Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 07-Oct-2019 | Report No: PIDISDSA25579
BASIC INFORMATION

A. Basic Project Data

Country | Project ID | Project Name | Parent Project ID (if any)
Kiribati | P162938 | South Tarawa Water Supply Project | 

Region | Estimated Appraisal Date | Estimated Board Date | Practice Area (Lead)
EAST ASIA AND PACIFIC | 07-Oct-2019 | 12-Dec-2019 | Water

Financing Instrument | Borrower(s) | Implementing Agency
Investment Project Financing | Republic of Kiribati | Ministry of Infrastructure and Sustainable Energy

Proposed Development Objective(s)

The proposed PDOs are to increase access and quality of water supply services, and to improve the operational performance of the water supply services provider, in South Tarawa.

Components

- Improvement of Water Supply Services
- Institutional Strengthening and Implementation Support
- Water, Sanitation and Hygiene Awareness
- Project Management Unit
- Sanitation Pilots
- Contingencies

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

| Total Project Cost | 58.12 |
| Total Financing | 58.12 |
| of which IBRD/IDA | 15.00 |
| Financing Gap | 0.00 |

DETAILS

World Bank Group Financing
B. Introduction and Context

Country Context

1. **The Republic of Kiribati is one of the smallest, most remote and geographically dispersed countries in the world.** The country consists of 32 low lying coral islands and one raised coral island in three main island groups - namely the Line Islands, Phoenix Islands and Gilbert Islands. Most islands are no more than two meters above mean sea level and only a few hundred meters wide. As such, they are at the forefront of climate change. The capital, South Tarawa, is about 4,000 kilometers from the major trade markets of Australia and New Zealand. The total population of Kiribati, estimated at 106,000 in 2015, is spread amongst 167 rural villages and one urban area on 21 islands across some three million square meters. Forty five percent of the country’s population lives in rural areas.

2. **These geographical features create significant human development and economic growth challenges.** Kiribati has a limited economic base, dominated by (i) investment income from its sovereign wealth fund, the Revenue Equalization Reserve Fund (RERF), (ii) the sale of fishing license fees, (iii) remittances, and (iv) aid flow. Only around 20 percent of the country’s population is formally employed.
in the cash economy, with 80 percent of the jobs provided by the public sector. Food security relies largely on subsistence agriculture and fisheries. Despite improvements in revenues in recent years, Kiribati’s Human Development Index (HDI) ranking is 137, and Human Capital Index (HCI) ranking is 113, both amongst the lowest in the Pacific region. According to the last available Household Income and Expenditure Survey (HIES) conducted in 2006, poverty was widespread in Kiribati.

3. **Despite its relatively privileged position as gateway to international markets, South Tarawa suffers major development challenges.** Located on the atoll of Tarawa, South Tarawa, the country’s only urban center, spans a string of very densely populated coral islets connected by several causeways. Its population is expected to grow further from 58,000 in 2016 to 96,000 in 2040. Per the 2006 HIES, the country’s basic needs poverty was concentrated in South Tarawa, where the rate reached about 24 percent. However, South Tarawa provides opportunities for cash employment and consumption, as well as access to higher education and specialized social services that is not available elsewhere in Kiribati. This has made the district a magnet for internal migration from the outer islands, further increasing population density and related urban development challenges. In 2012, it was estimated that half of South Tarawa’s population was living in informal areas.

4. **The country’s development aspirational statement, Kiribati 20-year Vision 2016-2036, views fisheries and sustainable tourism as key productive sectors on the long term.** The provision of adequate water supply and sanitation services, and as a result the cleaning of urban and coastal environments, will be critical to the development of sustainable tourism. Kiribati’s Government Development Plan (2016-2019) commits to improve access to quality climate change resilient infrastructure in urban and rural areas. The strategies to achieve this Goal include (i) the improvement of water security for communities through development of water supplies from ground resources and rainwater harvesting, and the exploration of solar-powered seawater desalination by reverse osmosis; and (ii) the promotion and implementation of sanitation programs.

5. **Gender differences are strongly embedded in Kiribati culture and tradition.** Kiribati society is generally patriarchal. Women perform the vast majority of unpaid domestic work, and husbands hold considerable authority over the types of activities their wives can exercise and women’s reproductive health rights are limited.\(^1\) Overcrowding in many areas of South Tarawa is contributing to stresses faced by women and girls. Women’s involvement in political, social and economic activities is promoted through many gender equality commitments by the government. Kiribati is a signatory to the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and has committed to achieve gender equality and advance women, including through the Kiribati Development Plan 2016-2019. A National Women’s Policy is currently under development.

