had three components: (i) strengthening and operation of the Rural Water Supply and Sanitation Fund Development Board, (ii) selection and construction of water supply and environmental sanitation schemes, and (iii) institutional development studies.

The review finds that the project development objectives were highly relevant at the time of both appraisal and closing. At the time of project closing, one of the main country goals was to provide basic drinking water and sanitation facilities to all citizens of Nepal and reach universal access to water and sanitation by 2017. The project objectives continued to be relevant to the follow-on Nepal Rural Water Supply and Sanitation Improvement Project, which was approved in May 2014 at an estimated cost of $90 million.

The project's relevance of design is rated **modest,** as it did not include any activities to contribute to achieving the objective of mainstreaming the Fund-Board approach in the government's system. The results framework, too, lacked suitable indicators for measuring the project's contribution to this objective. The project design assumed that village-level Water Supply and Sanitation User Committees would plan and implement the water supply and sanitation components. However, such design contradicted the country's Local Governance Act (1999), which had empowered the local government bodies at the village level to implement rural water supply and sanitation schemes. As a

result, the institutional water and sanitation delivery arrangements between project villages and nonproject villages were inconsistent. IEG finds that following project closure and the withdrawal of technical and financial support from the Fund Board, the Water Supply and Sanitation User Committees found it difficult to rehabilitate or expand their schemes. Institutional sustainability was compromised because of the parallel structure of Water Supply and Sanitation User Committees and Village Development Committees (VDCs).

To assess the efficacy of this project, the two project development objectives were unbundled into three different objectives because the second objective contained several elements that were outcome-oriented and therefore worthy of receiving special attention:

(i) The efficacy of the first objective, to improve rural water supply and sanitation sector institutional performance and mainstream the Fund-Board approach in the government's system, is rated **modest**. The project established a sector monitoring and evaluation system at the ministry level and provided training to its staff, but the systems were not put to use. The project was not successful at assisting the government in linking the budget allocations according to potential outcomes from alternative programs. The mainstreaming of the Fund-Board approach in the government sector was not achieved either. Although communities are consulted in assessing their needs at design stage. the government sector institutions continue to implement its projects in a supply-driven mode with construction of schemes being done by contractors, who are directly procured by government agencies.

(ii) The efficacy of the second objective, to support communities to form Inclusive local water supply and sanitation user groups that can plan, implement, and operate drinking water and sanitation infrastructure, is rated **substantial**. 1,465 local water supply and sanitation user groups were formed in 831 villages benefiting 1,140,892 people in the project area. Access to tap water increased from 7.1 percent at the start of the project to 94.6 percent at the project's end in the project area. The Water Supply and Sanitation User Groups planned and constructed 64,407 sanitary latrines using the Sanitation Revolving Fund.

(iii) The efficacy of the third objective, to deliver sustainable health, hygiene, and productivity benefits to rural households, is rated **substantial**. Selective impact studies showed a significant increase in the use of improved toilets and handwashing practices, and a decrease in the prevalence of diarrheal disease among young children from 78 percent at the beginning of the project to 14 percent at the end of the project. The hygiene awareness campaign under the project led to communities building more than 72,000 latrines at their own cost. All Water Supply and Sanitation User Groups had the minimum stipulated (three) women members in the Water Supply and Sanitation User Committees. The project succeeded in catering to about 54 percent of beneficiaries from marginalized groups (Dalits, indigenous people, and minorities); 51 percent were women.

The efficiency of the project is rated **substantial**. Main benefits, quantified for the cost-benefit analysis at appraisal, included time savings and increased availability of safe

water. The average time saving achieved was 2.1 hours per household per day, which was 40 percent higher than the 1.5 hours per household per day expected at appraisal. On average, water consumption increased by more than 200 percent, from 13.8 liters per capita per day (LPCD) before project start to 43.2 LPCD at project end. The economic rate of return (ERR) of all schemes calculated in the Implementation Completion and Results Report was 31.05 percent, which is higher than the 24.75 percent ERR estimated at appraisal. These ERR estimates are conservative because health benefits are not incorporated into the calculation of benefits.

Given the high relevance of objectives, modest relevance of design, modest efficacy of the first objective, substantial efficacy of the second and third objectives, and substantial efficiency of the project, IEG rates the overall outcome of the project as **moderately satisfactory**.

The quality of monitoring and evaluation (M&E) is rated **substantial**. The Fund Board used a state-of-the-art web-centric integrated MIS solutions (IMISS). They also conducted Healthy Home Surveys to evaluate progress in hygiene habits and health benefits. The Fund Board also contracted service agencies to conduct various M&E studies including (i) short-term sustainability studies, (ii) long-term sustainability studies, (iii) impact assessment studies, and (iv) technical, operational, and environmental audits.

The risk to development outcomes is rated **significant**. Most schemes are being run sustainably as evidenced by sustainability studies and IEG's own findings during the field mission. However, there is an absence of regular water quality monitoring systems, and Water Supply and Sanitation User Committees lack monitoring capacity, which poses risks for the availability of safe drinking water. In addition, Village Health Promoters are not functional in most villages largely due to nonpayment of their salaries. In their absence, health education and awareness are discontinued, creating potential health risks. There are several schemes that require rehabilitation and reconstruction after the earthquake but do not have adequate funds to cover the required expenditure.

The World Bank's performance regarding quality at entry is rated **moderately satisfactory**. Project design reflected lessons of experience from similar projects in Nepal and globally, and showed exceptional attention to detail in implementation guidelines. However, the project design did not include any activities to contribute to the key first development objective of mainstreaming the Fund-Board approach in the government's system. There was no robust political economy analysis that assessed the feasibility of achieving this objective. The missing link between Water Supply and Sanitation User Committees and VDCs at the village level negatively impacted the institutional sustainability.

The World Bank's performance in supervision is rated **moderately satisfactory**. The presence of a committed and experienced task team leader (TTL) based in the Nepal Country Office enhanced World Bank supervision. Safeguards and fiduciary staff were also based in the Nepal Country Office. Proactive World Bank supervision addressed the issues that delayed scheme approvals in the early years of implementation. However, the team did not take timely action to address challenges in mainstreaming the Fund-Board approach. The government did not adopt the Fund-Board approach in community

contracting. There could have been greater advocacy by the World Bank in this area to influence government policy.

The government's performance is rated **moderately satisfactory**. The government fully supported the RWSS service delivery model executed by the Fund Board, continued to support the autonomous operation of the Fund Board, and provided timely annual budget appropriations. However, the government failed to mainstream the Fund Board delivery model in its own implementation mechanism, and did not put to use the sector M&E system developed and established by the project at the ministry level. The government did not initiate the expected outcome-based budget allocations in the sector. This objective has been hampered by the entrenched "incremental budgeting"[1] approach prevalent in the government of Nepal. Efforts to reallocate funds from less to more effective uses have not been notably successful in any of the public policy sectors in Nepal, including water and sanitation.

The implementing agency's performance is rated **satisfactory**. The Fund Board developed a successful implementation modality for RWSS delivery with a detailed and well-thought out scheme cycle. It exercised its functions professionally, effectively, and efficiently. The project executing agency ensured that village Water Supply and Sanitation Committees strictly followed the implementation modality for improved RWSS in a satisfactory manner.

The following are the major lessons from this project:

Mainstreaming a community-led approach in a supply-driven government structure is difficult to implement in the absence of a prior agreement with government and continuous advocacy. In this project, "mainstreaming of the Fund-Board approach" in the government sector was adopted as a project development objective (PDO). However, it was not preceded with a prior agreement with the government on the understanding of the concept and the implementation timeline. Adopting the Fund-Board approach would have required the government to transfer its power of procurement and implementation contracting to communities, which the government was not ready to do. Had the PDO been based on a robust political economy analysis, it is likely that mainstreaming the Fund-Board approach would not have been adopted as a PDO or it would have been more phrased more cautiously.

Project implementation arrangements that are not linked to institutions that have a legal mandate and parallel institutional structures undermine the sustainability of the project. The project was implemented by Water Supply and Sanitation User Committees with support from support organizations and under the overall supervision and monitoring of third-party service agencies. This arrangement worked because the support organizations and service agencies were paid by the project. After project closure, the arrangement became dysfunctional and no agency provides support to Water Supply and Sanitation User Committees. The Local Self Governance Act 2056 (1999) made water supply and sanitation service a responsibility of local bodies. Failure to link Water Supply and Sanitation User Committees with VDCs and District Development Committees (DDCs) under the project has impacted institutional sustainability.

Given that women are main stakeholders, placing them at the center of planning and implementation of a community-led rural water supply and sanitation project supports sustainable benefits. In this project, women were the main stakeholders as they had to travel long distances to fetch water. Community mobilization activities, such as the Women's Technical Support Services (WTSS), nonformal education, and community workshops on health and hygiene, helped to organize women toward common goals. The requirement of a minimum representation of women in the Water Supply and Sanitation User Committees facilitated their key role in implementation. Because women were mostly affected and benefited from the project, they enthusiastically contributed to its implementation.

When project sustainability rests on community contribution to the operations and maintenance (O&M) costs, there is a need to prepare and agree on an explicit O&M plan with the community at the project's development phase. In this project, water tariffs were often set too low to sustainably meet all costs. The project guidelines did not include preparation of an O&M plan during the development phase. There was a tendency to court community popularity and not levy too heavy a tariff, which led to lower than economic tariffs. As a result, many schemes in the post implementation phase are still struggling to regularly pay staff salaries and electricity bills, purchase generators, and so on.

In rural water supply programs aimed at increasing water supply at the village level, it is necessary to make provisions to cater to demand for higher service levels for wastewater management and water quality monitoring. In this project, following improvement in the water supply, people from target villages have been demanding higher service levels. People from the neighboring villages have also raised their demand. However, capacity constraints do not cater to increased demand. With increased service levels, people's expectations are now focused on water quality. In addition, increased water supply creates increased wastewater, which needs to be managed. The project design did not adequately address the issues of capacity constraints of Water Supply and Sanitation User Committees to meet increased demand from nearby villages, waste water management, and water quality.

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[1] Incremental budgeting is when a budget is prepared using a previous period's budget or actual expenditure as a basis, with incremental amounts added for the new budget period.

1. Background and Context

Country Background

1.1 The political circumstances in Nepal at project appraisal presented many challenges to the project's success. The country was in the midst of the Maoist insurgency that gripped the country for 10 years (1996–2006), plunged Nepal into a prolonged period of political instability, and retarded its economic development. In addition to the human toll from the conflict, the country experienced internal and external displacement of people and the destruction of economic infrastructure. The majority of men in rural areas migrated in search of jobs to Kathmandu, other urban centers, and neighboring countries. The villages were inhabited mainly by women, their children, and elderly folks. Women had to travel long distances to fetch water and their families had to resort to open defecation. Poor water quality and lack of sanitation facilities led to high incidences of diarrhea and other diseases, largely affecting women and children.

1.2 There was a lack of sustainable access to water supply and sanitation services. According to government estimates, in 2004, the water supply coverage was 72 percent; only 25 percent of the population had sanitation coverage with access to sanitary latrines. Inadequate attention on sanitation and hygiene improvement—with sanitation coverage lagging far behind water supply coverage—impeded potential health gains from increased coverage of safe water. There was insufficient emphasis on environmental risks and water quality. Potential problems included landslides from gravity schemes, drainage around artesian wells and roadside tap stands, pollution of aquifers due to poor-quality well head construction and siting latrines close to well points, ponded wastewater around water points that become breeding grounds for mosquitoes and water-borne and water-related diseases, and arsenic in groundwater in many Terai districts.

Project Context

1.3 The First Rural Water Supply and Sanitation Project (RWSSP I), which was approved in September 1996 with an IDA credit of $18.2 million and closed in December 2003 with a satisfactory rating, had demonstrated that demand-driven and community-managed schemes were more sustainable than supply-driven schemes and that additional efforts were needed to ensure the inclusion of more remote communities and poor and disadvantaged groups in rural water supply and sanitation schemes. The Second Rural Water Supply and Sanitation Project (RWSSP II) was the follow-on project. It adopted the same tested demand-driven modality, and built on it to incorporate further improvements.

1.4 The government's overarching objectives for the sector were to increase sustainable access to basic drinking water supply and sanitation facilities to improve health and lessen drudgery of the beneficiaries. About 5–7 percent of the total development budget was allocated to the water supply and sanitation sector. During the 10th Plan period (2002–07), the government aimed to (i) increase coverage of basic drinking water services to 85 percent (from 72 percent) of the rural population with gradually increasing drinking water service standards, (ii) provide suitable sanitation

facilities in rural areas, and (iii) decrease child mortality rates by reducing water-borne and water-related epidemics. The thrust of the 2004 rural water supply and sanitation sector policy was consistent with that of the 10th Plan Poverty Reduction Strategy Paper, the key principles of which were that provision of water supply and sanitation services was to be based on "effective demand" and service standards to correspond with affordability and willingness of the consumer to pay. Government agency's role was to be limited to financing and allocating sector investments, formulating policies and legislation, regulating sector development and management including sector monitoring and evaluation, and establishing a Fund Board as a regular sector institution through an Act of Parliament.

1.5 Detailed project information is provided in the Data Sheet in appendix A.

2. Objectives, Design, and their Relevance

Objectives

2.1 The project objectives, as described on page 19, Schedule 2 of the Development Credit Agreement and the project appraisal document (World Bank 2004, 2) were to (i) improve rural water supply and sanitation institutional performance and mainstream the Fund-Board approach in the government's system and (ii) support communities to form inclusive local water supply and sanitation user groups that can plan, implement, and operate drinking water and sanitation infrastructure that delivers sustainable health, hygiene, and productivity benefits to rural households.

Relevance of Objectives

2.2 These objectives were consistent with the country's current conditions, government's development plans, and the World Bank Group's country partnership strategy, both at the time of appraisal and at the time of closing.

2.3 At the time of appraisal in January 2004, the government had adopted a National Policy and Strategy on Rural Water Supply and Sanitation (RWSS), which had a thrust on the provision of water supply and sanitation services to be based on "effective demand" and service standards to correspond with affordability and willingness of the consumers to pay. The World Bank's country assistance strategy (CAS) for FY03–07 supported strengthening of local community participation in the drinking water and sanitation sector. This project was fully consistent with priorities identified in the National RWSS Policy/Strategy 2004 and CAS.

2.4 At the time of project closing, the country's goals were to provide basic drinking water and sanitation facilities to all citizens and reach universal access to water and sanitation by 2017. The project objectives continued to be relevant in the implementation of the follow-on Nepal Rural Water Supply and Sanitation Improvement Project that was approved in May 2014, at an estimated project cost of $90 million with project development objectives of (i) increasing sustainable access to improved water services and promoting improved sanitation and hygiene practices in rural areas and (ii)

developing and implementing a long-term support mechanism to promote the sustainability of water supply schemes in selected districts.

2.5 The relevance of the objectives is rated **high.**

Design

COMPONENTS

2.6 The project had the following three components:

- **Strengthening and Operation of the Rural Water Supply and Sanitation Fund Development Board (Fund Board) (Original: $10.57 million; Actual: $12.15 million).** Activities in this component included supporting the operations of the Fund Board, training and capacity building of support organizations, the costs of the development phase of water supply schemes, and project audits.
- **Selection and Construction of Water Supply and Environmental Sanitation Schemes (Original: $47.02 million; Actual: $53.21 million).** Activities in this component included the construction of water supply and sanitation schemes as well as community development activities that promoted active participation of communities in the planning, construction, and management of schemes, and local ownership, effective use, and sustainability of the facilities.
- **Institutional Development Studies (Original: $2.43 million; Actual: $2.56 million).** Activities in this component included miscellaneous institutional and sectoral studies, including sector assessments and monitoring and evaluation, studies on appropriate technologies, water quality controls, health impacts, inclusion of poor families and minorities, gender aspects of rural water and sanitation, impacts on community development, and health, hygiene, and sanitation practices.

IMPLEMENTATION ARRANGEMENTS

2.7 The institutional arrangements for the project were geared to support a demand-driven and participatory approach that would empower communities to be in charge of the water supply and sanitation facilities. The Fund Board was responsible for overall oversight of the project, including policy formulation, monitoring, and implementation. Water Supply and Sanitation User Committees planned, implemented, operated, and maintained water supply and sanitation facilities. Water Supply and Sanitation User Committees were elected by the Water Supply and Sanitation User Groups consisting of representatives of every household that had chosen to participate in the scheme. Water Supply and Sanitation User Groups were legally registered under the Water Resources Act and identified, contributed to, and benefited from the water supply and sanitation scheme.

2.8 Water Supply and Sanitation User Groups/Water Supply and Sanitation User Committees were supported by a support organization, selected by the Fund Board, for carrying out their water supply and sanitation schemes. The support organizations assisted communities to apply to the Fund Board and then provided assistance in

technical and social aspects of the project, including social capital mobilization, awareness creation, and community capacity development in identification, planning, implementation, operation, and maintenance of RWSS schemes. The Fund Board recruited service agencies to conduct training courses for support organization staff, carry out monitoring and evaluation (M&E) during the development and the implementation phases, make support organization field assessments and scheme site appraisals, follow up on legal registration of the Water Supply and Sanitation User Group, test water quality, audit support organization and community accounts, and other activities.

2.9 The Project Scheme Cycle followed four phases: predevelopment phase, development phase, implementation phase, and scheme follow-on phase. The project scheme cycle is explained in detail in appendix B.

2.10 At the time of appraisal, the Ministry of Physical Planning and Works (MPPW) was tasked with leading the sector and donor coordination. In 2011, it was split up and the water and sanitation sector was placed under newly formed Ministry of Urban Development. In 2015, Ministry of Water Supply and Sanitation was formed and the Department of Water Supply and Sewerage (DWSS) under this Ministry, became responsible for planning, implementation, operation, repair and maintenance of water supply and sanitation systems throughout the country.

MONITORING AND EVALUATION DESIGN

2.11 The M&E framework developed for the project was comprehensive and detailed. The design included baseline and subsequent data on households, gender, and health as well as socioeconomic data and the incorporation into the Fund Board's management information system (MIS). The project status of key performance indicators (which were a subset of a larger data set) was reported on a regular basis to the World Bank supervision team. The M&E design included PDO and intermediate outcome indicators that measured the objective of supporting communities to form inclusive local water supply and sanitation user groups that could plan, implement, and operate drinking water and sanitation infrastructure, and deliver sustainable health and hygiene benefits to rural households.

2.12 However, the objective of mainstreaming the Fund-Board approach in the government's system was not captured well in the M&E design. Also, the objective of delivering sustainable productivity benefits was not captured. There was no indicator to measure the objective of improving rural water supply and sanitation institutional performance. PDO#5, "National Planning Commission and MPPW effectively monitor and evaluate the sector," could have contributed to improving institutional performance, but it did not measure the RWSS institutional performance itself. On the other hand, PDO#6, "establishing a common set of guidelines for all projects in the sector," and PDO#7, "establishing sectorwide minimum cost recovery norms of 20 percent and 10 percent for poor and disadvantaged groups," were already achieved at the baseline under the National Policy and Strategy of Rural Water Supply and Sanitation in 2004. There was therefore no need to keep them in the results framework.

Relevance of Design

RELEVANCE OF PROJECT DESIGN TO OBJECTIVES

2.13 The project design was based on a consistent approach to identify, on a demand basis, villages in need of water and sanitation infrastructure, and then to support them in the design, fund-raising, implementation, and operations and maintenance of resulting water and sanitation schemes. This design was relevant at appraisal and remains relevant at this time. The project design also included significant support for the key agency managing the process and for technical and community-building organizations that supported the work at the ground level. The approach was successful, is fully accepted by stakeholders, and continues to underpin the RWSS sector strategy in Nepal.

2.14 However, the project design did not include any activities to contribute to achieving the objective of improving RWSS institutional performance and mainstreaming the Fund-Board approach in the government's system. While Component 1 supported the operations of the Fund Board, there was no specific activity to mainstream the Fund-Board approach. Similarly, while Component 3 supported institutional studies that could have contributed to decision making in improving RWSS institutional performance, the direct contribution to improving institutional performance came only from Component 2, which aimed at improving access to rural water supply and sanitation facilities in the target villages of the project. Only Component 2 addressed the objective of achieving sustainable health and hygiene benefits for the targeted villages under the project.

2.15 Under the project, water supply and sanitation were to be planned and implemented by Water Supply and Sanitation User Committees at the village level. However, this institutional arrangement was contradictory to the country's Local Governance Act (1999), which had empowered the local government bodies at the village level—Village Development Committees (VDCs)—to implement rural water supply and sanitation schemes. As a result, the institutional water and sanitation delivery arrangements between project villages and non-project villages were inconsistent. IEG finds that after the project closure and withdrawal of technical and financial support from the Fund Board, the Water Supply and Sanitation User Committees found it difficult to rehabilitate or expand their schemes. Institutional sustainability was compromised because of the parallel structure of Water Supply and Sanitation User Committees and VDCs.

QUALITY OF RESULTS FRAMEWORK

2.16 The results framework had a clear statement of objectives linked to intermediate and final outcomes. The causal chain between funding and outcomes was broadly clear and convincing; however, the results framework did not capture mainstreaming the Fund-Board approach in the government's system, improving the RWSS institutional performance, or sustaining improvement in productivity benefits.

2.17 The relevance of design is rated **modest.**

3. Implementation

Planned versus Actual Expenditure by Component

3.1 The original project cost was $41.51 million. Additional Financing of $32.1 million led to a revised allocation of $73.61 million. The largest allocation, 78 percent, was for Component 2. The total actual expenditure at the project closing was $67.92 million, which was 92 percent of the total planned expenditure. Appendix table C.1 shows the planned versus actual expenditure by component.

3.2 There was a shortfall in the actual expenditure in relation to appraisal estimates for the implementation phase and monitoring and evaluation, publicity, training, studies, and other items. On the other hand, the actual expenditure on operating costs was higher—at 167 percent of the appraisal estimate—which was largely due to the increase in the project time. Appendix table C.2 shows the project costs by category.

3.3 The borrower provided $6.91 million against an appraisal estimate of $7.8 million (89 percent). However, the local communities contributed more than their estimated share of $8.5 million by 154 percent. The U.K. Department for International Development (DFID) pledged $5 million to the project, but it did not provide its share due to a change of its country's priorities during the implementation. Appendix table C.3 shows the project financing by source.

3.4 **Donor coordination.** Donors coordinated their work in the water and sanitation sector through a coordination group chaired by the Finnish International Development Agency (FINNIDA). Other members included the Asian Development Bank (ADB), U.K. Department for International Development (DFID), Japan International Cooperation Agency (JICA), and World Bank. FINNIDA supported the Ministry of Federal Affairs and Local Development under a Rural Water Supply and Sanitation Project in Western Nepal and Rural Water Resources Management Project. DFID supported the Ministry of Physical Infrastructure and Transportation (earlier called Ministry of Physical Planning and Works) under a Rural Water Supply and Sanitation Program (Gurkha Welfare Scheme) Phase V. ADB supported the Ministry of Urban Development under Small Town Water Supply and Sanitation Projects. JICA together with ADB supported the Ministry of Urban Development under the Melamchi Drinking Water Project. Appendix D shows the project investments by donor.

Implementation Experience

3.5 A project mid-term review (MTR) was held on May 10, 2007. The MTR drew three main conclusions: (i) the project concept and design were delivering results as intended at the community level; (ii) the external security factor as well as weak management of the project by the Fund Board resulted in significant implementation delays of up to 18 months; and (iii) the government's commitment to the project had been mixed: while the government had not defaulted in providing funds to the Fund Board, the institutional set-up of the Fund Board as the singular sector institution and establishment of RWSS sector M&E unit with an operational M&E system had been substantially delayed. To address project implementation delays, cost overruns, and the need to

strengthen Fund Board management, the government of Nepal agreed to table a Bill in the Parliament to establish the Fund Board as an independent and autonomous institution. It also agreed to fully fund the operational cost of the RWSS Sector M&E unit and ensure Additional Financing of about $6 million–$7 million for the project to finance the Batch VIII schemes.

3.6 The MTR was followed by the first project restructuring on May 6, 2008 to increase the IDA fund support to finance increased project costs. There was an Additional Financing of SDR 16.4 million ($27 million) and the closing date was extended to December 31, 2010. The scope of the project was enhanced to scale up the water supply and sanitation services in rural areas. Additional Financing covered the enhanced scope of the project and the cost overruns.

3.7 A second project restructuring was done on December 6, 2010 under which the closing date was extended to August 30, 2011, financing was reallocated across various categories to match the latest cost projections, and the date of covenant for operationalizing the sector M&E system was extended to August 30, 2011.

3.8 A third project restructuring was done in July 2011 to extend the closing date of the Additional Financing (Grant H3690-NP) from August 30, 2011 to August 31, 2012, and to cancel $4 million (SDR 2.32 million) from the Additional Financing allocation of $27 million. The parent project was to close on August 30, 2011 as scheduled.

3.9 In January 2011, the World Bank cancelled $4 million of the grant based on the assessment of the Fund Board's expenditure until then and the future disbursement projection by August 31, 2012. The cancelled funds will be redeployed to other programs within the Nepal Country Program. The Restructuring Paper dated July 7, 2011 notes that, "In retrospect, it was unrealistic for the project to be expected to disburse $27 million of supplemental funds versus the original credit size of $25.3 million in such a tight timeline."

3.10 The project piloted some innovative initiatives during project implementation. Gender-focused Livelihood Program (Jeevika Karyakram) provided support to Women Technical Support Services to promote economic activities by female beneficiaries and thus enhance the gender-specific economic benefits from time savings. Under the Social Accountability Program (Jagran Karyakram), a local group was formed to carry out third party monitoring of the scheme implementation in order to assure the governance and accountability aspects of the scheme.

SAFEGUARDS COMPLIANCE

3.11 **Social safeguards.** Compliance with social safeguards was found to be satisfactory. Land used for schemes was either public land or voluntarily donated private land that used a standard agreement for land donation. During the IEG mission's field visits to villages, no one reported dissatisfaction regarding land acquisition. The World Bank's Indigenous Peoples safeguard policy (OD 4.20) was also triggered by the project and an indigenous people's development plan (IPDP) was prepared by the Fund Board prior to project implementation. The IPDP laid out actions to ensure that indigenous

peoples had equitable access to project benefits. The representation of marginalized groups (Dalits, Janajatis, and "other deprived ethnic groups") in Water Supply and Sanitation Users Groups was 60 percent and that amongst project beneficiaries was 54 percent.

3.12 **Environmental safeguards.** The project was a Category B project. Environment and water quality reports were undertaken for proposed schemes and reviewed by the Fund Board. High-lift pumps to access deeper aquifers were added to the water supply scheme types due to the possibility of arsenic in shallower groundwater. An environmental checklist was developed for prefeasibility study, assessment of disaster risk, and rights issue, and it was ensured that the project would not lose forest or vegetation. In the Terai region, arsenic was an issue. In addition, there were issues of water logging in the area around tube wells. Later, pipes were used to drain out water. The problem of water quality remained during the rainy season. Users are not aware of testing the water quality and are unaware of testing facilities in the district. There was no preventive action taken by the users. If the community realized there was a problem of water quality, they were supposed to reach out to the district office or the Fund Board. There were capacity issues related with chemical treatment. Post-maintenance checklists were prepared. There were some instances of source depletion at the end of the project due to climate change, deforestation, and degradation of catchment areas.

FINANCIAL MANAGEMENT AND PROCUREMENT

3.13 **Financial management.** Financial management was satisfactory in the Fund Board. The Fund Board developed a good financial management system with continuity of staff. The staff of the World Bank and Fund Board received training together, which led to common understanding and camaraderie. The Fund Board entered all relevant financial data in the financial management system in a timely manner, which produced timely and reliable financial information. Payments to communities were based on proposals that were carefully examined by a Technical Appraisal Committee and approved by the Fund Board. Once payments were disbursed, they were treated as expenditures. Support organizations provided technical assistance to communities on how to manage and report on the use of funds. There was a provision of an internal financial audit by an independent private auditor firm hired by the Fund Board, which was usually conducted on time. Fund Board submitted periodic financial statements on time. There were no major issues related to financial management. The final statutory audit was conducted by the Office of Auditor General. The Auditor General's report raised some issues initially, but those were cleared subsequently upon clarifications from the Fund Board.

3.14 **Procurement management.** Under RWSSP I, the Fund Board had gained ample experience in procuring services, goods, and civil works in accordance with World Bank procurement guidelines. Procurement essentially consisted of the selection of support organizations and service agencies for each batch of schemes, and the selection of audit and monitoring firms. During this implementation, the Fund Board developed acceptable bid documentation and evaluation procedures for support organization and service agency selection. The Fund Board had difficulty in streamlining the evaluation of proposals leading to delays, so trainings were organized for support organization staff and water

supply and sanitation user committees. The project was based on community procurement and schemes were scattered. An Implementation Manual was prepared defining roles and responsibilities in procurement. Communities undertook procurement of materials following guidelines developed under the project, including the preparation of cost estimates and provision of technical support by the service agencies. The implementation was done jointly by the Water Supply and Sanitation User Committees and support organizations and payments to contractors were made through their joint accounts. Overall, procurement management was satisfactory.

4. Achievement of the Objectives

4.1 To assess the efficacy of this project, the two project development objectives were unbundled into three different objectives because the second objective contained several elements that were outcome-oriented and therefore worthy of special attention.

- **Objective 1:** To improve rural water supply and sanitation sector institutional performance and mainstream the Fund-Board approach in the government's system.
- **Objective 2:** To support communities to form inclusive local water supply and sanitation user groups that can plan, implement, and operate drinking water and sanitation infrastructure.
- **Objective 3:** To deliver sustainable health, hygiene, and productivity benefits to rural households.

Objective 1: Improve Sector Institutional Performance and Mainstream Fund Board Approach

IMPROVE SECTOR INSTITUTIONAL PERFORMANCE

OUTPUTS

4.2 The following outputs were achieved:

- The project assisted the M&E unit in developing and making operational a management information system (MIS) and decision support systems (DSS) for the sector in December 2011. However, the government did not put the MIS/DSS to use. There was an apparent lack of ownership of the MIS/DSS by the government.
- There was training of staff involved in sector data management in the ministry of finance, line agencies, and at the district level. 245 participants from among the department of water supply and sewerage division/subdivision office—Divisional Engineer and other engineers, District Development Committee information officer, District Technical Officer, and sociologist from the districts of Biratanagar, Dhangadi, Kathmandu, Nepalgunj, and Pokhara—were provided training. 29 officials from the Ministry of Urban Development and Department of Water Supply—including the Under Secretary, Regional Director, M&E chief,

and M& E unit participants—as well as 15 Fund Board executives and professionals were also provided training on the system.

OUTCOMES

4.3 A detailed account of recent developments and sector performance of the RWSS sector in Nepal is presented in appendix G. A summary of sector performance from 2010 to 2014 is presented in table G.2. The institutional performance of the Water Supply and Sanitation sector has improved during the project period, as reflected in the following indicators:

- Percentage of the coverage of households with safe drinking water supply increased from 80.4 percent in 2010 to 83.59 percent in mid-2014.
- Percentage of the coverage of households with access to hygienic latrines increased from 43.3 percent in 2010 to 70.28 percent in mid-2014.
- Percentage of the prevalence of diarrheal disease morbidity among children below five years old decreased from 598 per thousand in 2009–10 to 502 per thousand in 2014–15. This was a 16 percent reduction in 5 years.

4.4 The above improvements are wider than the project itself. However, the project did contribute to improving the water and sanitation coverage in the project area. The project established a DSS and MIS at the ministry level in 2011 and provided training to its staff a year before the project closed, but the systems were not put to use after 2011 due to tensions and conflicting interests among more than twenty sector agencies, including donors and international nongovernment organizations whose M&E frameworks were not aligned with established system and therefore didn't supply the necessary information to the sector M&E unit. Thus, the project's contribution to strengthening the RWSS sector M&E to improve its performance was limited to providing inputs. This PDO indicators was not achieved.

4.5 The project was also supposed to assist the government in linking the budget allocations in the sector according to potential outcomes from alternative projects. The expectation was that once the budget was allocated based on higher outcome potential overall performance would improve. However, this also was not achieved. The government does not make budget allocations based on outcomes. It releases the allocated budget based on the prior expenditure level. So those schemes in which budgeted expenditure is greater will get preference in further budget allocations during the fiscal year.

MAINSTREAM FUND-BOARD APPROACH[1] IN THE GOVERNMENT'S SYSTEM[2]

OUTPUTS

4.6 The following outputs were achieved:

- The project contributed substantially to building capacity of the Fund Board and the subsidiary support organizations that were key to developing community capacity by organizing training for the staff of the Fund Board, service agencies,

and support organizations. A total of 66 staff of the Fund Board—including from among Fund Board members, executive staff, professional staff, and support staff—were trained on different subjects.

- The Fund Board is now a well-functioning agency within the government of Nepal, with capacity to oversee hundreds of very small projects by reporting on, monitoring, and evaluating project-level outputs and outcomes. From inception to date, the Fund Board has already reached 74 out of 75 districts benefiting 2.13 million people with completion of 2,745 water supply schemes in different projects. The World Bank has agreed to implement the Rural Water Supply and Sanitation Improvement Project (RWSSIP) from July 2014 to June 2020 through the Fund Board.
- The project assisted the Fund Board to make effective the National Policy and Strategy for the RWSS Sector, 2004, which was in schemes implemented by itself as well as by other agencies and donors—such as ADB and FINNIDA— that adopted the Fund-Board practice of community contribution, social mobilization, and facilitation services. The Fund Board was overseeing only 46 projects of Batch IV at the start of the project, but its capacity grew enormously to 1,465 projects by the end of the project.

OUTCOMES

4.7 **Ministry of Water Supply and Sanitation.** The Ministry of Water Supply and Sanitation continues to implement its program in a supply-driven mode. Appendix table I.1 shows the ministry's budget allocations. While the principle of community cost-sharing is being followed, the construction of water supply infrastructure remains at the hands of the government department. Once constructed, the scheme is handed over to the WSUC for O&M. However, unlike the Fund-Board approach, there is no development phase in which the communities do scheme selection in an inclusive manner, the capacity of WSUC is built by support organizations, or a WSUC account is opened and project share transferred. Similarly, in the implementation phase, community contracting is not done by the WSUCs; and in the post-implementation phase, WSUCs are unable to collect tariffs from households to do the O&M themselves.

4.8 **Ministry of Federal Affairs and Local Development.** The Ministry of Federal Affairs and Local Development implemented its programs through Village Development Committees (VDCs) that are empowered under law to implement water supply and sanitation programs within its jurisdiction. Table I.2 shows the ministry's budget allocations. The VDCs collaborated with WSUCs in implementation. However, a direct fund-flow to WSUCs did not happen in this program. Neither were WSUCs authorized to do community contracting. The contracting under the program was done by the District Offices of the Ministry of Federal Affairs and Local Development and material was supplied to the VDCs.

4.9 **Donor-funded programs.** In the donor-funded programs as well, the water supply schemes are implemented by the contractors and then handed over to the WSUCs for management. Appendix D shows the investments by donors. While the WSUCs manage the scheme after construction, they do not implement them. There is no direct

fund flow to the WSUCs from which they could hire the contractors and implement the schemes themselves.

4.10 In sum, the implementation of the Fund Board was not achieved in government programs. Table 4.1 summarizes the adoption of Fund-Board principles under different schemes.

Table 4.1. Adoption of Fund-Board Approach by government sector and donors

Fund-Board Approach Principles	Fund Board	Ministry of Drinking Water Supply and Sanitation	Ministry of Federal Affairs and Local Development	Donors
Demand-driven and community-led approach	✓	X	✓	✓
Community cost-sharing	✓	✓	✓	✓
Establish and register WSUCs	✓	✓	✓	✓
Build capacity of WSUCs	✓	X	X	✓
Direct fund flow to WSUCs	✓	X	X	X
WSUCs plan and implement WSS schemes	✓	X	X	X
WSUCs do community contracting	✓	X	X	X
WSUCs do O&M on their own and from their own resources	✓	X	X	✓

Source: IEG mission assessment.