### Sectoral and Institutional Context

6. **Access to safe water supply and improved sanitation is a major issue in Kiribati.** Per recent data (WHO/UNICEF JMP, 2017), 64 percent of the population in Kiribati has access to a basic water supply

\(^1\) ADB, 2017a. TA-9200 KIR: South Tarawa Water Supply Project (49453-001) – Project Preparatory Technical Assistance (PPTA) Gender and Social Inclusion Action Plan
service while only 40 percent have access to basic sanitation services. There are wide disparities in access between urban and rural areas: 90 percent of the urban population in Kiribati (which mostly overlaps with South Tarawa population) has access to a basic water supply service,\(^2\) about twice the level of access across rural areas, i.e. Kiribati’s outer islands. Outside of South Tarawa and Kiritimati island, there is minimal formal water and sanitation infrastructure and people mostly rely on household-based provision. Improved sanitation coverage represents only 49 percent in urban areas, and 32 percent in rural areas. Open defecation on beaches is widely practiced across the country.

7. **Despite the presence of a centralized water supply system, access to safely managed water supply services remains very limited in South Tarawa.** South Tarawa’s reticulated water supply system covers about two thirds of its population and is operated by the Public Utility Board (PUB).\(^3\) However, water is only supplied up to two hours every 48 hours and at very low pressure, and connected households consume an average of 10 liters per capita per day. Water is chlorinated in various points of the system, but negative pressures in the distribution pipelines lead to groundwater infiltration and recurrent bacteriological contamination. Consequently, many households rely on multiple water sources, including rainwater collected from roofs and local groundwater from household wells, from which per capita consumption is estimated to represent about 20 liters per capita per day. In most cases, PUB water, harvested rainwater and groundwater show high levels of bacterial contamination.\(^4\) A baseline survey carried out by the Bank in 2018 found that two thirds of households spend more than half an hour a day on water collection tasks.\(^5\)

8. **Due to strong limitations in freshwater resources and climate change, South Tarawa faces increasing water scarcity challenges.** Bonriki and Buota’s rainfall-fed groundwater lenses are the only available freshwater sources suitable for drinking water production and have a combined sustainable yield of approximately 2,000 m\(^3\) per day. This represents an average per capita freshwater availability of only 34 liters. Even with a major reduction of water losses and consumption limited to basic needs, the water supply deficit would reach 2,500 m\(^3\) per day in 2020, increasing to a range of 3,300 m\(^3\) per day to 4,800 m\(^3\) per day in 2040.\(^6\) Furthermore, climate change is likely to affect the water resources of South Tarawa through variations in rainfall,\(^7\) evapotranspiration, increase in sea-levels and extreme events such as droughts, in particular during El Niño–Southern Oscillation. A 10 percent decline in rainfall could be expected to cause a 14 percent reduction in groundwater recharge. In addition, inundation caused by sea level rise and storm surges could temporarily reduce yields from the Bonriki and Buota aquifers used for

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\(^2\) A household has access to basic water supply service when a water point is available with a collection time is no more than 30 minutes for a roundtrip, including queuing (SDG definition)

\(^3\) The PUB is also responsible for electricity service provision.


\(^5\) The survey was carried out in June 2018 and collected baseline information from 292 households in South Tarawa.


\(^7\) Most global climate models point for the project area to an increase in average rainfall but the level of uncertainty is high and predictions span between a decrease by up to 11 percent and an increase by up to seven percent by 2050.
South Tarawa water supply by about 20 percent by 2030. Further analyses suggest that climate change induced overtopping and/or drought could lead in the long-term to periods of complete collapse of lenses’ available yield.

9. **This deepening water deficit calls for the consideration of new water resources for South Tarawa’s potable water supply.** The Government of Kiribati (GoK) adopted in 2008 the National Water Resources Policy. Demonstrating the importance attached to this sector, GoK further developed the Tarawa Water Master Plan 2010-2030 and the Tarawa Water and Sanitation Roadmap 2011-2030. Considering all water production options and the potential for physical losses reductions, these plans stress the importance of demand management and efficiency in the network, but identified the use of non-conventional water sources, such as desalination, as the only option to meet South Tarawa’s water demand, along with the diversification of sources such as urban groundwater and rainwater harvesting for risk mitigation and increased resilience. These studies encouraged the use of rainwater but recognized that it cannot be relied on during prolonged droughts.

10. **South Tarawa faces significant insufficiencies in the availability and quality of sanitation services.** While about half of South Tarawa has access to basic sanitation services, the remaining population use shared sanitation facilities, on-site unimproved sanitation systems such as pit latrines without a slab or platform, or practice open defecation in the sea (nearshore), to which 60 percent of the population resort at least occasionally. South Tarawa has three sewerage systems coupled with seawater supply networks for flushing in the historical settlement centers. These centers have expanded, and other centers have grown in recent years. As a result, about 25 percent of the population is presently connected to these sewerage systems. Sewage is discharged, untreated, through an ocean outfall currently being upgraded. Except in sewered areas, households generally discharge greywater locally, taking advantage of the high infiltration capacity of coral sand. Appreciation of the importance of good hygiene in South Tarawa is low, with only 57 percent of households reportedly having a fixed place for handwashing. The island’s low elevation, high population density, lack of available space and high water table represent significant challenges to the implementation of safe and effective on-site sanitation solutions.

11. **Those inadequate water supply and sanitation services entail, in a densely populated context, dire health consequences.** Kiribati’s infant mortality rate is among the highest in the Pacific at 44 per 1,000 live births and is partly attributable to infantile diarrhea. In 2012, one in every two persons was treated for a waterborne disease in a hospital or clinic in South Tarawa. The link between diarrhea and

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10 3,600 inhabitants per square kilometer, almost entirely on ground level.


12 ADB 2014, *Economic costs of inadequate water and sanitation*
child undernutrition and other enteric infections has been documented. Environmental enteric dysfunction, a gut disorder caused in part by chronic ingestion of pathogenic microorganisms, results in nutrient malabsorption and is hypothesized to be the primary causal pathway between poor water, sanitation and hygiene, and child growth.\(^\text{13}\) Stunting is widely understood to be caused by multiple underlying factors, including food insecurity, poor child care practices, and lack of access to health services, water, and sanitation.

12. **Gender disparities persist in the water and sanitation sector.** Women, children, and the elderly bear a disproportionate share of the burden of inadequate water and sanitation services in South Tarawa.\(^\text{14}\) An observational study and household survey carried out during project preparation found that the burden of collecting PUB water (for drinking and cooking) every other day is generally shared equally between males and females, but that women tend to be responsible for a larger share of water-related household tasks such as cleaning and washing, and so spend a significant amount of time fetching well water for these uses.\(^\text{15}\) Women are not only affected by the burden of collecting water, but also to a great extent by the health issues resulting from inadequate water supply in South Tarawa: as the collectors and carriers, they tend to be more exposed to harmful pathogens in water and risk being ill themselves, and they bear the brunt of caring for the other members of the household who are sick due to unclean water.\(^\text{16}\) Female children are reported to have a higher likelihood of suffering from diarrhea and dysentery than males. Girls face significant challenges when managing their menstruation at school, due to a lack of available WASH facilities, lack knowledge about menstruation and reproductive health and negative cultural perceptions associated with menstruation.\(^\text{17}\)

13. **The operation of water supply and sewerage services is largely inefficient.** The water distribution network is in an advanced state of disrepair. Physical non-revenue water (NRW) was estimated in 2015 to exceed 60 percent but no detailed assessment is possible given the lack of connection meters and taps. Inadequate water services quality (pressure, continuity), together with customer’s lack of willingness to pay, tampering of networks and water leakages have been self-reinforcing in a vicious cycle over the past decades, in the backdrop of increasing freshwater deficit. Water often does not reach the household anymore and needs to be collected from various formal and informal points. Facing widespread discontent by the population, PUB’s line ministry requested that it stop charging residential customers in 2013. In the absence of a residential water tariff, PUB water and sewerage revenues now mostly come from non-domestic customers and from on-demand services (delivery by tanker, septic tank emptying). The current average operation and maintenance (O&M) cost of water services amounts to US$1.7 per m\(^3\) sold, a high level given the system’s simple physical features. This is driven notably by (i) high physical losses, (ii) high electricity\(^\text{18}\) and chlorine supply costs (26 percent of total costs), and (iii) high labor costs (47 percent of total costs). Limited improvements in operational efficiency have been achieved since 2015 with enhanced donors support. Key PUB operational figures are provided in Annex 3.


\(^{14}\) The Economic Costs of Poor Water and Sanitation South Tarawa study (ADB 2014)

\(^{15}\) This was observed for stay-at-home mothers as well as women in paid employment.