Note: O&M = operation and maintenance; WSS = water supply and sanitation; WSUC = Water Supply and Sanitation User Committee; [✓] = Present; [X]= Not Present.

4.11 Nevertheless, commendably, the Poverty Alleviation Fund has replicated the Fund-Board approach in which the government department has adapted some elements of the fund-based model. Similarly, a program called Janta Ko Tatbandha Karykram (JTK), implemented by the government, has adapted the demand-driven, community participation, and cost-sharing principles. Also, the Ministry of Federal Affairs and Local Development implements community-led development at the subnational level (District Development Committees and Village Development Committees).

4.12 However, given the limited achievement so far in influencing other programs to adopt the full Fund-Board approach despite the adoption of some elements, the achievement of this objective is rated **modest.**

Objective 2: Inclusive Water Supply and Sanitation User Groups

OUTPUTS

4.13 The following major outputs under this objective were achieved:

- 1,465 local Water Supply and Sanitation User Groups were formed in 831 villages under this project.
- 1,465 Water Supply and Sanitation User Groups were provided training by support organizations in Water Supply and Sanitation User Committee

management, leadership, and for treasurers; O&M management; and training for Village Maintenance Workers and Village Health Promoters. Their capacity was built to plan, implement, operate, and maintain water supply and sanitation infrastructure.

- 1,465 Water Supply and Sanitation User Groups were sensitized to elect their Water Supply and Sanitation User Committees to manage the program in their village.
- Women's Technical Support Services (WTSS) were started, under which a revolving fund was provided to women's groups to undertake economic activities.

OUTCOMES

4.14 **Establishing inclusive water supply and sanitation groups.** The project made strong efforts to ensure a minimum level of representation of women in Water Supply and Sanitation User Groups. All Water Supply and Sanitation User Groups have the stipulated minimum of three women members in the Water Supply and Sanitation User Committees. 585 Water Supply and Sanitation User Committees have more than three women members, and 11 percent have female chairpersons. The average number of women in Water Supply and Sanitation User Committees is four. Independent studies conducted for a sample of project villages found that 41 percent of the Water Supply and Sanitation User Committee members were women. The village of Thulosirubari in the Sindhupalchowk district in a mountain region (visited by the IEG mission) had an overwhelming participation of women in the Water Supply and Sanitation User Committees as well as WTSS economic activities.

4.15 **Ensuring consistency between caste and ethnic profiles of households in the project area and the households actually served by the system.** 48.5 percent of the households served by the system were from marginalized groups. 51 percent of the beneficiaries were women, which showed a good gender balance. The immediate impact study conducted in 70 out of total 297 schemes completed under Batch VI found that 50 percent of the beneficiaries (Dalits 14 percent, disadvantaged ethnic group 30 percent, and other excluded groups 6 percent) were from the disadvantaged population.

4.16 **Creation of water supply infrastructure and improved access.** The Water Supply and Sanitation User Groups planned and constructed 1,465 water supply infrastructure schemes benefiting 1,140,892 people in the project area. The project benefited 100,000 people more than the revised target. The proportion of people with improved access to water supply significantly increased. The Health KAP impact study under Batch IV schemes found that 94.6 percent (N = 1,457) of the scheme population used tap water provided from the project, while before the project only 7.1 percent (N = 114) of the total scheme population used tap water. The use of a hygienic source of water for drinking and cooking has thus substantially increased.

4.17 **Creation of sanitation infrastructure.** The Water Supply and Sanitation User Groups planned and constructed 64,407 sanitary latrines using the Sanitation Revolving Fund. An additional 72,080 were built by the communities as a result of awareness-raising activities using their own resources. Independent sample studies find that the

recommended distance within 30 meters from the house was maintained in 87 percent of constructed toilets.

4.18 **Sustainability.** As per independent sustainability studies conducted by the service agencies, most schemes are being run by Water Supply and Sanitation User Committees in a sustainable manner. The short-term sustainability study of Batch-V schemes conducted in August 2012, found that 46.67 percent schemes were highly sustainable, 47.78 percent moderately sustainable, 3.33 percent sustainable, and 2.22 percent not sustainable. Similarly, the long-term sustainability study of Batch-IV schemes, conducted in June 2012, found that 44 percent schemes were highly sustainable, 46 percent sustainable, 3 percent moderately sustainable, and 7 percent not sustainable. Under the project, 100 percent WSUCs are registered, have a village maintenance worker, and are maintaining an O&M fund. This was in sharp contrast to the sustainability of rural water supply and sanitation services at the national level, where whole year water supply is available in only 68 percent of sources and only 4.5 percent are maintaining an O&M fund, only 37.9 percent WSUCs are registered and only 4.5 percent are maintaining an O&M fund.

4.19 **Operation and maintenance.** As per the Implementation Completion and Results Report of the project, all 1,465 schemes under this project were in operation and functioning satisfactorily with community operations and maintenance (O&M). Sample impact studies revealed that 56 percent of the beneficiaries interviewed were satisfied with the scheme implementation. IEG conducted a field mission to Nepal during November 25–December 13, 2016 to assess the project outcomes (see appendix F for the report summary). The IEG mission found that the water supply schemes they visited were functioning satisfactorily. Communities were found to be doing O&M of the water supply infrastructure themselves and contributing to O&M funds. Women were engaged in economic activities, which unified and equipped the water users to pay regular water tariffs and work toward improving their hygiene habits. O&M funds are being collected regularly and necessary expenses are paid for electricity bills, maintenance and repairs, and staff salaries. There is a functional Village Maintenance Worker in each village who is doing his or her task diligently. There were adequate O&M funds to cover the regular O&M costs in the visited villages. These observations were found even for schemes constructed a decade ago in 2006. However, there were certain sustainability issues that cause Risk to Development Outcomes, discussed in Section 6 of this report.

4.20 **Demand for higher service levels.** Beneficiaries have been demanding a higher service level. In most schemes, drinking water is supplied 1–2 hours a day, mostly in the mornings, in the mountain and hill regions. People want one additional hour of water supply in the evening. Significantly, migration of households to the project areas has increased after the project completion. Demand for water supply has increased both for community connections and yard connections. Users have to compromise with their daily need of water. However, the limited hours of water supply do meet the minimum water need for drinking and cooking. This saves water-fetching time for women, which they are using to better care their children and which frees time to engage in other economic activities. There is also additional demand for water connections from nearby habitations that were not part of the original Water Supply and Sanitation User Groups and that are not satisfied with the supply of water in their habitations. The schemes with current

capacity may not be able to cater to higher service levels without additional investments for increasing water storage capacity in the form of overhead tanks, and without appointing additional Village Maintenance Workers and meter readers. This problem is mainly in the less accessible hills and mountain regions. In the Terai region, drinking water is supplied 24 hours a day and people are charged based on their water consumption.

4.21 Overall, considering that the majority of groups can plan, implement, and operate the schemes, the project's contribution to this objective is rated **substantial.**

Objective 3: Sustainable Health, Hygiene, and Productivity Benefits

OUTPUTS

4.22 The following outputs were achieved:

- Training imparted to one Village Health Promoter each from 1,465 schemes under the project.
- Community action plans (CAP) prepared for all 1,465 schemes under the project that included health, hygiene, and sanitation (Health and Hygiene Service) activities to promote sustained improved practices through positive behavioral changes. The baseline information on Health and Hygiene Service formed part of the CAP.
- Health and Hygiene Service activities informing and orienting resident communities of causes, effects, and prevention of water-borne and filth-related diseases implemented.

OUTCOMES

4.23 The Fund Board conducted several impact studies on Community Development Activities (CDA) under the project to get a better understanding of the degree to which communities had gained immediate benefits from the schemes after the project intervention. The scope of these studies included, among other things, an assessment of impact on health and hygiene behavior of the beneficiaries that affected environmental and personal hygiene and sanitation. A summary of key findings from these studies is presented in appendix K.

4.24 While the impact study of Batch VII reported a prevalence of diarrhea as 14 percent and of Batch IX as 3 percent, this was in contrast to the government reports for the country as a whole. Annual Reports of the Department of Health Services indicate that incidence of diarrhea was much higher, at 598 per 1,000 children below five years old in 2009–10, and it reduced to 502 in 2014–15 (see appendix table G.6).

4.25 The impact study of Batch VII reported that incidence of diarrhea in 2011–12 was 140 per 1,000 in 90 project villages of this Batch, and the impact study of Batch IX reported that incidence of diarrhea in the same year was 30 per 1,000 in 115 target villages of this Batch. However, at the national level, the incidence of diarrhea was reported as 528 per 1,000 in 2011–12. This difference is striking.

4.26 The impact studies conducted under this project report significant improvement in hygiene practices, establishment and use of improved sanitation infrastructure, and improved access to safe drinking water. The health impact is expected to be high. There were some methodological weaknesses in establishing baselines and conducting repeat comparison studies to measure impact, but achievement made by the project in creating health awareness and its impact on communities, which built about 70,000 latrines at their own cost, are significant achievements. In conclusion, the project has made a significant health impact on the communities in the target villages.

4.27 Although a number of the Batch impact studies conducted under the project lacked a baseline, the surveys in the project areas reflected a quite high absolute level of hygiene practices in terms of use of sanitary latrines, handwashing, and disposal of solid waste. The project area had only 11 percent sanitation coverage at the baseline and had a project target of 50 percent coverage, which was equivalent to the construction of 74,374 latrines. A total of 137,536 latrines were constructed, benefiting 136,487 households in the project area. In the end, an additional 72,000 sanitary latrines were also constructed by people through their own sources because of increased health awareness. At the end of the project, about 83 percent of households in the project area had sanitary latrines against a national average of 36 percent. There was thus a 72 percent increase in the coverage of sanitary latrines in the project area. The incidence of diarrhea in project villages in 2011–12 was only 140 per thousand in comparison to 528 per thousand for the nation as a whole. The average time saving was found to be a very substantial 2.1 hours per household per day, which is likely to translate into an increase in time for engaging in productive activities and other opportunities for increasing household income. With improved coverage and use of sanitary latrines, improved practices of handwashing and solid waste disposal, improved availability of safe water, significant time savings that can be used productively, and technical and financial sustainability of the schemes, the project has significantly contributed to achieving sustainable health, hygiene, and productivity benefits to the project area.

4.28 Overall, the project's contribution to this objective is rated **substantial**.

5. Efficiency

5.1 At appraisal, a cost-benefit analysis was conducted to estimate the ERR for investments in improved water supply and for the project as a whole. The cost-benefit analysis by the ICR relied on the Fund Board's monitoring database for cost and benefit data. Annual O&M costs were estimated based on the information collected by the Fund Board based on information from 74 selected completed schemes. Subsequently, Fund Board provided to the IEG team additional data related to 500 completed schemes.

5.2 **Benefits.** The main benefits quantified at appraisal for the cost-benefit analysis included time savings and increased availability of safe water. Additional benefits—such as improved health and better hygiene practices and institutional strengthening and sustainability—could not be quantified and were therefore excluded from the cost-benefit analysis. The cost-benefit analysis replicated at completion by the ICR was both to assess the absolute rate of return and to ascertain whether the expected ERR at appraisal materialized. The methodology used in ICR is thorough and sound, and the IEG used the

same methodology using the additional data provided by the Fund Board for a larger number of schemes to conduct the economic analysis.

5.3 **Time saving.** The main quantifiable benefit for the households in the participating communities is the time saved from fetching water. The time savings are presented in appendix table H.1. The average time saving was 3.1 hours per household, which was 106 percent higher than the average 1.5 hours per household per day expected at appraisal. The time saved is likely to translate into increased time for engaging in productive activities, providing opportunities for increasing household income. The average time saved significantly exceeds the estimate at appraisal for all technology options with the exception of shallow tube wells. The time savings in gravity and water harvesting technologies are particularly high and suggest high levels of released labor for productive work.

5.4 **Increased availability of safe water**. A population of 1,140,892 benefitted from improved water supply through 1,465 water supply schemes. The incremental water consumption resulting from access to improved water supply is another quantifiable benefit from the project. Increased availability of safe water has been shown in other studies to result in significant health benefits and reduced medical expenditures for households. Availability of adequate quantities of water may also allow the use of more water for gardening, small animal husbandry, livestock production, and other water-intensive activities that increase food consumption or income opportunities. The benefits from the increased water consumption resulting from the project are evaluated conservatively based on the prevailing water tariff set by concerned Water Supply and Sanitation User Committees, which is likely to be below the actual average willingness to pay. On average, water consumption increased from 13.8 liters per capita per day (LPCD) to 33.7 LPCD in the project area.

5.5 **Costs.** The actual per capita capital cost at constant prices (community contributions included) was used for the ICR economic analysis. Annual O&M costs were estimated based on annual O&M expenditure data collected by the Fund Board for the 74 schemes surveyed. ICR reported that per capita average annual O&M cost for gravity is NPR 72 and NPR 100 for lift schemes. O&M cost for other technologies were assumed to be 50 percent of O&M cost of gravity schemes. Fund Board subsequently informed the IEG team that these costs seem underestimated, but the actual O&M costs were not provided. The per capita investment costs for all technology options were higher than the per capita cost estimated at appraisal.

5.6 **Economic rate of return.** The ERR has been calculated for each technology separately for all completed water supply schemes and for the project as a whole. The ERR estimates are conservative because health benefits (for example, in terms of disability-adjusted life years—DALYs) are not included in the calculation of benefits. The aggregate ERR of all schemes is 26.7 percent, which is higher than the ERR estimated at appraisal (24 percent). All technology options provide satisfactory ERRs, above the economic cost of capital (12 percent) and positive net present value (NPV). In addition, the estimated ERR of the project (26.6 percent) is significantly higher than the ERR estimated at appraisal (16 percent). The project costs include Fund Board's

operating costs in addition to the costs of the schemes. The results of the economic analysis are summarized in appendix table H.2.

5.7 The Fund Board's activities appear to have been cost effective compared with other RWSS service providers because it covered 18 percent of the country's population since 1996, using only 5 percent of the total sector expenditure.

5.8 In addition, the project has contributed significantly to improving health and hygiene outcomes in the project area. The level of hygiene practices including handwashing and solid waste disposal have improved and are at a high level.

5.9 However, there were significant cost and time overruns. The project cost at appraisal was $41.51 million. This was increased to $73.61 million at project closure in order to partially cover cost overruns and to cover the enhanced project scope. Similarly, the estimated project time at appraisal was 5 years, which increased to 8 years at close.

5.10 The quality of the economic analysis done in the ICR is assessed as sound and the benefit stream data appears conservative. However, the risk to development outcomes is rated significant. The efficiency of the project is rated **substantial**.

6. Ratings

Outcome

6.1 Given the high relevance of objectives, modest relevance of design, modest efficacy of the first objective, substantial efficacy of the second and third objectives, and substantial efficiency of the project, IEG rates the overall outcome of the project as **moderately satisfactory**.

Risk to Development Outcome

6.2 While in independent studies, more than 93 percent of projects schemes were found to be sustainable, there are some risks to sustainability. Continuation of women members in the user committees was found to be doubtful. During the field missions conducted by the IEG, women members were found to be withdrawing from the Water Supply and Sanitation User Committees and men members were taking their roles. Even if women members were in the Water Supply and Sanitation User Committees, their decision-making role in undertaking activities was not significant. As called for in the project guidelines, women were to be appointed as the treasurers of the Water Supply and Sanitation User Committees. While they were appointed during the planning phase and some continued during the implementation phase, most have been replaced by men in the post-implementation phase. Village Health Promoters appointed by the Water Supply and Sanitation User Committees during the planning phase were mostly women. However, Water Supply and Sanitation User Committees did not pay a salary or honorarium, failing which, most of the women withdrew from their role in the post-implementation phase in view of competing demands from home, farm, and other employment opportunities.

6.3 There is evidence that the amounts set aside for O&M are insufficient in many cases. Several water supply infrastructures created under the project have completed their project lives and have become dilapidated. They require major repairs. The tariffs were fixed to cover the routine O&M costs but not to cover major repairs and rehabilitation cost in the nature of capital works. Therefore, some of Water Supply and Sanitation User Committees do not have adequate funds for major repairs and rehabilitation. They need support from the government.

6.4 During the IEG field mission, people complained of poor quality of water, especially during the rainy season. The Water Supply and Sanitation User Committees have not been testing water quality regularly nor are they using chemicals to purify water. There is no system by which the Fund Board monitors the water quality in its target villages on a regular basis. It had assigned the task of one-time water quality assessment to two of its service agencies (Aastha Scientific Research Service Pvt. Ltd and IRDS) for six districts of the eastern region. The assessment found that that while 38.3 percent of the samples collected and tested from this region were free from physical, chemical, and microbiological contamination, as high as 61.7 percent of samples were contaminated with one or more contaminants, thus making the water unsuitable for drinking. Out of the 214 samples collected and tested, 21.5 percent posed intermediate fecal risk and 12.1 percent posed high fecal risk. Water quality data also revealed that 17.3 percent of samples were found contaminated with a high concentration of iron and 17.3 percent exhibited an elevated level of turbidity. There is no system of registration and follow up of citizens' complaints in this regard. Water Supply and Sanitation User Committees were found lacking capacity.

6.5 A total of 837 schemes were affected by earthquake in 14 severely affected districts in the country, in 2015, out of which 443 schemes were from this project. Out of these 443 affected schemes, 225 schemes were taken up for rehabilitation and reconstruction work in follow-on Rural Water Supply and Sanitation Improvement Project. The remaining 218 schemes are at risk. The project had started an innovative insurance scheme to cover the risk of natural calamities, but due to the nonpayment of insurance premiums by the communities, the benefits could not be drawn. This insurance issue needs more attention in the follow-on project.