\(^{16}\) Balancing the Burden (ADB 2015)


\(^{18}\) This is driven by high power supply costs (US$0.5/kWh) compounded by old electromechanical equipment.
14. **PUB’s financial viability is severely undermined by the lack of adequate revenue stream for its water supply and sewerage activities.** PUB recovered in 2015 only 34 percent of its O&M costs associated to water and sewerage (WSS) services. The financial gap has been covered by limited operational subsidies from GoK and through the non-payment to the national fuel provider (KOIL), in effect relying on cross-subsidy from its profitable power/electricity business. Community Service Obligation (CSO) payments have been delivered by GoK to PUB in the amounts of US$1.38 million in 2016 and US$1.01 million in 2017, mostly to cover losses in its water and sewerage activities. Improving PUB’s financial viability will require: (i) restoring adequate tariffs together with improving service quality and expanding PUB’s efficient electricity billing and customer management capacity to the water side of the company, and (ii) improving infrastructure efficiency and assets management to minimize operating costs.

15. **The institutional framework leaves PUB management autonomy, but sector regulation remains weak.** The Ministry of Infrastructure and Sustainable Energy (MISE) plays a policy, planning and regulatory role within the water, sanitation and hygiene (WASH) sector. The Ministry of Health and Medical Services (MHMS) is responsible for drinking water quality monitoring, but water quality analyses are not carried out on a regular basis. The Public Utilities Board (PUB) is a state-owned enterprise (SOE) responsible for delivering power generation and distribution, water supply, and sewerage services across South Tarawa on a commercial basis. Its Board is chaired and appointed by MISE. In the absence of effective technical regulation, PUB has faced limited performance incentives and has rarely been held accountable for the quality of service delivery.

16. **The Government of Kiribati has taken some important commitments towards the establishment of reliable sector financing mechanisms.** The Cabinet approves fees and charges proposed by PUB’s Board on a case-by-case basis, since there is no regulation guiding their formulation and periodic revision. Policy makers have historically been reluctant to adopt an effective charging policy for the supply of water and sanitation services in South Tarawa due to their concern about the adverse impact of higher charges on household welfare. GoK now recognizes the need to change public attitudes toward utility payment in South Tarawa, and important progress has recently been made in this direction with the adoption of volumetric tariff charges, which is already being applied in the pilot villages supported by the Kiribati Adaptation Program (KAP) III. Per the SOE Act, PUB should receive CSO payments from GoK if the Cabinet wishes to lower tariffs below cost recovery level for social purposes. While GoK has provided significant financial support, this has mostly been on an unplanned basis to cover operational deficit and to help PUB meet accrued KOIL payment obligations, rather than as a CSO. A Strengthening Economic Management Reform Program Policy-Based Grant financed by ADB was approved late 2017, promoting (i) continued government commitment to the payment of its CSOs, and (ii) water tariffs reforms that introduce usage fees to improve access to and quality of water services in a sustainable manner. As a result, GoK introduced in early 2018 a volumetric water tariff, to be immediately applied to KAP-III pilot areas and later elsewhere across South Tarawa as improved services are being rolled out.

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19 P112615. Co-financed by Australia, Japan, GFDRR, the Government of Kiribati and the World Bank (GEF-LDCF) in a total amount of US$10.8 million. The project’s completion date is end-December 2018.
17. **PUB recently initiated positive changes in its management of water and sewerage services.** The Kiribati Utility Services Reform Project (KUSRP), a technical assistance delivered by the Pacific Regional Infrastructure Facility (PRIF), provided in 2017 recommendations for the improvement of PUB’s operational and financial sustainability. As part of this effort, an international CEO was hired (funded by the New Zealand [NZ] Ministry of Foreign Affairs and Trade [MFAT]), and some organizational rationalization of PUB was carried out, including the creation of a NRW team and a reorganization into separately accounted profit / cost centers (Electricity, Water & Sewerage, and Central Administration). KUSRP also recommended private sector participation in PUB operations to support capacity building and performance improvement. The KAP-III, which closed in December 2018, financed leakage reductions on the water transmission line, the rehabilitation of reservoirs and, in three pilot areas, the replacement of the water distribution system to achieve 24/7 water supply.

18. **Donors’ involvement in the sector.** There are currently 26 donor-funded WASH sector initiatives ongoing in South Tarawa. Most of them are Non-Governmental Organization (NGO)-driven and implemented at a very limited scale. The most significant ongoing engagement is the ADB-financed South Tarawa Sanitation Improvement Sector Project (STSISP), focusing on the rehabilitation of existing sewerage systems in three communities of South Tarawa and capacity building for MISE and PUB. In addition to the leakage reduction and pilots described above, KAP-III financed the creation of community-based rainwater harvesting systems in South Tarawa and on outer islands. NZ MFAT is financing concept engineering designs for the expansion of sanitation services in South Tarawa. The Secretariat of the Pacific Community (SPC) has recently supported PUB in the preparation of a drought management plan. The overall donor coordination is good, and donors are working from broadly common investment maps and policy recommendations, under the aegis of the National Infrastructure Development Steering Committee (NIDSC)\(^{20}\), which provides policy directives and coordinates and oversees the country’s infrastructure program.

**C. Proposed Development Objective(s)**

**Development Objective(s) (From PAD)**

The proposed PDO are to increase access and quality of water supply services, and to improve the operational performance of the water supply services provider, in South Tarawa.

**Key Results**

19. **PDO indicators for the proposed Project include:**

   (a) People provided with access to improved water sources through piped household water connections (male/female)

   (b) People provided with continuous water supply (male/female)

   (c) Samples testing at distribution points meeting national standards for residual chlorine (%)  

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\(^{20}\) Members of the PSC include Secretaries or their delegated representative from the following ministries: Office of the President (Chair); Ministry of Finance and Economic Development (Deputy Chair); Ministry of Public Works and Utilities Ministries of Environment, Lands and Agriculture Development; Ministry of Communications, Transport and Tourism.
(d) Non-revenue water (%)

D. Project Description

20. To achieve the Project Development Objectives (PDOs), the proposed Project will have five components.


21. This component will aim to improve access and quality of water supply services in South Tarawa, and to increase resilience of the services to climate change. It will include:

Subcomponent 1.1: Increase in water production capacity (Cost: US$16.20 million; Fully funded by ADB and GCF)

22. This subcomponent will support the construction of a desalination plant and ancillary infrastructure, with an initial capacity of 4,000 cubic meter/day. This will allow for a significant increase in water use by South Tarawa population, from an average 42 lpcd in 2018 to an average 80 lpcd after project. This increase in PUB water supply capacity will also enable a decrease in the contribution of non-safe and climate dependent water sources (urban groundwater and marginally rainwater) to overall residential water use, from 78 percent in 2018 to 19 percent after the project. The desalination plant will, to a large extent, climate proof the South Tarawa water system, covering about two thirds of PUB production capacity up to 2030, while the rest is to be met with water abstracted from the groundwater lenses of Bonriki and Buota using existing water production systems. Design criteria take into account the expected reduction in yield of the groundwater lenses due to climate change and include selected provisions to enable its expansion up to 6,000 cubic meter/day total capacity in the future (which would be deemed sufficient until at least 2040), without the need to upgrade supporting infrastructure. Brine will be discharged through the nearby sewerage submarine outfall, currently being upgraded under STSISP to diffuse sewage 30 meters deep beyond the reef edge.


23. This subcomponent will support the significant upgrade to, and expansion of, the water transmission and distribution networks to achieve full service coverage across South Tarawa through the rehabilitation of 3,800 piped water connections and the implementation of 5,200 new ones. The system will be upgraded to have adequate capacity to meet water demands up to year 2040. This upgrade, combined with the NRW reduction and water-conservation policy (more metered connections) mentioned below, will make the area residents resilient to droughts. The works will include: (i) implementation and upgrades with more energy efficient equipment of primary pumping systems at the Buota and Bonriki groundwater lenses (from which water is already being produced at an acceptable quality), and at the desalination plant in West Betio; (ii) implementation of additional ground storage; and (iii) replacement, upgrades and expansion of reticulation networks and metered connections in communities across South Tarawa. Together with the increased water production capacity
(subcomponent 1.1), the modernized water network will allow for the continuous supply of all South Tarawa population with drinking water complying with water quality standards and will help substantially reduce NRW. It will also allow for a significant reduction of widespread kerosene-based water boiling practices at the household level, contributing to a net decrease of greenhouse gas (GHG) emissions of 31,991 tons of CO\textsubscript{2} equivalent over 20 years.