6.6 Given that improving sector institutional performance was one of the project objectives, institutional risk is particularly important. At the national level, the sustainability of water supply infrastructure is at great risk, as can be seen in appendix table G.5. It is evident that at the national level, only 37.9 percent Water Supply and Sanitation User Committees are registered and only 4.5 percent are maintaining an O&M fund. Whole year water supply is available in only 68.2 percent of sources—the rest do not have year-round availability of safe water. About 19.8 percent schemes need rehabilitation and 8.6 percent need reconstruction. This is in striking contrast to the sustainability in project villages, which is primarily due to its community-led and demand-driven approach. Thus the overall sector institutional performance poses serious challenges to sustainability of water supply infrastructure nationally even though the project has made significant achievements.

6.7 The risk to development outcome is rated **significant**.

World Bank Performance

QUALITY AT ENTRY

6.8 Project design took account of the needs for participation and the importance of women's labor and role in decision making. The government's supply-driven approach to service delivery was not ensuring sustainable results. The project appropriately adopted a bottom-up demand-driven approach that was driven by community, gender-focused, and inclusive. Everyone in the catchment area of the scheme was given a chance to be included in the scheme. The project was designed to save women water-fetching time so that they could use that time engaging in income-generation activities and nonformal education. Users were empowered to elect their own user committee. The election process was democratic. Representation of women and marginalized groups in the user committees was ensured in the design. The project established the message: "This is yours."

6.9 Beneficiaries were involved in planning, implementation, and O&M of water supply schemes, which empowered them and built their capacity. The project was designed so that support organizations provided support to communities in building their capacity and awareness as well as lent a supporting hand in implementation. The project design included a third-party monitoring mechanism to ensure quality control and evaluate impact, as well as a provision for public audit. The project design included the Fund Board as the implementing agency, which contributed to the paradigm shift in the government's role from provider to facilitator.

6.10 The design included a detailed monitoring and evaluation framework and means for it to be implemented, both on a project and sectorwide scale. Project design included an indigenous people's development plan (IPDP) that addressed the World Bank's Safeguard Policy 4.20 (Indigenous Peoples).

6.11 However, the project design had three significant weaknesses. First, it did not include any significant activities to mainstream the Fund-Board approach in the government's system. Second, there was no robust political economy analysis that assessed the feasibility of mainstreaming Fund Board approach in light of stakeholders' interests. Third, there was a missing link in the design between user committees and local government bodies -Village Development Committees (VDCS) and District Development Committee (DDCs). Although Water Supply and Sanitation User Committees are registered and in many cases working together with VDCs, ownership of project's schemes by the latter after the project completion was not clearly established. That link could have been established through an executive order or another instrument specifying roles and responsibilities of local government bodies in respect of these schemes after project completion. Even though elections to the local government bodies were being not held due to conflict, this link could have provided sustainability to rural water supply and sanitation services created under this project when the support organizations and service agencies were to move out after project completion.

6.12 The project cost at appraisal was $41.51 million, which was an underestimation. There had to be an Additional Financing of $32.1 million to cover the cost overruns and

enhanced scope. Similarly, the estimated project time at appraisal was 5 years, which had to be extended thrice to be completed in 8 years.

6.13 Quality at entry is rated **moderately satisfactory**.

QUALITY OF SUPERVISION

6.14 The World Bank's supervision was enhanced by the presence of a highly experienced and committed task team leader (TTL). He was a team member in the World Bank's pilot project and a team member in the World Bank's first rural water supply and sanitation project. He was the TTL at the preparation and appraisal stage and was based in the Nepal Country Office so was accessible to the government, stakeholders, and communities for any "trouble-shooting." World Bank staff in-charge of procurement management, financial management, and safeguards were also based in the country office. Together, the team provided proactive implementation support to the Fund Board and resolved many issues in a timely manner.

6.15 However, the team did not take timely action in addressing challenges in mainstreaming the Fund-Board approach and contributing to improving sector institutional performance. The government did not adopt the Fund-Board approach as far as community contracting is concerned. There was scope for greater advocacy by the World Bank in this area. The sector performance shows that government schemes are not sustainable. They have also not achieved good health impact. There was a missed opportunity to contribute to sector performance.

6.16 Also, the project designed and made operational a sector M&E system in the Ministry of Water Supply and Sanitation, but in the end the government did not use it. There was scope to be more proactive and to convince the government of the merits of using that system.

6.17 There was scope for implementation support and adjustment in managing environmental safeguards - the Water Quality Monitoring Reports were not effectively utilized to address the water quality problem prevalent in target villages.

6.18 The quality of World Bank supervision is rated **moderately satisfactory**. Together, these two ratings lead to an overall rating of World Bank performance of **moderately satisfactory**.

Borrower Performance

GOVERNMENT PERFORMANCE

6.19 The government facilitated the implementation of the Rural Water Supply and Sanitation National Policy, 2014, which had set out the "demand responsive approach" for RWSS provision, cost sharing principles, inclusion of women in decision making, and roles and responsibilities of different government agencies. It coordinated the sector well and ensured all government entities, donors, and NGOs followed these principles while implementing their respective programs in the RWSS sector. It also prepared the National Hygiene and Sanitation Master Plan, 2011, which promoted the open defecation free

(ODF) movement to achieve total sanitation. The government supported sector coordination involving multiple stakeholders including donors and held frequent Stakeholder Group Meetings and coordinated the Joint Sector Review. As a result of the joint collaborative efforts of all sector actors led by the Sector Lead Ministry, in 2015, Nepal met the Millennium Development Goals set in the water supply, sanitation and hygiene sector. The Ministry is now striving toward achieving the National Target of "Basic Water Supply and Sanitation Facilities for all by 2017."

6.20 The government was committed to establishing the Fund Board as an autonomous institution by an Act of the Parliament and submitted the Bill twice. Unfortunately, the Bill could not be passed because of political instability in the country. Still, the government allowed the Fund Board to operate without the Bill with sufficient autonomy and provided timely budgetary support.

6.21 However, the government was not successful in achieving the first development objective of mainstreaming the Fund Board delivery model of direct fund flow to Water Supply and Sanitation User Committees and community contracting in its own national implementation mechanism. This was largely due to resistance to change within the government agencies that did not want to part with the responsibility of procurement and construction. Also, the project had developed and established the sector M&E at the ministry level in 2011, but the government did not put that to use. This seems to have been due to lack of ownership and their reliance on the traditional reporting and monitoring systems. The government was expected to initiate outcome-based budget allocations in the sector, but did not achieve that either. No serious efforts were made to assess the outcomes of alternative programs and allot more funds to those that had potential for better outcomes. The aim was to allocate budget to different programs based on the evidence of program effectiveness and in furtherance of the priorities of government. However, achieving this objective has been hampered by entrenched incremental budgeting. Efforts to explicitly reallocate funds from less to more effective uses have not been notably successful in any of the sectors in Nepal including water and sanitation.

6.22 Overall, the government's performance is rated **moderately satisfactory**.

IMPLEMENTING AGENCY PERFORMANCE

6.23 The Fund Board developed a successful implementation approach, which was demand-driven and community-led. It let the communities play the lead role in planning, design, implementation, and operations and maintenance of water supply and sanitation schemes. It strictly followed the community action planning endorsed by the whole community through meetings and community procurement that encouraged cost effectiveness, quality control, and ownership by the community. Its implementation approach was consistent with both government RWSS National Policy, 2004, and the World Bank's project appraisal document.

6.24 The Fund Board had developed and operationalized a state-of-the-art web-centric M&E system. It used this effectively to improve its decision making. The Fund Board's activities appear to have been cost effective compared with other RWSS service

providers as it covered 18 percent of country's population since 1996, with only 5 percent of the total sector expenditure.

6.25 Areas where it could have performed better were preparing community O&M plans and advising and motivating communities to fix water tariffs accordingly. It could have provided training to communities on water quality monitoring and taken necessary corrective steps based on the water quality monitoring reports of the service agencies. It also could have kept better track of economic activities of Women's Technical Support Services (WTTS) and facilitated the development of forward and backward linkages for their productive activities.

6.26 Implementing agency performance is rated **satisfactory**. These ratings lead to an overall borrower performance rating of **moderately satisfactory**.

Monitoring and Evaluation

6.27 **Design.** The results framework had a clear statement of objectives, linked to intermediate and final outcomes. The causal chain between funding and outcomes was broadly clear and convincing. However, the results framework did not capture the mainstreaming of the Fund-Board approach in the government's system, the improvement of RWSS institutional performance, and sustainable improvement in productivity benefits. The Fund Board established a state-of-the-art art web-centric integrated management information system solution (IMISS). Business processes of the Fund Board were analyzed and the system designed accordingly. The system included an integration of the project management information system (PMIS), financial management information System (FMIS), and technical management information system (TMIS). The project was designed to conduct several M&E studies including (i) technical, operational, and environmental audits; (ii) short-term sustainability studies; (iii) mid-term sustainability studies; (iv) long-term sustainability studies; (v) impact assessment studies; and (vi) community development impact assessment studies.

6.28 The results framework had two redundant PDO indicators: PDO indicator 6 was about setting up common guidelines for all projects in the sector and PDO indicator 7 was about setting up sectorwide minimum cost recovery norm of 20 percent and 10 percent for poor and disadvantaged groups. However, these had already been achieved at the baseline in the form of RWSS National Policy of 2004.

6.29 **Implementation.** The Fund Board used the IMISS that produced standard, dynamic, and consolidated reports. Standard reports were required and identified by the Fund Board to be produced periodically. Dynamic reports were produced as required by the Fund Board from time to time. Different reports were merged to prepare a consolidated report.

6.30 Support organizations conducted Healthy Home Surveys to evaluate progress in the hygiene habits and health benefits. The Fund Board also contracted service agencies to conduct various M&E studies. All data collected through these studies were entered into the Fund Board's web-centric IMISS.

6.31 The results framework was at a higher level of aggregation in which progress reports were fed from IMISS for PDO indicators 1, 2, and 3 and intermediate outcome indicators 1 and 3. M&E impact evaluation fed progress reports for PDO indicator 4 and intermediate outcome indicator 2.

6.32 While the mid-term sustainability reports were to be prepared 3 years after scheme completion and long-term sustainability studies were to be conducted 5 years after scheme completion, mid-term sustainability reports were prepared for only Batch V. The same were not prepared for Batches VI, VII, and VIII. Similarly, no long-term sustainability report was prepared. The project should have prepared the same for Batch V at least.

6.33 The Health KAP impact studies were conducted under the project by independent service agencies, but did not have baselines established at the time. The recollected baselines and current status were measured together at the same time, which raises doubts about the validity of the baselines and therefore the magnitude and direction of change.

6.34 There was no monitoring, follow-up, or evaluation of the economic activities conducted by women's groups. Whether economic activities helped in raising incomes of women's groups and by what extent is not known.

6.35 **Utilization.** The MIS reports were effectively utilized by both the Fund Board and the World Bank to review progress and identify areas of slow progress. They used these reports to take midcourse corrections and strengthen the implementation mechanism for boosting progress in slow areas. The Fund Board could identify which ecological or geographical regions had slow progress and which support organizations were low performers. They conducted regular meetings of the support organizations and discussed the bottlenecks and resolved implementation issues. They utilized the M&E system during the mid-term review to identify weaknesses of internal management of the Fund Board causing implementation delays up to 18 months. They also identified significant delays in the Terai region that were attributed to frequent blockages and bandhs (strikes). During the mid-term review, the key performance indicators of PDO 1 were modified to make them more appropriate.

6.36 However, there is little evidence of utilization of impact evaluation studies, especially those related to health and hygiene and water quality. There was no course correction in that regard. This was primarily because health impact studies were one-off studies in which both baseline and impact were measured. If baseline studies had preceded the repeat comparison studies and the community action plan had been prepared based on a baseline, the project could have contributed more effectively to the health impact. Similarly, there is no evidence of the follow-up based on water quality reports. The communities still lack capacity to do water quality monitoring themselves and are unaware of what preventive and curative actions they should take. Only the sustainability studies were utilized to address weak areas, especially technical issues.

6.37 On balance, project M&E is rated **substantial**.

7. Lessons

The evolution of RWSSP II provides a useful example of a model that may be suitable for other communities in Nepal and rural areas in other developing countries. The main lessons include

- Mainstreaming a community-led approach in a supply-driven government structure is difficult to implement in the absence of a prior agreement with government and continuous advocacy. In this project, "mainstreaming of the Fund-Board approach" in the government sector was adopted as a PDO. However, it was not preceded with a robust political economy analysis and a prior agreement with the government on the understanding of the concept and its implementation timeline. Adopting the Fund-Board approach would have required the government to transfer its power of procurement and implementation contracting to communities, which the government was not ready to do. Had the PDO been based on a robust political economy analysis, it is likely that mainstreaming the Fund-Board approach would not have been adopted as a PDO or it would have been phrased more cautiously.
- **Project implementation arrangements not linked with institutions that have a legal mandate and parallel institutional structures undermine the sustainability of the project.** The project was implemented by Water Supply and Sanitation User Committees with support from support organizations and under the overall supervision and monitoring of third-party service agencies. This arrangement worked because the support organizations and service agencies were paid by the project. After project closure, the arrangement became dysfunctional and no agency provides hand-holding support to Water Supply and Sanitation User Committees. The Local Self Governance Act (1999) made water supply and sanitation service a responsibility of local bodies. Failure to link Water Supply and Sanitation User Committees with Village Development Committees and District Development Committees under the project has impacted institutional sustainability.
- **Given that women are main stakeholders, placing them at the center of planning and implementing a community-led rural water supply and sanitation project supports sustainable benefits.** In this project, women were the main stakeholders as they had to travel long distance to fetch water. Community mobilization activities such as Women's Technical Support Services (WTSS), nonformal education, and community workshops on health and hygiene helped to organize women toward common goals. A minimum representation of women in the Water Supply and Sanitation User Committees facilitated their key role in implementation. Because women were mostly affected and benefited from the project, they enthusiastically contributed to its implementation.
- **When project sustainability rests on community contribution to the operations and maintenance (O&M) costs, there is a need to prepare and agree on an explicit O&M plan with the community at the development phase.** In this project, water tariffs were often set too low to meet all costs sustainably. The project guidelines did not include preparation of an O&M plan during the development phase. There was a tendency to court community

popularity and not levy too heavy a tariff, which led to lower than economic tariffs. As a result, many schemes in the postimplementation phase are still struggling to pay staff salaries and electricity bills, purchase generators, and so on.

- **In rural water supply programs aimed at increasing water supply at the village level, it is necessary to make provisions to cater to demand for higher service levels of wastewater management and water quality monitoring.** In this project, following the improvement in water supply, people from target villages have been demanding higher service levels. People from the neighboring villages have also raised their demand. However, capacity constraints do not cater to increased demand. With increased service levels, people's expectations are now focused on water quality. In addition, increased water supply creates increased wastewater, which needs to be managed. The project design did not adequately address the issues of capacity constraints of Water Supply and Sanitation User Committees to meet increased demand from nearby villages, waste water management, and water quality.

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[1] The Fund-Board approach is a demand-driven and community-led approach involving the adoption of principles of community cost-sharing; establishing Water Supply and Sanitation User Committees, then getting them registered and building their capacity; and directing fund-flow to Water Supply and Sanitation User Committees. The Water Supply and Sanitation User Committees will plan and implement WSS schemes with support from NGOs and will do community contracting and O&M on their own and from their own resources.

[2] Mainstreaming in the government's system means that the government uses this approach in the schemes managed by itself, whether financed by its own sources or in partnership with other donors.

Appendix A. Basic Data Sheet

SECOND RURAL WATER SUPPLY AND SANITATION PROJECT (P071285)

Key Project Data (US$, millions)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	73.61	67.92	92
Loan amount	52.3	47.35	91
Cofinancing (DFID)	5.00	0.00	0
Cancellation	0.00	3.74	—

Note: DFID = U.K. Department for International Development.

Cumulative Estimated and Actual Disbursements (US$, millions)

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Appraisal estimate	1.40	6.50	12.80	19.50	25.30	35.01	42.62	52.30	52.30
Actual	1.3	4.54	11.39	17.14	23.53	35.01	42.62	42.81	47.35
Actual as % of appraisal	92.85	69.84	88.98	87.89	93	100	100	81.85	90.53

Date of final disbursement: January 11, 2013

Project Dates

	Original	Actual
Concept review	09/17/2001	09/17/2001
Negotiations	03/31/2004	03/31/2004
Board approval	06/01/2004	06/01/2004
Signing	09/14/2004	09/14/2004
Effectiveness	01/07/2005	01/07/2005
Closing date	08/31/2009	08/31/2012

Staff Time and Cost

	Staff Time and Cost (World Bank budget only)	
Stage of Project Cycle	**Staff Weeks (number)**	**US$, thousands (including travel and consultant costs)**
Lending		
FY01	8.31	14.17
FY02	14.40	99.29
FY03	26.94	93.33
FY04	28	55.91
FY05	0	10.34
Total	77.65	273.04
Supervision/ICR		
FY04	0	0.00
FY05	32.28	54.52
FY06	31.35	56.86
FY07	41.61	109.31
FY08	39.85	117.86
FY09	39.76	89.90
FY10	32.51	78.12
FY11	35.69	34.29
FY12	27.40	70.92
FY13	14.47	35.81
Total	**380.72**	**611.78**

Other Project Data

Borrower/Executing Agency: Ministry of Urban Development

Follow-on Operations

Operation	**Credit no.**	**Amount (US$, millions)**	**Board date**
Rural Water and Supply and Sanitation Improvement Project	IDA Credit 5446-NP	50	May 29, 2014
	IDA Grant H365-NP	22	

Task Team Members

Name	Title (at time of appraisal and closure, respectively)	Unit	Responsibility/ Specialty
Lending			
Tashi Tenzing	Senior Sanitary Engineer	SASDU	Task Team Leader
William D. Kingdom	Lead Water and Sanitation Specialist	SASDU	Task Team Leader
Tirtha Rana	Senior Health Specialist	SASHN	Health
Jeeva Perumalpillai-Essex	Leader Operations Officer	CSASB	Project Operations
Lynn Bennett	Lead Social Scientist	SARDS	Social Development
Rachel Bet Kauffmann	Senior Public Health Specialist	SASHN	Health Specialist
Bigyan Pradhan	Senior Financial Management Specialist	SARFM	Financial Management
Kiran Ranjan Baral	Senior Procurement Officer	SARPS	Procurement
Christoffe Bosch	Senior Water and Sanitation Officer	SASDU	Water and Sanitation
Mona Sur	Economist	EASNS	Economics
Nawaf A.Al-Mahamel	Counsel	LEGES	Legal
Rajesh Singh	Program Assistant	SASDO	Program Assistance
Johanna Thapa	Program Assistant	EXC	Program Assistance
Jayashree Shreenivasan	Program Assistant	SASDO	Program Assistance
Supervision/ICR			
William D. Kingdom	Leader Water and Sanitation Specialist	SASDU	Task Team Leader
A.D.C. Godavitarne	Consultant	SASDU	ICR team
Elisa Muzzini	Senior Economist	SASDU	ICR team
Silva Shrestha	Water and Sanitation Specialist	SASDU	Water and Sanitation
Tashi Tenzing	Senior Sanitary Engineer	SASDI	Senior Sanitary Engineer
Kiran R. Baral	Senior Procurement Officer	SARPS	Procurement
Lynn Bennett	Consultant	SASDS	Social Development
Samantha L. Forusz	Program Manager	HRSAS	Program Management
Drona Raj Ghimire	Environmental Specialist	SASDI	Environment
Sunita Gurung	Program Assistance	SASDO	Program Assistance
Sumbo Adeyemo	Program Assistance	SASDO	Program Assistance

Sangeeta Kumari	Social Development Specialist	SASDS	Social Development
Yuka Makino	Natural Resources Mgmt. Spec	SASDI	Resource Management
Midori Makino	Lead Evaluation Officer	IEG	Financial Analysis
Nagendra Nakarmi	Senior Program Assistant	SARFM	Program Assistance
Asta Olsen	Senior Social Dev. Specialist	SASDS	Social Development
Bigyan Pradhan	Senior FM Specialist	SARFM	Financial Management
Johana Shah	Program Assistant	GCMCG	Program Assistance
Neena Shrestha	Procurement Assistant	SARPS	Procurement
Mona Sur	Senior Agriculture Economist	EASNS	Economics
Naresh Duraiswamy	Senior Operations Officer	SASDU	Project Operations
Bandita Sijapati	Consultant	SASDS	Social Development
Pawan Lohani	Consultant	SASDU	Economic Analysis

Appendix B. Project Scheme Cycle

The Project scheme cycle had four phases.

1: Predevelopment Phase (12 months)

The predevelopment phase of the scheme cycle lasted about 12 months and included a selection process for support organizations before effectively starting prefeasibility studies for scheme selection. Its main objective remained identification of support organizations and schemes that met eligibility criteria to enter into a development phase contract. The predevelopment phase included the following four activities:

- Prequalification of support organizations
- Prefeasibility study preparation and assessment
- Schemes selection
- Signing of development phase contract

As part of the predevelopment phase, source flow measurement was to be determined by the support organization and confirmed by the service agency. The community willingness to participate and take over the roles and responsibilities was assessed in a participatory way.

2: Development Phase (12 months)

The development phase lasted about 12 months. The main objective of the development phase was to prepare an implementation phase contract agreement. The development phase included the following three activities:

- Orientation and training for support organization staff
- Community action planning
- Finalization of implementation phase proposal

The development phase designed to result in a registered Water Supply and Sanitation User Group with a representative Water Supply and Sanitation User Committee and a community action plan, which formed the basis for the implementation phase proposal, and community contributions to capital and operation and maintenance (O&M) costs. In cases that met all Board eligibility criteria, a tripartite contract agreement among the WSUC, the Board, and the support organization for the implementation phase financing was signed. The water tariffs were fixed by the Water Supply and Sanitation User Committees with support from support organizations after considering different O&M costs.

3: Implementation Phase (13 months)

The outcome of the implementation phase was the consolidation of all activities, a completed and functioning water supply and sanitation scheme, and trained Water Supply and Sanitation User Committees and community members. During the implementation phase, two bank accounts were used. The first was a joint account operated by the community and

the support organization, while the second one was operated by the support organization. The community and Board contribution to the scheme's construction cost was deposited in the joint bank account, while the Board contribution to the community development cost was deposited in the support organization account.

The implementation phase hardware costs included the construction, rehabilitation, and augmentation costs for water schemes, catchment's protection, and institutional latrines. All water supply and sanitation scheme construction and rehabilitation activities designed in the development phase took place during the implementation phase. Community members were required to provide all unskilled labor, up to 1 day of portage, locally available materials (sand, stone, aggregates etc. within a day of porterage), and an upfront cash contribution toward the scheme's capital cost.

4: Scheme Follow-on Phase (24 months)

The follow-up phase was of 24 months. The primary objective of this phase was to follow-up on sustainability. This included both social and technical matters. During this phase, support organizations were required to conduct quarterly follow-up sustainability monitoring visits and provide technical support required to the community. A separate arrangement with the service agency made semiannual follow-up visits of all schemes completed in the implementation phase. During these visits, a participatory sustainability assessment was conducted, the problems analyzed, and technical support provided, if required.

The follow-up was designed to include training to reconstituted Water Supply and Sanitation User Committees, new Village Maintenance Workers, and refresher/advanced training to Water Supply and Sanitation User Committees; encourage Water Supply and Sanitation User Committees to renew their registration and improve the record keeping and financial transparency; facilitate conflict resolution; promote sanitation activities; rehabilitate part of the scheme; and improve coordination and relationships with local authorities and other related agencies.

Appendix C. Project Costs

Table C.1. Planned versus Actual Expenditures

Component	Planned Expenditure (US$, millions)			Actual Expenditure (US$, millions)		
	Original Allocation	Additional Financing	Total Planned Expenditure	Original Allocation	Additional Financing	Total Actual Expenditure
1. Strengthening and operations of Fund Board	6.67	3.9	10.57	6.73	5.42	12.15
2. Selection and construction of Water Supply and Environmental Sanitation schemes	26.52	20.5	47.02	31.68	21.53	53.21
3. Institutional development studies	0.73	1.7	2.43	1.06	1.5	2.56
Total Baseline Cost	**33.92**	**26.1**	**60.02**	**39.47**	**28.45**	**67.92**
Physical contingencies	3.39	2.5	5.89			
Price contingencies	4.2	3.5	7.7			
Total Project Cost	**41.51**	**32.1**	**73.61**	**39.47**	**28.45**	**67.92**

Source: World Bank 2013, 18.

Table C.2. Project Cost by Category

Components	Appraisal Estimate (US$, millions)	Actual/Latest Estimate (US$, millions)	Percentage of Appraisal
Work: RWSS Schemes Development phase Implementation phase	 7.80 52.42	 7.86 45.32	92
Monitoring and evaluation, publicity, training, studies and sector development, goods, etc.	12.26	8.51	69
Operating costs	3.73	6.23	167
Total Project Costs	**73.61**	**67.92**	**92**

Source: World Bank 2013, 20.

Table C.3. Project Cost by Source of Finance (US$, millions)

	Date	IDA	Borrower	Local Communities	DFID	Total
Original Appraisal Estimate	06/01/2004	25.3	6.6	4.6	5.0	41.5
Additional Financing through First Restructuring	05/06/2008	27.0	1.2	3.9	0	32.1
Final Appraisal Estimate after Second Restructuring	12/06/2010	52.3	7.8	8.5	0	73.6

Sources: World Bank 2004; Restructuring Papers.
Note: DFID = U.K. Department for International Development; IDA = International Development Association.

Table C.4. Implementation by Source of Finance

Source of Funds	Type of Cofinancing	Appraisal Estimate (US$, millions)	Actual/Latest Estimate (US$, millions)	Percentage of Appraisal
Borrower		7.8	6.91	89
International Development Association		52.3	47.35	92
Local communities		8.5	13.08	154
U.K. Department for International Development	Grant	5	0	0
Total		**73.6**	**67.92**	**92**

Source: World Bank 2013, 20.

Appendix D. Investments by Major Donors in RWSS Sector

Table D.1. Budgeted Investments in Projects by Ministry and Donor, FY 2014-15

Organization	Project title	Donor	Amount (US$)
Ministry of Federal Affairs and Local Development	Rural Water Supply and Sanitation Project in Western Nepal, Completion Phase (RWSSP-WN II)	Finnish International Development Agency	36,922,855
Ministry of Physical Infrastructure and Transportation[1]	Rural Water and Sanitation Program (Gurkha Welfare Scheme) Phase V	Department for International Development	24,790,737
Ministry of Urban Development	Second Small Town Water Supply and Sanitation Sector Project	Asian Development Bank	42,703,386
Ministry of Water Supply and Sewerage	Third Small Town Water Supply and Sanitation Sector Project	Asian Development Bank	5,462,580
			109,879,560

Source: Aid Management Platform, Ministry of Finance: http://amis.mof.gov.np/portal/.

Table D.2. Ongoing Investments in Projects by Ministry and Donor, FY 2015-16

Organization	Project title	Donor	Amount (US$)
Ministry of Federal Affairs and Local Development	1. Rural Water Supply and Sanitation Project in Western Nepal, Completion Phase (RWSSP-WN II) 2. Rural Village Water Resources Management Project Phase III (RVWRMP III) 3. Rural Village Water Resource Management Project Phase-II	FINNIDA	5,218,793
Ministry of Physical Infrastructure and Transportation	Rural Water and Sanitation Program (Gurkha Welfare Scheme) Phase V	DFID	2,635,308
Ministry of Urban Development	Rural water supply and sanitation improvement project (RWSSIP)	IDA	9,460,000
	Second Small Town Water Supply and Sanitation Sector Project	ADB	35,619,805
	Melamchi Drinking Water Project	ADB, JICA, NDF, OFID	16,152,282
Ministry of Water Supply and Sewerage	Third Small Town Water Supply and Sanitation Sector Project	ADB, OFID	4,819,381
	Total		**73,905,569**

Source: Aid Management Platform, Ministry of Finance: http://amis.mof.gov.np/portal/.
Note: ADB = Asian Development Bank; DFID = U.K. Department for International Development; IDA = International Development Association; JICA = Japan International Cooperation Agency; NDF Nordic Development Fund; OFID = OPEC Fund for International Development.

Table D.3. Ongoing Investments in Projects by Donors

Donor	US$
Asian Development Bank (ADB)	31,527,071
Finnish International Development Agency (FINNIDA)	5,218,793
Japan International Cooperation Agency (JICA)	13,997,529
U.K. Department for International Development (DFID)	2,635,308
World Bank	2,300,000
Total	**53,043,393**

Source: Aid Management Platform, Ministry of Finance: http://amis.mof.gov.np/portal/.

Appendix E. List of Persons Met

Name	Title/Organization
Mr. Suman Prasad Sharma	Secretary, Ministry of Peace and Reconstruction[2]
Mr. Yuga Raj Pandey	Under Secretary, Ministry of Finance
Mr. Bhim Prasad Upadhyaya	Secretary, Ministry of Water Supply and Sanitation
Mr. Bhupendra Aryal	Executive Director, Fund Board
Mr. Sanjay Mishra	Deputy Executive Director, Fund Board
Mr. Binod Dhital	Chief of the Planning and Operation Division (CPOD)
Mr. Pravesh Niraula	Chief of Project Monitoring and Evaluation Division (CMED)
Mr. Tika Prasad Adhikari	Chief of the Human Resource/Program Development Division (CHRD/PD)
Mr. Kapil Dev Gyawali	Chief of the Technical Division (CTECH)
Mr. Chudamani Pokharel	Chief of the Administration Division (CADMIN)
Mr. Bhumi Nanda Devkota,	Chairperson, Fund Board
Mr. Ram Chandra Devkota, Member	Joint Secretary, Department of Water Supply and Sewerage, MoWSS
Mr. Chakra B. Budha, Member	Under Secretary, Ministry of Federal Affairs and Local Development (MoFALD)
Mr. Krishna Prasad Jaishi, Member	Fund Board
Ms. Mana Dahal, Member	Fund Board
Mr. Basu Dev Basnet, Member	Fund Board
Mr. Maheswor Yadav	Former Executive Director, Fund Board
Mr. Arjun Narsing Rayamajhi	Former Executive Director, Fund Board
Mr. Takuya Kamata	Country Manager, World Bank, Nepal
Ms. Silva Shrestha	Water Supply and Sanitation Specialist, World Bank, Nepal
Mr. Yogesh B. Malla	FM Specialist
Mr. Shambhu P. Uprety	Senior Procurement Specialist
Mr. Drona Raj Ghimire	Environmental Specialist
Mr. Tashi Tenzing	Former Task Team Leader (TTL)
Ms. Sushila Rai	Program Assistant, Country Management Unit
Mr. Tameez Ahmad	Chief, WASH, UNICEF
Mr. Rajendra Aryal	Chairperson, Federation of Drinking Water Supply and Sanitation (FEDWASUN)
Ms. Laxmi Sharma	Sr. Project Officer (Infrastructure), Asian Development Bank
Mr. Gobinda Neupane	Local Governance Coordinator, DFID
Mr. Ilomäki Jukka	Counsellor, Embassy of Finland
Mr. Rajendra Pradhan	Solve Nepal
Baidyanath Chaudhari	RYC
Hem Raj Chatkuli	Focus Nepal
Chokhraj Shkya	DECON Nepal
Naresh Shrestha	PARDEP
Prakash Koirala	IDS Nepal

Name	Title/Organization
Skhaka Buddha Lama	SJASK
Ms. Prabha Pokharel	ETA Consult Pvt. Ltd
Mr. Keshab K.C	Managing Director, IRDS
Mr. K.B. Shahi	Chairperson, Aastha S.R.S Pt. Ltd.
Mr. Krishna P. Shrestha	Executive Director, CEMAT

[1] Ministry of Physical Infrastructure and Transportation (MPIT) was earlier called Ministry of Physical Planning and Works (MPPW)

[2] Mr. Suman Prasad Sharma was the Joint Secretary at the Ministry of Physical Planning and Works during RWSSP II implementation and was responsible for the project oversight.

Appendix F. IEG Field Visits

The IEG conducted a field mission in Nepal during November 25–December 13, 2016 to assess the quality of project implementation. The mission met with officials of the Project Management Team, Ministry of Water Supply and Sanitation, Ministry of Finance, Ministry of Federal Affairs and Local Development, Rural Water Supply and Sanitation Fund Board (Fund Board), Donors—Asian Development Bank (ADB), U.K. Department for International Development (DFID), Finnish International Development Agency (FINNIDA), and United Nation International Children's Fund (UNICEF)—international nongovernment organizations, support organizations, service agencies, Federation of Drinking Water Supply and Sanitation (FEDWASUN), Village Development Committees (VDCs), beneficiaries, and the World Bank staff. Appendix E contains a list of persons met during the mission.

The IEG mission visited four schemes, which were purposively selected to represent different ecological and geographic regions as well as different technology choices. In addition to the WSUC members, support organization staff, and VDC members present in the village, the IEG mission met about 80 beneficiaries in groups and about 40 beneficiaries. The water supply schemes were functioning well in the villages visited. Communities were doing O&M themselves. Beneficiaries were by and large contributing to O&M funds as per levied tariff. The Water Supply and Sanitation User Committees, however, did not keep account of which beneficiaries had not contributed during the month and the outstanding arrears against different users. Beneficiaries were largely satisfied but wanted increased service levels and water quality. Some schemes required major repairs/rehabilitation. Beneficiaries reported water quality problems during the rainy season. A number of WSUC members were requesting overhead tanks to lift water for distribution in the arsenic-prone areas where water was abstracted from deeper aquifers. This could have enhanced the level of service, enabled a continuous 24-hour supply, and facilitated individual connections through yard taps. The incremental costs of overhead tanks and pumping costs were to borne by communities, but they did not have adequate balances in the O&M fund.

IEG team selected schemes for field visits based on the information provided by the Fund Board. It was done at two levels. First, the local consultant collected information of all schemes implemented under the project across the country. Schemes implemented in three different ecological regions—Mountain, Hills, and Terai—used different technologies due to difference in water sources in those regions. Second, all information related to projects schemes across Mountains, Hills, and Terai ecological regions was assessed and at least one scheme in each of the ecological region was selected.

The following criteria was used to identify schemes to be visited:

- Selected schemes should cover all technologies that were implemented under Fund Board projects: lift pump, gravity, and boring technologies.
- The scheme should be selected from different Batches—V, VI, VII, and VIII—so that the team could assess sustainability of schemes completed at varying time periods before the visit.

- The population covered under the scheme should be at least 1,000 to get an assessment of a reasonably sized scheme.
- Select at least one scheme from an earthquake affected region.
- Select at least one scheme randomly without giving advance information to the Fund Board or community.

The local consultant received contact details of WSUCs, service organizations (support organizations), and support agencies (service agencies) for communication and coordination and finalized the sample schemes with consideration of the selection criteria, as set above.

A total of four schemes were visited and assessed. Two of the schemes visited were in the Mountain district of Sindhupalchowk. One of those schemes was randomly identified and assessed. One was selected in the Hill district of Kaski and another in the Terai district of Kapilvastu.

During the field mission, stakeholders including the members of the WSUC, Village Development Committee (VDC), Village Health Promoter (VHP), Village Maintenance Worker (VMW), and water users were consulted. The number of participants in the stakeholder discussion varied between 15 and20 people. 7 to 10 beneficiary households were randomly visited after the stakeholder discussion. The following checklist of questions was prepared and used to facilitate the stakeholder discussions.