Subcomponent 1.3: Solar photovoltaic power plant (Cost: US$9.63 million; Fully funded by ADB and GCF)

This subcomponent will include the construction of a 2,500 kW ground mounted, fixed centralized solar photovoltaic (PV) array with a 2,000 kW Solar Smoothing Energy Storage system to be connected to the grid. The proposed PV array will offset up to 98 percent of the demand of the entire water system, including the desalination plant and water supply pumping systems, which would otherwise have been powered by diesel-based generation. This technical solution will allow for a net reduction of GHG emissions by the water system by 57,523 tons of CO\textsubscript{2} equivalent over 20 years, and a reduction by about 50 percent of PUB’s future operating costs. Across South Tarawa, the overall power generation capacity from low-emission sources is expected to increase from 27 percent in 2018 to 42 percent after the project. The proposed works also include an upgrade to the existing 11 kV power network to cater to the additional energy demand associated with the desalination plant.


This component is designed to contribute to the sustainability of water-related investments funded under Component 1 and to help improve the operational efficiency and financial viability of PUB. It will include:

Subcomponent 2.1: Support to water supply system O&M and utility institutional strengthening (Cost: US$7.73 million; Financing: IDA – US$2.00 million, ADB and GCF – US$5.73 million)

This subcomponent will support the O&M of both the desalination plant and the entire South Tarawa water supply network over a five-year period by a single private operator (PO), which will have previously carried out their design and construction through a Design-Build-Operate (DBO) contract.\textsuperscript{21} In addition to ensuring reliability of the plant and water supply over that period, the DBO contract will play a key role in building PUB capacities to undertake preventive, predictive and breakdown maintenance of the plant and network, and ensure sound asset management. All these elements will ensure an uninterrupted, ample water supply to all project area residents, thereby making them resilient to water shortages. Under this subcomponent, the DBO contract will also support the delivery of utility management systems to improve NRW monitoring, asset management, billing and collection and GIS-based customer complaints management, the enhancement of customer-oriented culture in the utility and the delivery of vocational training to administration and technical staff on core technical subjects. The O&M component of this contract will include specific performance targets for O&M, such as (i) at technical level: water production capacity, water quality at production and at distribution and continuity of service; (ii) at operational efficiency level: non-revenue water, energy efficiency; (iii) at commercial level:

\textsuperscript{21} In implementation phase, the desalination system will be subject to the design-build arrangements, while the water network will be constructed based on provided detailed designs.
responsiveness to customer complaints; and (iv) at utility management level: staff training, implementation of utility management systems. This subcomponent will support the recruitment of an Independent Audit Body to review the PO’s achievement of performance targets.

Subcomponent 2.2: Project implementation support (Cost: US$5.60 million; Financing: ADB and GCF – US$5.13 million, Counterpart financing – US$0.47 million)

27. This subcomponent will support MISE in project management, design and supervision activities. This includes hiring consulting services to undertake (i) surveys to facilitate detailed design of project infrastructure; (ii) detailed design of water supply network infrastructure; (iii) procurement support to MISE, including preparation of bidding documents, bid evaluation and contract award; (iv) supervision of works; and (v) safeguards support and community engagement in preparation for project activities. A project implementation assistance (PIA) consultancy firm will be hired under this subcomponent to support the Project Management Unit (PMU) in project management and supervision, including management and safeguards coordination.

Subcomponent 2.3: Management of the groundwater reserves and sector strengthening (Cost: US$0.80 million; Fully funded by IDA)

28. This subcomponent will support the preparation and implementation of sustainable management plans to help mitigate water pollution risks to the Bonriki and Buota water lenses and conserve these resources increasingly vulnerable to climate change impacts. It will therefore contribute to the project area residents’ increased resilience to water scarcity. Management plans could include a range of measures such as: raising awareness among current occupants of the potential impacts of their activities on groundwater quality, implementing small-scale infrastructure improvements (e.g. sanitation, drainage), establishing an active surveillance and compliance regime aimed at protecting the water reserves and preventing further encroachment on the reserves, and enhancing groundwater quality monitoring. The subcomponent will also finance sector studies such as a review of the water tariff, as well as the formulation of sector technical and economic regulatory frameworks, which will help facilitate future dialogue between PUB and GoK on aspects such as tariff adjustments and on the set-up of service performance targets. The subcomponent will finally support the continuation of water sector activities carried out under KAP-III until new arrangements are in place under the project to further support and strengthen PUB operations (community engagement in the three pilot areas receiving continuous water supply, enhanced NRW management).

Component 3: Water, Sanitation and Hygiene Awareness (Cost: US$2.23 million; Fully funded by ADB and GCF)

29. This component involves the implementation of a comprehensive and intensive 5-year ‘WASH Awareness Program (WAP)’ in South Tarawa. The WAP is critical to support significant transformations in the population’s water use and behavior that are key to project success, such as: a) restoring confidence towards PUB and the quality of its supplied water; b) deterring further use of unsafe water sources for consumptive use; c) raising awareness of the volumetric tariff and stimulating payment for water according to metered consumption; d) conserving water despite its apparent abundance at the tap; and e) changing behaviors linked to sanitation, hygiene, menstrual hygiene management, and solid waste
management in a nutrition-sensitive manner (i.e. considering and seeking to address the multiple pathways of fecal-oral transmission in the local context). Activities a) to d), directly linked to PUB’s core mandate, will be implemented as part of the DBO contract while for activity e), an international NGO will be recruited under the project and will implement the awareness campaigns with the support of local Civil Society Organizations at the community level.

Component 4: Project Management Unit (Cost: US$2.15 million; Fully funded by ADB and GCF)

30. This component will support the operation of the PMU housed within MISE. The PMU will be the core unit responsible for the overall implementation of the STWSP including the day-to-day project activities, compliance with the provisions of the grant agreements and government policies and guidelines, project administration, preparation of grant withdrawal applications, and maintenance of records. It will be staffed from both MISE/PUB personnel and individual consultants.

Component 5: Sanitation Pilots (Cost: US$1.24 million; Fully funded by IDA)

31. This component will finance the implementation of nutrition-sensitive pilot sanitation models to upgrade current sanitation services and provide an acceptable alternative to a costly expansion of sewerage systems across all of South Tarawa beyond the areas targeted by the current ADB-financed project. The models will be recommended by a concept study and designed by a subsequent engineering study, both commissioned by NZ MFAT as part of donor collaboration under the project. Recommendations to improve greywater management, formulated in a recent technical assistance provided by the World Bank, will also be considered in the design of these pilots. Sanitation activities will focus in priority on (but not be limited to) the three KAP-III village pilots (representing about 280 households) where 24/7 water supply has been introduced early 2018. The study should be completed in 2020. The activities include: (i) investments in sanitation (and handwashing) infrastructure; and (ii) technical assistance and training to support community-based organizations and other stakeholders involved in the management of the sanitation facilities and in fecal sludge management. Investments in sanitation infrastructure will aim to reduce the contamination of urban groundwater and help improve the quality of those local water sources including during extreme weather events, thereby contributing to the area residents’ resilience to climate change threats.

E. Implementation

Institutional and Implementation Arrangements

32. The Government of Kiribati indicated a preference for the World Bank and ADB to prepare a joint operation, rather than separate projects. Developing a unified approach, both during preparation and throughout implementation, will help minimize duplication, transaction costs and complexity, which would be essential in a context of limited implementation capacity. The World Bank and ADB subsequently adopted a framework to address each donor’s respective environmental and social requirements, as well as financial management and disbursement arrangements. It was also agreed that, to facilitate project

management, only one donor’s procurement procedures should be utilized during implementation. For several reasons, including the advanced stage of ADB’s project preparation, and because ADB is mobilizing GCF funding, it was agreed that ADB would be the lead cofinancier and that the World Bank team would use the Alternative Procurement Arrangements (APA) policy during implementation. Using ADB’s procedures to procure works, goods and services will eliminate the need to carry out separate tenders according to different procedures.

33. The APA agreement signed\(^\text{23}\) by the World Bank and ADB defines how both agencies would respond to issues during implementation, including technical, procurement, financial management and safeguards aspects of STWSP. Both agencies agree to ensure the prompt delivery and exchange of information regarding the project and, when practical, will field joint missions during implementation to supervise progress. The APA would take effect after approval by the Boards of Directors of both organizations.

34. The implementing agency will be the Ministry of Infrastructure and Sustainable Energy (MISE). This is the first time MISE plays that role in a project financed by the World Bank, although it was responsible for the technical implementation of individual components of World Bank-financed projects and has experience in implementing projects financed by ADB.

35. The National Infrastructure Development Steering Committee (NIDSC) will act as the project steering committee to provide strategic direction and guidance during project implementation. NIDSC will provide general oversight and will review progress and the results of periodic monitoring and evaluation activities. NIDSC is chaired by the Secretary of the Cabinet and includes as core members the Secretaries of MFED and MISE and may be expanded to include representation from other stakeholders, if needed, to strengthen coordination and implementation. NIDSC will meet on a semi-annual basis, or more frequently, as needed.