A. Checklist for discussion with User Committees:

1. **Users Committee:** The formation process of the user's committee; ethnic composition and women members in the committee; the support received from service agency, support organization, local bodies, and Fund Board; the contract provision between WSUC and support organization, service agency, and Fund Board; the decisions that WSUC took for the implementation and operation of the scheme; the role of women within the committee.
2. **Financial management:** Scheme selection process; location and sustainability of the water source; fund flow mechanism from the Fund Board to user committee; training received for bank account operation and procurement of construction materials; technical support received for the estimation of the cost and operation and maintenance plan of the scheme; laying of water tariff and its collection; O&M balance in the account.
3. **Service level**: Number of private and community taps, daily hours of water supply, time saving, work load of women, and health benefits; ownership of schemes; percentage of households receiving water from the schemes in the project area.
4. **Women technical support service (WTSS)**: Seed money support received from the project; woman involvement, regular saving, current balance, revolving of the fund within members, etc.
5. **Social issues**: Caste, ethnicity, and pro-poor issues in the project areas; any conflict in the water supply and sanitation.
6. **Problems related to schemes:** Water sources depletion, O&M cost, and human resource for the maintenance of the scheme, sustainability of the scheme, water quality, service level, etc.

B. Checklist questions for Users/community people:

1. Did you participate during the planning phase of the schemes?
2. Did you participate during the construction of the scheme?
3. Did you participate in the management of the scheme?
4. Did you receive any nonformal education related to health, hygiene, and sanitation?
5. Did you receive a grant to construct household and institutional toilets?
6. Do you think substantial time is saved due to water supply and sanitation project in this community?
7. Have you (women) participated in the technical training to understand the benefits of time saved from fetching water?
8. Have you received orientation to access formal credit systems?
9. How much cash as capital cost did you pay for the construction of schemes?
10. What kind of support did you provide in the scheme?
11. What are the current problems in the water supply and sanitation in this community?
12. Are any of you trained in maintenance of the scheme?

Table F.1. Tinkhola Dovan Lift Water Supply and Sanitation Scheme in the Mountain District of Sindhupalchok

Support organization (supportorganization)	TYC (DECON)
Location	VDC Thulo Siurabari, wards 1, 2, and 6 Sindhupalchok (Mountain region)
Number of households	266
Population served	1,541
Batch	IX
Scheme type (technology)	Surface lift system
Water Supply and Sanitation Users Committee (WSUC) Member	11 (4 females, 7 males)
WSUC chairperson name	Devi Dulal
Status	Implementation phase completed

Tinkhola Dovan Water Supply and Sanitation Scheme is located at VDC Thulo Siurabari, 1, 2, and 6 Sindhupalchok district. The distance of the scheme from Kathmandu is 82.5 km (black top, 80 km plus 2.5 km gravel road). This area is a dry hill settlement with acute shortage of water. It is comprised of mixed ethnicity with majority of Newar. The total population served is 1,541 and its design population is estimated at 2,113 by the end of the design period after 20 years. Since the project was damaged by earthquake, the Fund Board Rehabilitation and Reconstruction (R&R) team is assessing the extent of damage. Ms. Ganga Parajuli is the Village Health Promoter (VHP). The WSUC is active and holding meetings regularly.

Operation and Maintenance Status:

There are two community paid staff members. The WSUC has recruited two Village Maintenance Workers (VMWs), one of which is a meter reader. Each staff gets NPR 9,000 as a monthly salary. Water tariff is charged based on the level of water use.

On average, monthly income from water tariff is about NPR 36,000. On the expenditure side, main items are salary for VMWs and meter reader, which amounts to NPR 21,000 per month. The electricity bill ranges from NPR 12,000 to 15,000.

At present, the amount of Operation and Maintenance fund is NPR 250,000. The community plans to increase this amount to NPR 500,000.

Women Technical Support Service (WTSS):

Three WTSS groups have been formed in this scheme with a total of 96 women members. The groups are conducting meetings regularly. Monthly saving mobilization is done at the rate of NPRs 50 per member. Their total group saving is NPR 77,000. The fund is lent to needy members for income-generation activities such as kitchen gardening, goat keeping, and local business and for personal urgencies.

Health and Sanitation Activities:

The WSUC had received NPR 93,000 from the board as a sanitation revolving loan fund (SRLF) for latrine construction promotion in two installments. The WSUC is mobilizing this fund as loan for the construction of household latrines. To date, 180 household latrines have been constructed through the support of SRLF and an additional 25 household latrines were constructed by the household themselves.

Environmental Management Action Plan (EMAP) :

The Water Supply and Sanitation User Group regularly cleans the water source including intake, reservoir tanks and public places in the community. However, they are not trained to do water quality monitoring. Mother Child Tap stands Groups (MCTGs) clean tap stand post and use waste water at their kitchen garden.

Key Observations:

1. The schemes observed is two-step pump gravity flow technology. It covers the 1, 2, and 6 wards of Thulosirubari VDC of Sindhupalchowk District. Storage water tank is filled in four and a half hours. The scheme serves through 125 yard connections located in households (against the 89 planned yard connections in the design phase) and 23 community taps.
2. Users committee has constructed additional overhead tank (6,000 liter) to supply water in the high land.
3. Water tariff: Private yard connection: NPRP 250 per month for consumption up to 7 units. NPR 50 is charged for consumption of every additional unit. In community taps each household is charged NPR 200 per month.
4. Water is being supplied two hours daily.
5. Problem: Separation of family members (family fragmentation) and migrant families from other villages has added pressure on the water supply. Everyday new demand is

coming for new water connection but the WSUC is not been able to meet the new demand due to limited capacity (e.g. water storage). The main storage tank has the capacity of 60,000 liters. In 2015, the earthquake damaged the scheme. Now there are problems of water leakage from the storage tank. During festival, they have to provide additional water. The scheme cannot supply water in the high land areas. About 7 households are not receiving water supply even though they have contributed capital and O&M cost.

6. Private connections are metered and are well functioning.
7. There are two VMWs, each of whom are receiving NPR 9,000 per month. One is responsible for the maintenance and other is responsible for the meter reading, which is done by a women worker. A male VMW (Mr. Chandra Bahadur Dulal) who is responsible for the maintenance and repair, received a 21-day training and additional 10-day training on the operation and maintenance of the scheme. According to him, there is a frequent problem of air in the supply pipes.
8. Women technical support service (WTSS) received NPR 10,000 as seed money. There are 30 members in the group. Each member deposits NPR 50 per month. WTSS has NPR 77,000 in their fund. They revolve the money within the members at 15 percent interest rate. The lending is provided for goat raising and poultry, education, and health.
9. According to VDC Secretary Mr. Durga Bahadul Dhungel, other schemes in the VDC are not functioning well. Government-supported schemes are not functional due to problem in O&M and monitoring.

Table F.2. Harre Water Supply and Sanitation Scheme District Sindhupalchok

Support organization	VIS
Location	Sangachok VDC, wards 2 and 7
Number of households	170
Population	847
Batch	VII
Scheme type (technology)	Surface lift (single stage)
Water Supply and Sanitation Users Committee (WSUC) Member	13 (including 4 female members) 4 females, 9 males
Status	Implementation phase completed

Harre WSS scheme is surface single stage lift scheme that provides services to wards 2 and 7 of Sangachok VDC. At present, it is serving 116 Janajati households and 54 upper-caste groups. The operation and maintenance is carried out by one village maintenance worker who is paid NPR 8,000 per month.

Women Technical Support Service: WTTS has 127 members and holds regular meetings every 3 months. Each member is contributing NPR 50 per month to the revolving fund. Women are engaged in saving, credit, small business, and goat raising. The current bank deposit is NPR 100,000 and the loan amount is NPR 162,000. A woman member can take a loan up to NPR 15,000 at 17 percent interest rate for the period of 3 months.

Operation and Maintenance: The main source of O&M comes through water bills. Each household has to pay NPR 160 per month.

Service hours (water distribution time): 6:00 a.m.–9:00 a.m. and 4:00 p.m.–6:00 p.m.

Maintenance of the system: Maintenance of the system has been done three times since the completion of the implementation phase.

VDC's support: VDC has provided support for source protection by Gabion wall (NPR 50,000) and for pump procurement (NPR 200,000).

Toilet: All the households have water-sealed latrines.

Table F.3. Kahun Water Supply and Sanitation Scheme in Kaski Hill District

Support organization	Nepal Red Cross–Kaski (NPRCS–Kaski)
Location	VDC Kahun, wards 1, 2, 3, 7, and 8 Kaski (Hilly region)
Number of households	254
Population	1,291
Batch	V
Scheme type (technology)	Gravity flow System
Water Supply and Sanitation Users Committee (WSUC) Members	11 (3 females, 8 males)
Status	Implementation phase completed

Kahun Water Supply and Sanitation Scheme is located at Kahun VDC wards 1, 2, 3, 7, and 8 of Kaski district (currently Pokhara municipality ward 21). The distance of the scheme from Pokhara is 5.5 km. This area is a dry hill settlement with acute shortage of water. The tripartite implementation phase contract was signed among the support organization—Nepal Red Cross Society (NPRCS) Kaski, Water and Sanitation User's Committee (WSUC), and the Fund Board. This is a multiethnic community with design population projected at 1,903.

Key Observations:

1. The scheme, gravity flow system, observed was Batch V in Kaski District. It was established in 2006. Currently it has 9 water tanks. At the time of establishment, it had 6 water tanks. 254 households were initially included in the design. In a 10-year period, 3 water tanks and 95 households have been added. There are 48 public taps. Project serves the users of wards 1, 2, 3, and lower parts of wards 7 and 8.
2. Households contributed NPR 25,000 for private connection and NPR 5,000 for the community taps. Current tariff rate is NPR 50 for the community taps and NPR 120 for the private taps. Private connections are supplied with meters but there is no meter reading. Water flow in the community tap is controlled by a regulator. Community taps have no meter connection. One community tap is used by 10 households on average.
3. The scheme's water source is 11km far from the intake chamber.

4. VMW is responsible for the cleaning of the tank and water supply. There is regular morning (6:00 a.m.–9:00 a.m.) and evening (5:00 p.m.–6:00 p.m.) water supply for the past 10 years. No chemical is added to the water for its treatment. There has been no sample test for water quality after the completion of the project.
5. For meter reading, a subcommittee is created for each water tank.
6. WTSS: women's group is active in the village. It received seed money from the Fund Board. Members are regularly depositing money in the group account. They contribute NPR 5 per month. Money is revolved within the members for 8–10 months. Current lending of the group is NPR 150,000, and the current deposit is NPR 50,000. Four groups of women jointly started a cooperative that is functioning well.
7. Communities/users have a high level of health and hygiene sensitization.
8. There is high demand for water. Users have identified the new source of water. There is a need for expansion of the project.
9. User meetings are regularly held on a monthly basis. They have maintained the meeting minutes' register and showed the record of general assembly meetings per year to the assessment team. Users committee has a two-year term. Each year, it has to be renewed at the District Development Committee.
10. Problem: Users identified damages and population pressure as core problems. There is no recovery and rehabilitation plan after the life of scheme completes. There are damages in the supply system due to road construction. There is no coordination with the users on potential damage to pipelines from road construction and there is no compensation on the loss.

Table F.4. Panwari Water Supply and Sanitation Scheme in Rupandehi District in Terai Region

Support organization	IRDC
Location	VDC Saljhundi -3 Rupendehi (Terai)
Number of households	215
Population	1,224
Batch	VIII
Scheme type (technology)	Ground lift system
Water Supply and Sanitation Users Committee (WSUC) Members	9 (4 females, 5 males)
WSUC Chairperson name	Shalikram Belbashe
Status	Implementation phase completed

Panwari Water Supply and Sanitation Scheme is located in Ward no 3, Saljhundi VDC of Rupendehi district. The distance of the scheme from Butwal city is 27 km. The tripartite implementation phase contract was signed among the Support Organization (IRDC), Water and Sanitation User's Committee (WSUC), and the Fund-Board. This is a multiethnic community with design population projected at 1,921. This is a groundwater lift system with an overhead tank.

Key Observations:

1. Boring depth: 90 m, Motor depth: 40 m
2. Functionality: well functional. Users receive water for 24 hours. It is serving water demand of 211 households.

3. Users felt that they have better health outcomes since they started consuming piped water from the scheme. They have low incidence of cough and fever.
4. The scheme was constructed on the cost-sharing basis. The Village Development Committee and District Development Committee contributed.
5. VMW is receiving NPR 6,000 per month.
6. Problem: users felt that they have problem of load shedding. They would like to get a generator to address the load shedding problem.
7. They have NPR 500,000 rupees as balance.
8. Women have engaged in the income generating activities. Woman group is socially active in the community. They raise fund by performing dance during marriage ceremony in the community and festivals. They recently went to Pokhara for a one-day trip. In addition, balance is invested within members as revolving fund for Poultry, Goat, Health, Kitchen Garden, etc.
9. Water table is lowering. Earlier water table was at 8–10 feet. Now the water table has gone down to 15–20 feet.
10. Project supported for the toilet construction. At present each household has toilet.

Appendix G. Sector Performance of Rural Water Supply and Sanitation Sector in Nepal

BACKGROUND

Legal, institutional, and regulatory framework

The history of piped water supply system development in Nepal dates back to 1895, when the first Bir Dhara system (1891–93) was commissioned in Kathmandu by then Rana Prime Minister Bir Samsher. This led to establishment of Pani Goshowara Adda, which became the office for water supply. This office facilitated private and community standpipes in a few selected parts of Kathmandu, but the service was highly limited. The water supply services were then gradually extended to a few other prominent places, such as Amalekhgunj, Birgunj, Jajarkot Khalanga, and Palpa, where either the Rana rulers or their relatives resided.

As of 2017, water supply and sanitation services are provided by the government of Nepal, currently under the Ministry of Water Supply and Sanitation (MoWSS). MoWSS was established on December 23, 2015. A separate department was commissioned in 1972—the Department of Water Supply and Sewerage—for regularizing the WSS facilities. The modernization of WSS infrastructure in the country began only after 1972, under the support of the World Bank, which focused on improvement in the urban water supply and wastewater services in Kathmandu Valley. This effort led to the formation of the Water Supply and Sanitation Board in 1974, which was reorganized in 1989 and named Nepal Water Supply Corporation (NWSC). It was assigned the responsibility of organizing, maintaining, and managing water supply and wastewater services in the country. In 2008, the responsibility of operation and management of water supply and wastewater services in Kathmandu valley was transferred to Kathmandu Upatyaka Khanepani Limited (KUKL) under public private partnership. In 2010, the water utility under KUKL is estimated to serve 78 percent of the population in Kathmandu valley (ADB 2010).

Water supply and sanitation (WSS) sectoral policies, acts, rules, and formation orders are the legal basis for functioning of this ministry. Services and actions to be undertaken for water supply and sanitation have been shared among the central and local levels as provisioned by Local Self Governance Act (1999) and continued by the incumbent Constitution of 2015. Among several policies, guidelines, and acts that have been formulated over the past years aimed at improving WSS access and quality, the following two are important for rural WSS:

- Rural Water Supply and Sanitation National Policy (2014) set out the "demand responsive approach" for RWSS provision, cost-sharing principles, inclusion of women in decision making, and roles and responsibilities of different government agencies. This document sets the target for universal RWS coverage by 2017.
- National Hygiene and Sanitation Master Plan (2011) promotes the open defecation free (ODF) movement to achieve total sanitation.

The Department of Water Supply and Sewerage (DWSS) has been given the responsibility of planning, implementation, operation, repair, and maintenance of WSS systems throughout

the country. With the ministry acting as the lead executing agency, DWSS is the lead implementing agency of the Water Supply, Sanitation and Hygiene sector. Apart from the Department, there are Boards, Water Supply Corporation, Committees, Project Directorate, and Water Tariff Fixation Commission as regulatory body for the WSS delivery.

As per the revised Work Division rules (BS 2072) of the government of Nepal, the scope of works vested in the ministry is as follows:

1. Water supply and sanitation related policy, formulation of plans and programs, implementation, monitoring, regulation, and evaluation;
2. Water supply, sanitation, and sewerage;
3. Kathmandu Valley Water Supply Management Board;
4. Kathmandu Upatyaka Khanepani (Valley Water Supply) Ltd.;
5. Kathmandu Valley Water Supply and Sanitation Project Implementation Directorate;
6. Nepal Water Supply Corporation;
7. Melamchi Water Supply Development Board and Melamchi WS Project;
8. Water Supply Tariff Fixation Commission;
9. Administration of Sanitary Subgroup/Civil Group of Nepal Engineering Services.

Nepal has already met the Millennium Development Goal (MDG) targets set in the WASH sector as the result of the joint collaborative efforts of all sector actors and led by the Sector Lead Ministry during the last decade. The ministry is now striving toward achieving the National Target of "Basic Water Supply and Sanitation Facilities for all by 2017."[1] This National Target was set after the government of Nepal approved the terms of reference for a National WASH Program on January 3, 2013. The terms of reference were prepared as a consequence of a sector consultation under the aegis of the Sector Steering Group, held in September 2012.[2] The vision of the program has been stated as "adequate and convenient sanitation and water services to all citizens, for health, dignity, and socioeconomic progress (to be achieved by 2017)." It has incorporated following strategic elements:

- Government of Nepal to ensure through enabling policy environment, technical assistance, financing arrangements, capacity building, and a regulatory framework that citizens of Nepal have access to and use of proper sanitation facilities and safe water for consumption, adequate for hygiene and general cleanliness. Thus,
- Adequate and functional services should be available to households and institutions such as hospitals, clinics, and schools;
- Where required, appropriate public facilities in sanitation and water should be available in markets and other public places frequented by a larger mass of people;
- Adequate arrangements should be in place for the disabled, elderly; and vulnerable.
- Ensure equitable use and distribution of water resources for water supply, and maintain a tariff structure that enforces pay-as-you-use above reasonable basic requirements;
- Protect natural resources in water, water bodies, and wetlands by updating and enforcing environmental and public health regulations;
- At district and national levels, capacity is to be assured for emergency water supply and sanitation. This capacity refers to common concerns such as annual flooding in

Terai districts and diarrhea outbreaks in low-coverage districts or municipalities, as well as to damage to WASH services caused by landslides or earthquakes.

- Government of Nepal to ensure through enabling policy environment, technical assistance, financing arrangements, capacity building, and a regulatory framework compliance with environmentally sound practice for the collection, treatment, and safe disposal and discharge of all categories of waste and waste water.

Similarly, the ministry has finalized a "15-year Development Plan of Nepal WASH Sector" aligning it with the Sustainable Development Goals (SDGs) as declared by the United Nations General Assembly for the next 15-year period. This Sector Development Plan will cover the period 2016–30, in three phases. First phase (2016–20) covers universal access to basic WASH services and improved service levels; the second phase (2021–25) covers improved service levels (medium/high), functionality, and sustainability improvement; and the third phase (2026–30) covers improved service levels and impact assessment. This rolling plan is provisioned to be updated every five years.

CURRENT SITUATION

Water Availability

Nepal is among the richest in terms of water resource availability, which is one of the most important natural resources of the country. The water availability is generally high in most parts of the nation. Even where piped water systems are not available, people are still dependent on traditional sources for water. Such traditional sources have depleted in urban settings due to unplanned development and urbanization. But its prevalence is still very high in rural parts. The three ecological zones of Nepal experience three different traditional sources of water. Residents of the highest regions, the mountains, rely on the natural springs that flow from the Himalayas directly for their daily consumption. The hilly region has spring-fed canyons and natural *muhaan.* The Terai region extensively uses tube wells and dug wells. All these traditional sources support the daily water consumption of people where piped water systems are not accessible.

The WSS sector in Nepal has seen an exponential improvement in the past decades. Achieving MDG goals within the stipulated time frame has been a major milestone. Nevertheless, Nepal still has a way to go. Recent surveys reveal that there has been a significant acceleration in sanitation progress both in terms of access to improved sanitation and, very importantly, a substantial decrease in open defecation. Embedding good hygiene behaviors will take time as well, but it is certainly improving. Drinking water systems have also seen progress but it seems slower compared to sanitation. The sustainability of the systems under operation is also a prime concern for the sector.

As of the 2014 report of the National Management Improvement Project—NMIP (Nepal 2014b), there were 41,205 schemes in operation all over Nepal. Table G.1 shows the status by type of systems and region.

Table G.1. System Status by Region

Region	System Types			
	Total Schemes	Gravity	Surface	Overhead
EDR	8,904	8,768	23	113
CDR	9,680	9,472	81	127
WDR	13,075	12,958	69	48
MWDR	5,169	5,119	24	26
FWDR	4,377	4,358	4	15
Nepal	41,205	40,675	201	329

Note: CDR = Central Development Region; EDR = Eastern Development Region; FWDR = Far-Western Development Region; MWDR = Mid-Western Development Region; WDR = Western Development Region.

Coverage

Table G.2 shows the trend in improvements in access of water supply and sanitation in rural areas of Nepal. It shows continuous improvement in the water supply and sanitation coverage across different regions.

Table G.2. Improvement in Access to Water Supply and Sanitation by Region, 2010–14

Region	2010			2012					Mid-2014		
	Water	San		Total	Water		Sanitation		Water	San	
	%	%	Projected Population	Households	Households	%	Households	%	%	%	Projected Population
Geographic											
EDR	76.4	42.2	6,374,298	1,142,476	885,902	77.5	560,752	49.1	82.45	62.58	5,997,378
CDR	81.3	46.1	9,859,227	1,723,142	1,340,244	77.8	894,612	51.9	85.21	62.77	10,324,734
WDR	84.6	53.5	5,468,946	900,637	791,925	87.9	623,169	69.2	82.84	80.6	5,076,207
MWDR	76.3	30.7	3,646,321	638,510	491,595	77.0	341,692	53.5	80.92	86.29	3,776,833
FWDR	83.32	29.1	2,694,765	432,659	331,282	76.6	170,353	39,4	84.68	78.19	2,660,729
Ecological											
Mountain	77.6	33.6	1,987,700	296,850	221,366	74.6	136,469	46.0	80.19	74.48	1,549,734
Hill	79.9	52.9	12,292,169	2,265,392	1,819,154	80.3	1,450,040	64.0	84.89	87.14	12,220,211
Terai	81.2	35.6	13,763,688	2,261,182	1,800,428	79.6	1,004,069	44.4	84.79	56.93	14,065,936
Nepal	80.4	43.3	28,043,657	4,823,424	3,840,948	79.6	2,590,578	53.7	83.59	70.28	27,835,882

Source: Nepal 2014b.

Note: CDR = Central Development Region; EDR = Eastern Development Region; FWDR = Far-Western Development Region; MWDR = Mid-Western Development Region; WDR = Western Development Region.

The past few decades have seen a substantial number of agencies providing WASH services and the trend is increasing. National Management Information Project (NMIP), under the DWSS is engaged in conducting surveys, managing the database, and publishing the latest information on WASH status on coverage and functionality. The activity is carried out by the divisional and subdivisional offices under direct supervision of NMIP and with close coordination of District Water, Sanitation, and Hygiene Coordination Committee (DWASHCC). The designated entities have updated the information of public and private sector at 36,042 wards of 58 municipalities and 3,815 VDCs in 2014.

Nepal has achieved basic level coverage of 83.59 percent in water supply and 70.28 percent in sanitation services by 2014. In 2010, it was 80.4 percent and 43 percent, respectively. Figures indicate that in comparison with sanitation, progress in water supply services seems to have a constant pace. Water supply coverage is more than 80 percent in all development regions with Central Development Region 85.21 percent (highest) and Mid-Western Development Region (MWDR) 80.92 percent (lowest). Sanitation coverage was highest in MWDR with 86.29 percent and lowest in Eastern Development Region with 65.58 percent.

Table G.3. Status of Water and Sanitation Coverage by Ecological Zone, 2010 and 2014 (percentage)

	Mountain		Hill		Terai	
	2010	2014	2010	2014	2010	2014
Water Supply	77.6	80.19	79.9	84.89	81.2	84.78
Sanitation	33.6	74.48	52.9	87.14	35.6	56.93

Table G.4. Status of Water and Sanitation Coverage by Development Region, 2010 and 2014 (percentage)

	Eastern Development Region		Central Development Region		Western Development Region		Mid-Western Development Region		Far-Western Development Region	
	2010	2014	2010	2014	2010	2014	2010	2014	2010	2014
Water Supply	76.4	82.45	81.3	85.21	84.6	82.84	76.3	80.92	83.32	84.68
Sanitation	42.2	62.58	46.1	62.77	53.5	80.6	30.7	86.29	29.1	78.19

This comparison shows incremental increase in coverage in all zones in both water supply and sanitation except in the Western Development Region's water supply. The progress is praiseworthy, but as mentioned, pace of water supply coverage seems nominal compared with sanitation. Another notable progress has been the official declaration of ODFs of 1 zone, 15 districts, 17 municipalities, and 1,615 VDCs by 2013-14 These data verify that the WSS sector is undeniably advancing, but it has a long way to go to achieve the ambitious vision of providing "adequate and convenient sanitation and water services to all citizens, for health, dignity, and socioeconomic progress" by 2017.

Functionality of Schemes

Several schemes to improve the Water Supply and Sanitation (WSS) sector have been functioning throughout the country. But their functionality and effectiveness in the truest sense are yet to be observed. The underlying cause of the low functionality rates can be attributed in part to inadequate O&M management. For instance, it is reported that about one third of the schemes have a Water Supply and Sanitation Technician to take care of the scheme, almost same percentage of schemes have registered Water and Sanitation Users Committees, and less than 5 percent of the schemes have an O&M fund. The functionality of these schemes is depicted in table G.5.

Table G.5. Functionality of Schemes

Region	Number of schemes	Percentage of the schemes									
		Whole-year supply	Well-functioning	Need minor repair	Need major repair	Need rehabilitation	Need reconstruction	Have WSST	Adequate tools	WSUC registered	O&M fund
Geographical											
EDR	8,904	65.3	27.2	37.4	9.2	19.0	7.1	30.9	30.2	35.9	4.8
CDR	9,680	71.7	25.0	36.4	10.4	20.2	7.9	29.6	35.5	44.5	3.7
WDR	13,075	69.7	24.3	39.5	7.9	19.9	8.4	31.3	33.2	30.9	3.8
MWDR	5,169	65.8	25.9	32.0	9.3	19.6	12.9	37.8	36.5	37.1	6.3
FWDR	4,377	64.5	25.5	34.7	10.4	20.6	8.7	30.1	42.4	49.6	5.9
Ecological											
Mountain	5,404	56.5	22.2	36.1	10.7	20.1	11	23.4	30.2	28.9	4
Hill	33,967	68	24.5	36.3	8.6	19.1	8.2	30.5	33.1	37.1	3.9
Terai	1,834	65	34.1	31.1	9.2	18.8	6.8	57.9	52.9	56.1	11.6
Nepal	**41,205**	**68.2**	**25.4**	**36.1**	**9.2**	**19.8**	**8.6**	**31.5**	**34.5**	**37.9**	**4.5**

Source: Ministry of Urban Development, National Management Improvement Project, 2014.
Note: CDR = Central Development Region; EDR = Eastern Development Region; FWDR = Far-Western Development Region; MWDR = Mid-Western Development Region; WDR = Western Development Region; WSST = Water Supply and Sanitation Technician; WSUC = Water Supply and Sanitation User Committee.

Several more issues need to be addressed immediately—with active involvement from all the concerned stakeholders—for the WSS sector in Nepal to improve. The safety of drinking water is an issue that affects the potential efficacy of the WSS schemes. The equity of access to WSS, which varies significantly according to location, wealth quintile, ethnicity, and level of education, also poses a major challenge for development in the sector.

A major issue is to reach the unreached. There is varying data on the unreached population regarding WSS; according to a rough estimate, 7–15 percent of the population lacks WSS. This figure spans ecological zones, and urban and rural areas. Though the estimates are not accurate, it is undeniable that strong mechanisms are needed to reach the unreached and intervene. All these issues must be incorporated and addressed in future WSS plans and programs.

Water Quality

While access to water has increased significantly over the past decade, the quality of the water might not be the ideal and it remains as a big challenge. Access to systematic piped water systems seems to be thriving, but the water is not always safe. With inadequate management of the water supply, much of the improved or even treated/safe water may be contaminated during transmission, distribution, and household use. Only 12–15 percent of the population have access of treated water (Ministry of Urban Development 2014, 23).

NMIP surveys do not include data on water quality, which is a limitation of its reports and studies (Ministry of Water Supply and Sanitation 2015). Water quality assessment is regarded to be unsystematic and irregular. Realizing the importance of water quality monitoring and analysis, the government of Nepal formulated and implemented the National Drinking Water Quality Standards, 2005 (NDWQS), provisioned by the Water Resources Act, 2049, Clause 18 and Sub Clause 1. Following these guidelines, the Rural Water Supply and Sanitation Fund Development Board (Fund Board) has been conducting water quality monitoring and analysis activities. Its activities are conducted at different phases of the schemes under operation in different parts of Nepal. Furthermore, the Ministry of Health and Population has undertaken the role of promoting health and hygiene through water quality surveillance and emergency response. As an agency responsible for water quality surveillance, the ministry has formulated water surveillance guidelines, which are used at the local levels and they report back on the adherence of water quality standards. Its work on water, sanitation, and hygiene services is guided by National Health Sector Plan II (2011–15).

However, due to the lack of an effective monitoring and surveillance system, adherence to NDQWS has been nominal. This has been creating serious health risks to the citizens across the sector. Water supply is typically sporadic; many towns have access to water only a few hours each day. People who do not have access to pipe systems use traditional water sources. Such sources are typically unprotected, so water quality is usually poor. Inadequate water services and poor sanitation habits have resulted in people using nearby, but often contaminated, sources. For instance, arsenic is a silent killer in Terai districts because people resorting to groundwater are vulnerable to arsenic poisoning.[3]

Incidence of Diarrhea

The prevalence and treatment of diarrhea in Nepal is presented in table G.6. Annual Reports of the Department of Health Services indicate that incidence of diarrhea was 598 per 1,000 children below five years old in 2009–10, and it reduced to 502 in 2014–15.

Table G.6. Prevalence and Treatment of Diarrhea in Nepal, 2009–15

	2009–10	2010–11	2011–12	2012–13	2013-14	2014–15	Change between 2009–10 and 2014–15, %
Incidence of diarrhea per 1,000 children under five years old (new cases)	598	500	528	578	629	502	-16
Children under five years old with diarrhea suffering from dehydration—facility, outreach, and community level (%)	-	-	-	-	-	21	-
Children under five years old with diarrhea suffering from dysentery—blood in stool (%)	-	-	-	-	-	12	-
Children under five years old with diarrhea treated with zinc and ORS (40)[a] (%)	48	88	79	97	98	93	+94

Source: Annual Reports, Department of Health Services.
Note: ORS = [[Oral Rehydration Salts]]; — = not available.
a. These indicators are from NHSP-2, results framework; the figure in parenthesis indicate target for 2015.

Continuity of Services

There is no systematic assessment of continuity of water supply in Nepal. The water supply hours vary by service provider and scheme type. Comprehensive assessment of water supply continuity in Nepal is needed for effective project formulation and implementation.

Risks

Water systems are found to be dysfunctional mainly due to inadequate application of water safety principles, negligence, and funding issues, and possibly because of a lack of institutional, technical, and financial capacity of the users' committee to undertake major repairs. These issues need to be resolved with the development of a dedicated national program and institutional support mechanisms. There is no assurance that these actions will be undertaken so the risk of future dysfunctionality of WSS infrastructures remains.

Challenges

The Constitution of Nepal has envisaged complete decentralization of all aspects of planning, implementation, operating, and maintaining water supply, sanitation, and hygiene projects to the federal, provincial, and local tiers of government. Adhering to the constitution's principles, efficient institutional mechanism is required for the systemic overhaul and core restructuring of the existing system. Models are to be developed and transformed into action, which is a challenge for a developing nation such as Nepal.

In addition, water supply services do not yet reach more than 15 percent of the population and about 30 percent have no access to sanitation services, most of whom are located in clusters in remote and rugged terrains, or disadvantaged and vulnerable communities that lack the power, resources, and skills to successfully secure water supply, sanitation, and hygiene services. Whatever the reasons, they must be provided the facilities for which they are entitled.

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[1] http://mowss.gov.np/content/about-ministry-of-water-supply-and-sanitation.html, (accessed February 4, 2017).

[2] http://www.seiu.gov.np/index.php/downloads/cat_view/3-sector-reports, (accessed February 4, 2017).

[3] Highly arsenic-affected districts in the Terai region include Banke, Bara, Bardiya, Parsa, Rautahat, Saptari, Sarlahi, Siraha, and Sunsari.

Appendix H. Economic and Financial Analysis

Table H.1. Average Time Saving
(Hours per household—HH—per day)

Technology	Average time saving (Hours/HH/day)			Estimated at appraisal (Hours/HH/day
	Maximum	Minimum	Average	
Gravity	4.1	3.7	3.8	1.8
Shallow tube well	1.7	1	1.2	1.35
Dug well	4.2	1.9	2.6	1.35
Lift	9.24	0.94	3.28	NA
Rain water harvesting	6.16	3.29	4.8	1.8
Average	5.08	2.16	3.13	1.57

Source: World Bank 2013, 27.
Note: Information regarding Gravity, Shallow tube well and Dug well schemes are based on the ICR and those related with Lift and Rainwater harvesting are based on additional information provided by the Fund Board to the IEG team

Table H.2. Economic Rate of Return (ERR) and Net Present Value (NPV) Estimates by Technology

Parameters	Gravity	Shallow Tube well	Dug well	Lift	Rainwater harvesting	All schemes	Project
At project closure (2012)							
ERR (%)	40.15	56.54	45.38	28.11	28.65	26.74	26.66
NPV (NPR Million)	1,685	49	94	154	20	1,943	1,407
B/C Ratio	2.83	4.35	3.21	2.08	1.99	1.92	1.91
At project appraisal (2004)							
ERR (%)	23.45	55.51	41.81		4.79	24.57	16.7
NPV (NPR Million)	866	141	61		-16	1,052	542
At Additional Financing (2008)							
ERR (%)	40.15	56.64	45.38	18.13	13	37.42	25.69
NPV (NPR Million)	1,685	49	94	9	7	1,845	1,362

Source: World Bank 2013, 30.
Note 1: Lift schemes were not included in the original project design, so ERR was not estimated at appraisal.
Note 2: Information related with ERR, NPV and B/C Ratio at closure (2012) is based on additional information provided by the Fund Board to the IEG team.

Appendix I. Government Budget Allocations in the Rural Water Supply and Sanitation Sector

Table I.1. Budget Allocations for the Ministry of Water Supply and Sanitation

(NPR, thousands)

	2014–15 Actual Expenditure	2015–16 Revised Estimate	2016–17 Budget Allocation	Source		
				Government of Nepal	Foreign	
					Grant	Loan
Recurrent	822,661	1,116,571	1,322,467	1,109,432	122,174	90,861
Capital	9,004,069	11,152,283	20,751,913	9,801,971	771,938	10,178,004
Total	**9,826,730**	**12,268,854**	**22,074,380**	**10,911,403**	**894,112**	**10,268,865**
US$, thousands	**91,389**	**114,100**	**205,292**	**101,476**	**8,315**	**95,500**

Source: Budget 2016–17.

Table I.2. Budget Allocations for the Ministry of Federal Affairs and Local Development

(NPR, thousands)

	2014–15 Actual Expenditure	2015–16 Revised Estimate	2016–17 Budget Allocation	Source		
				Government of Nepal	Foreign	
					Grant	Loan
Recurrent	39,646,083	48,016,571	88,834,466	82,214,102	5,965,182	655,182
Capital	7,903,939	20,121,280	27,903,442	16,043,814	8,941,673	2,917,955
Total	**47,550,022**	**68,137,851**	**116,737,908**	**98,257,916**	**14,906,855**	**3,573,137**
US$, thousands	**442,215**	**633,682**	**1,085,663**	**913,799**	**138,634**	**33,230**
Rural Drinking Water and Sanitation Program						
Recurrent	94,929	204,166	160,902	160,152	8,250	
Capital	313,910	398,070	438,105	430,605	7,500	
Total	**408,839**	**602,236**	**599,007**	**590,757**	**15,750**	
US$, thousands	**3,802**	**5,601**	**5,571**	**5,494**	**146**	
Rural Drinking Water and Sanitation Project in Western Nepal						
Recurrent	109,447	154,686	166,728	57,229	109,499	
Capital	126,230	219,739	319,272	143,143	176,129	
Total	**235,677**	**374,425**	**486,000**	**200,372**	**285,628**	
US$, thousands	**2,192**	**3,482**	**4,520**	**1,863**	**2,656**	

Source: Budget 2016–17.

Appendix J. Coverage under Nepal Second RWSS Project

The water supply infrastructure by region, technology, and ecology, presented table J.1, shows

i. The project supported schemes mostly in Central and Western Nepal. Central and Western Nepal districts are currently better on development indicators compared to the Mid-Western and Far-Western districts. The programs reached only 119 schemes in Mid-Western and Far-Western regions and supported 360, 355, and 236 schemes in Central, Western, and Eastern region districts, respectively.

ii. The largest number of schemes are gravity flow system (gravity and groundwater).

iii. The highest number of schemes were constructed in the hill districts where the focus was on gravity flow water. During summer season, water sources dry up and the only option is to lift water from the river. Hence, more lift system schemes are needed to meet the water needs of people who are more marginal and poor to cover needs in the drier summer season.

Table J.1. Distribution of Schemes by Region and Technology

Region	Ecology	Technology							Grand Total
		GR	GR (Yard)	GW, DTW	GW, DW	GW, STW	Lift	RWH	
Central	Hill	264	1				5		270
	Mountain	46					1		47
	Terai	50		3	22	121	5		201
Central Total		**360**	**1**	**3**	**22**	**121**	**11**		**518**
Eastern	Hill	191		1	1		2		195
	Mountain	23							23
	Terai	22		5	11	19	23		80
Eastern Total		**236**		**6**	**12**	**19**	**25**		**298**
Far-Western	Hill	83							83
	Mountain	16							16
	Terai	20				6	1		27
Far-Western Total		**119**				**6**	**1**		**126**
Mid-Western	Hill	64							64
	Mountain	31							31
	Terai	24	1	1		9	1		36
Mid-Western Total		**119**	**1**	**1**		**9**	**1**		**131**
Western	Hill	306					1	12	319
	Mountain	3							3
	Terai	46				15	8	1	70
Western Total		**355**				**15**	**9**	**13**	**392**
Grand Total		**1,189**	**2**	**10**	**34**	**170**	**47**	**13**	**1,465**

Note: DW = dug well; DTW = deep tube well; GR = gravity; GW = groundwater; RWH = rain water harvesting; STW = shallow tube well.

Table J.2. Distribution of Schemes by Region and Ecology

Region	Technology	Ecology			
		Hill	Mountain	Terai	Grand Total
Central	GR	264	46	50	360
	GR (Yard)	1			1
	GW, DTW			3	3
	GW, DW			22	22
	GW, STW			121	121
	Lift	5	1	5	11
Central Total		**270**	**47**	**201**	**518**
Eastern	GR	191	23	22	236
	GW, DTW	1		5	6
	GW, DW	1		11	12
	GW, STW			19	19
	Lift	2		23	25
Eastern Total		**195**	**23**	**80**	**298**
Far-Western	GR	83	16	20	119
	GW, STW			6	6
	Lift			1	1
Far-Western Total		**83**	**16**	**27**	**126**
Mid-Western	GR	64	31	24	119
	GR (Yard)			1	1
	GW, DTW			1	1
	GW, STW			9	9
	Lift			1	1
Mid-Western Total		**64**	**31**	**36**	**131**
Western	GR	306	3	46	355
	GW, STW			15	15
	Lift	1		8	9
	RWH	12		1	13
Western Total		**319**	**3**	**70**	**392**
Grand Total		**931**	**120**	**414**	**1,465**

Note: DW = dug well; DTW = deep tube well; GR = gravity; GW = groundwater; RWH = rain water harvesting; STW = shallow tube well.

Table J.3. Population Served and Cost Estimates

Total households served	190,172
Total population served	1,140,892
Indigenous population	388,821
Percentage of indigenous population	34.1
Dalit population served	164,841

Percentage of Dalit	14.4
Average number of WSUC members	10
Average number of female WSUC members	4
Percentage of female members	40
Average O&M fund (NPR)	68,312
Maximum O&M fund (NPR)	*394,584*
Minimum O&M fund (NPR)	*9,400*
Total tap stands	30,451
Fund Board average scheduled amount (NPR)	1,499,545
Fund Board average actual amount (NPR)	1,535,816
Deviation	(36,271)
Average community cost contribution (NPR)	540,830
Percentage of community cost contribution as compared with Fund Board actual amount (NPR)	35

Appendix K. Key Findings of Baseline Studies

The project conducted several baseline studies through its service agencies to measure health knowledge, attitudes, practice and impact in project villages on a sample basis. These studies were based on both primary and secondary information. They applied participatory tools and methods, that is, Participatory Rural Appraisal, and Rapid Rural Appraisal consisting of household interview, focus group discussion, key person interview, observation, and case studies. Structured and semistructured questionnaires were used during these studies. The study teams conducted site appraisals using observation checklists, questionnaires, and other data enumeration formats to solicit the required information.

The impact study teams conducted key persons' interviews with representatives from Water Supply and Sanitation User Committees, Women Technical Support Services group members, Mother and Child Tap stand Group members, nonformal education participants/facilitators, school teachers, local leaders, and, representatives from the poorest/disadvantaged/occupational groups among the minority groups. During these interviews, the information collected at the time of site appraisal was verified. In addition to interviews and discussions, a review of account keeping, record keeping, minutes, and other documents maintained by the community were checked. Moreover, to facilitate the evaluation and carry out analysis of the procedures and processes followed during scheme implementation, the team used focus group discussions and individual household surveys to ascertain recommendations for future improvements. Before preparing the final report, the team also interviewed the concerned support organization staff to obtain their views and feedback on the findings.

Following is a summary of key findings of some of the major studies:

1. **The Health Knowledge, Attitudes, and Practice (KAP) Study of Batch IV:** This study was conducted by a joint venture of Environment and Resource Management Consultant Pvt. Ltd. and MEH Consultants (P.) Ltd. The baseline study covered 1,600 households in 73 schemes, and the impact study covered 1,540 households in 46 schemes. Stratified random sampling was used to select the schemes. The main findings of this study were as follows:

a. Handwashing practice before eating increased 22 percent.
b. More than 60 percent of the scheme population had built and used toilets, compared with about 25 percent before implementation of the project.
c. There were 90 reported cases (6 percent) of diarrhea following the project intervention, compared with 414 (26 percent) cases before the project interventions. There was thus a decrease in diarrhea cases by nearly 77 percent due to project intervention.
d. The beneficiaries' level of knowledge on causes of diarrhea increased by about 14 percent, compared with the baseline.

2. **Immediate Impact Study Report on Community Development Activities (CDA), Batch VI, July 2011:** This study was conducted in 70 schemes out of the total 297 completed schemes of Batch VI (about 24 percent of the total completed schemes). Stratified random sampling was applied to select the schemes. There was no baseline conducted for these schemes and this study was more like a late baseline study. It cannot be called an impact study as it was titled. Key findings of this study were as follows:

a. In terms of handwashing practices using soap in four critical junctures, it was found that 92 percent households used before meals, 75 percent after meals, 62 percent after working in the field, 45 percent before serving meals, and 38 percent before feeding babies.
b. 65 percent of households practiced disposing household-induced solid wastes in manure pits. 63 percent of households disposed or used the wastewater in kitchen gardens. 92 percent of households kept water vessels and cooked food covered in the kitchen.
c. 68 percent of households were aware that use of safe drinking water prevents water-borne diseases. 56 percent of households were aware that rinsing hands with soap before meals prevents water-borne diseases.
d. For treatment of water-borne diseases, 79 percent of households took oral rehydration salts (ORS) followed by taking the patient to government health centers (66 percent).
e. 69 percent of the people had access to hygiene sanitation, which increased by 50 percent in the project area.
f. The study observed 79 children below five years old with diarrhea, but did not estimate incidence of diarrhea per 1,000 people.

3. **Immediate Impact Study Report on CDA, Batch VII, July 2011:** The study was conducted in 90 completed schemes from Batch VII. Stratified random sampling was applied to select the schemes. The communities were scattered in several districts of Central, Eastern, Western, Mid-Western, and Far-Western development regions of Nepal, and the strata were defined accordingly. As a result, the representative sample schemes comprised regional balance, geographical location, and representation of different support organizations. The sample scheme was designed to ensure that ethnic group, poor and deprived group in a scheme were covered. However, there was no baseline study conducted and this could be considered as a late baseline study instead of an impact study. Key findings of this study were as follows:

a. 83 percent of households interviewed practiced cleaning toilets. 84 percent of households practiced nail-cutting and wearing clean clothes. 94.4 percent of households practiced covering food. All households practiced cleaning raw food before cooking.
b. 97 of the percent people knew the causes of diarrhea and 96 percent had knowledge of how to prevent diarrhea.

c. More than 80 percent of the people practiced handwashing before meals, but handwashing after defecation was practiced by only half of the population. About 90 percent washed their hands with disinfectant materials, such as soap and ash.
d. 84.7 percent people have access to hygiene sanitation in the project area, which increased by 77.1 percent.
e. Prevalence of diarrheal disease morbidity decreased from 78 percent in the beginning of the project villages in Batch VII to 14 percent at the end of the project in those villages, which was a decrease of 86.4 percent in the community.

4. However, while this study states that there was a decrease in the prevalence of diarrheal disease morbidity of 86.4 percent, it does not reference the baseline. There was no baseline study conducted and this impact study estimated the baseline ex post at the time of conducting the impact study.

5. **Impact Study on CDA, Batch IX:** This study was carried out by Integrated Development Consultant Pvt. Ltd., to study the baseline on community development (including health, hygiene, and sanitation) activities (CDA) under Batch-IX schemes. The CDA baseline survey was conducted in 115 schemes (24.8 percent) out of the total 463 schemes of Batch IX. To select the schemes, stratified and multistage sampling was applied purposively. No baseline study was conducted so this could be considered a late baseline study, instead of an impact study. The following are the key findings of this study:

a. Access and use of toilet, personal hygiene situation, household sanitation, school sanitation, and environmental sanitation were at moderate level. Though 1,339 (58.2 percent) of families had toilets in their homes, only 345 (15 percent) of the families had improved toilet facilities, that is, water-sealed toilets.
b. Field survey and observation of the communities showed that only 14 percent of the households were in an open defecation free area. Most of the Dalits and disadvantageous ethnic people, who were less educated and less aware of health and hygiene, did not have a toilet in their home.
c. Handwashing practice after defecation was found better: 69.4 percent of the people always washed their hands after defecation and 64.1 percent always washed their hands after washing children's feces. But only 35.5 percent washed their hands; similarly, 35.9 percent washed their hands before feeding children.
d. Prevalence of transmissible diseases was found to be 8.2 percent during the survey; among them prevalence of water-borne diseases was 6.3 percent and prevalence of diarrhea was only 3 percent.

6. **Achievements of Rural Water Supply and Sanitation Projects Implemented by the RWSSFDB, July 2011:** This was an independent study by freelance consultants, Method, and was conducted for Batches V–VII. It was an assessment of completion reports,

baseline reports, documents, MIS reports, issues-based occasional reports, aid memoirs, personal discussion with Fund Board staff, World Bank and other stakeholders, and field visits. It showed that after project intervention, 96 percent of the beneficiaries used soap or ash for handwashing after defecation as opposed to 72 percent recorded in the baseline. It also showed that before the project, only about 25 percent of the households were using latrines, which increased to 65 percent. Overall occurrence of diarrhea was about 25.9 percent, which has come down to 5.9 percent.

Appendix L. Borrower Comments

pp 5, Para 20: Local Governance Act 1999 empower VDCs legally to implement water supply and sanitation projects; whereas Water and Sanitation User Committee (WSUC) of beneficiaries registered under District Water Resource Act implement water supply schemes under RWSSP II. The report, thus points out that it is inconsistent legally to takeover WSUC implemented schemes by VDCs for their sustainability after implementation phase. WSUCs are not parallel to VDCs; rather these are grass root organizations covering part of VDC's populations as beneficiaries. WSUCs implement schemes in close communication with VDCs; for example out of 63 schemes sampled in Immediate Impact Study of Batch V of RWSSP II, some 58, 52, 56 and 56 schemes communicated information on scheme agreement, scheme's progress, scheme's completion and selection of scheme respectively to the VDC/DDC (Karki, 2009). Also, sustainability of the Fund Board schemes implemented through WSUCs is higher than that of the other schemes. The sustainability of the schemes was rated high (93%) in the most recent sustainability studies. Functionality of the schemes was 96% against a national functionality rate of 48% (as per National Management Information Program sector status report 2011).

pp 10, **Mainstreaming Fund Board Approach**:

It is worth to mention observation of ICRR, 2013 in this regard. Rural Water and Sanitation National Policy, strategies and strategic Action Plan 2004 has embraced the concept of development phase, community contribution, demand driven approach, women empowerment and economic development of the communities served by the RWSSP schemes, which were the key elements of the Fund Board model. Other donors, such as the ADB and FINNIDA also have adopted the features of the Fund Board modality such as community contribution, social mobilization, facilitation services from NGOs and to some extent, the community procurement system. Upfront collection of O&M funds by the community before the construction of the schemes is another good practice adopted by the Fund Board, which is being adopted gradually by other service providers in the sector. At the policy and strategy level, Fund Board approach is thus adopted.

As compared to 25.4% functional schemes at national level (Appendix G: Table 5), Fund Board schemes as per Long Term Sustainability more than 90% are sustainable (Para 74). This is mainly due to community ownership (demand led, community managed approach), SOs support in community capacity building, cost sharing for construction and O&M fund, third party monitoring etc. Good practices are being gradually picked up by other agencies in the sector. This report also accepts that principles of the Fund Board approach have been to some extent adopted by government as well as donors at implementation level too (pp 12, Table 1).

pp 10, Para 41: The Fund Board staff size is relatively small with 30 professional staff and 18 support staff implementing 500 to 600 schemes in one batch spanning over two years. Highly dedicated and skilled staffs of the Fund Board were able to work even during prevalent conflict situation of the country. However, there is strong need of knowledge and skill enhancement trainings/exposure visits to the Fund Board staffs

including the Board Members, policy makers (MoWSS, MoFALD, MoF, NPC etc.) and concerned stakeholders

pp 16, Para 63: **Economic Rate of Return (ERR)**: It is fine that currently estimated ERR is higher than estimated during appraisal. On the benefit side, assumed incremental water consumption 13.8 to 43.2 LPCD seems to be on higher side. Instead, if we get actual LPCD figure from larger numbers of schemes of RWSSP II, it will be more representative. Also on the cost side, assumed per capita O&M cost for gravity at NPR 72 does hardly take care of salary of VMW not to talk of additional O&M cost. However, IEG study in their report has without any comments on estimated parameters and assumptions, agreed and presented ERR estimated by the ICR Report. There is need to estimate ERR incorporating average figures estimated for large and diversified sample.

P18, Para 75: IEG mission has generalized based on their field visit and observation of few water supply schemes that continuation of women members in the WSUCs is doubtful. Studies conducted with representative sample size, point out that all WSUC is institutionalized (ETA Consult, 2011). Female representation in WSUC is 33% or above. Besides, there is Mother Child Tap Stand Group (MCTSG) representating each and every beneficiary households to take care of water supply and health hygiene and sanitation. Further, Jeevika Karyakram/Women Technical Support Services (WTSS) is a solely women group focused on income generating activities, which also contributes to sustainability of the schemes. On the whole, women's representation in the Fund Board's schemes is all-around and their role in the direction of sustainability is outstanding.

P18, Para 76: The design life of RWSS schemes is 15-20 years. Therefore, many of the RWSSP I schemes have already completed or about to complete project lives. Further, country's topography, environmental degradation led flash floods and natural hazards play havoc role on water supply schemes. In consideration to above mentioned risks the Fund Board also initiated scheme insurance on pilot basis of Batch V to Batch VIII schemes against flood, fire, landslide and earthquake. Insurance premium was about NPR 5000 per year per scheme or about NPR 3-4 per household per month. However, due to non-continuity in the premium payment, WSUCs of damaged schemes could not claim damages after the mega-earthquake of 2015. The fact is pointed out by this report as well in Para 78. The Fund Board is in the process of mainstreaming the concept of scheme insurance, aimed to take care of natural hazards led damages in the schemes.

pp19, Para 78: Out of 921 schemes constructed by the Fund Board in the14 severely earthquake affected districts; SOs reported 837 schemes were damaged by earthquake. Out of which, 468 damaged schemes have been contracted with SOs for detail Survey Design and Cost Estimate. Rehabilitation &Reconstruction (R&R) works for remaining 369 damaged schemes will be initiated in the next phase subject to availability of budget. Out of 468 damaged schemes contracted for Survey Design and Cost Estimate, contract agreements have been already signed with SOs and communities for the R&R works of 162 schemes.

Lessons Learnt:

The report suggests need to prepare and agree on an explicit O&M Plan with the community at the development phase. Under Community Action Plans (CAP) there A1 to A15 activities for which plans are prepared during Development Phase by the community and implemented in the Implementation Phase. O&M plan is one of these activities. Besides, it suggests catering to demand for higher service level and water quality management, which is highly laudable.

Explicit mention and discussions of innovative approaches namely Jeevika Karyakram/WTSS, Jagaran Karyakram/Social Accountability and Scheme Insurance, which helped to support achievement of the PDO, seem to be missing in the report. Jeevika Karyakram mobilizing savings and credit at the women's group level contribute to financial inclusion as well as women empowerment through livelihood support programs. Jagaran Karyakram addresses issues like governance and accountability of the schemes including grievance handling at the local level. Similarly, scheme insurance improves work efficiency and covers risk against natural hazards at development phase, implementation phase and post implementation phase of the schemes.

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