36. A PMU has been established to support MISE in implementing STWSP. It reports to the Secretary of MISE and to NIDSC. In addition to its manager, who has already been recruited, the PMU will appoint seven individual consultants with specialist expertise in project management, technical and social matters, procurement management, accounting, and environmental and social safeguards. The PMU, under the guidance of MISE, will have responsibility for overseeing and managing project execution and compliance with project requirements, including those associated with procurement, financial management and auditing, safeguards, monitoring and evaluation, and project reporting. The PMU will recruit and manage the DBO contract covering all activities under subcomponents 1.1, 1.2, 2.1 and part of component 3 activities, and all other contracts required to achieve the PDOs. An Independent Audit Body recruitment will be hired to review the PO’s achievement of performance targets, which will be critical to DBO contract management. During project implementation, the PMU will be supported by Project Implementation Assistance (PIA) consultants in project management, supervision and safeguards management and coordination. The financial management (FM) arrangements for the project will be maintained in KFSU.

37. A project operation manual (POM) is being jointly developed with ADB and the PMU and define procedures for implementing STWSP. It shall be finalized and approved not later than one month after project effectiveness. STWSP will be carried out in accordance with the arrangements and procedures set

\(^{23}\) Signed on February 20, 2019
out in the POM, which can be amended from time-to-time, provided all modifications are agreed with the World Bank and ADB in writing prior to any changes.

38. The project will be implemented over an eight years period to allow for the financing of the five-year O&M of the DBO contract following the construction phase.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The project’s physical investments will be situated in several locations on South Tarawa atoll and will include a desalination plant (including raw water intake and brine discharge facilities), new water transmission and distribution networks, together with associated storage and pumping infrastructure, a solar array (approximately 3 hectares) and limited small-scale sanitation infrastructure. The civil works will be situated on customary land, some of which is leased to the Government. The project will also have potential implications for informal settlements within the two water reserves. There is the potential for environmental impacts to both terrestrial and marine environments as a result of the works and mitigation measures will need to be carefully designed to ensure impacts are minimized. The civil works contemplated under the project include: • Installation of solar panels, most likely in a cleared area of the Bonriki Water Reserve adjacent to the existing solar array. The structures will include simple concrete footings (on which individual solar panels will be mounted), underground cabling and a control center/transformer facility. Environmental risks are readily manageable; however social risks will need careful consideration in the context of disputed land tenure within the water reserve; • Water reticulation within peri-urban areas of Tarawa atoll. These works will involve excavation of trenches, placement of water pipes, pump stations, standpipes etc. and backfilling and stabilization. Environmental risks are readily manageable; however, care will need to be taken to avoid existing formal and informal services. Social risks are mainly associated with the construction phase with assets (e.g. pig pens, shelter structures, fences etc.) requiring temporary relocation and possible removal of crop trees to allow pipework to be installed. This will require diligent citizen engagement and compensation for any lost assets; and • Desalination plant. The desalination plant is expected to be sited on Government-leased land at Betio and will comprise a chemical store, control center, desalination units and reticulation for feed water and brine discharge. The brine will be discharged via the existing sewage outfall to enable sufficient dispersion in receiving waters to reduce salinity. The marine environmental impacts are not expected to be significant.

G. Environmental and Social Safeguards Specialists on the Team

Rosemary Alexandra Davey, Environmental Specialist
Joyce Onguglo, Social Specialist
**SAFEGUARD POLICIES THAT MIGHT APPLY**

<table>
<thead>
<tr>
<th>Safeguard Policies</th>
<th>Triggered?</th>
<th>Explanation (Optional)</th>
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</table>
| Environmental Assessment OP/BP 4.01 | Yes        | Overall, the project is environmentally and socially beneficial. The provision of safe drinking water and proper sanitation facilities is expected to have a significant positive impact on the improvement of livelihoods and the environment, including reduction in groundwater pollution. Some minor and temporary negative environmental impacts may occur, resulting mainly from the construction activities but also potentially from by-products of the desalination process.  

The positive impacts include: (i) increased access to safe water supplies (ii) reducing the time and effort—especially of women and children—to collect water, (iii) reducing the incidents of waterborne diseases caused by contact with contaminated water (Kiribati’s infant mortality rate is among the highest in the Pacific at 44 per 1,000 live births and is partly attributable to infantile diarrhea), (iv) diminishing absenteeism from work and school and the costs associated with these, including lost income and opportunities and (v) better and properly sited sanitation facilities will reduce the risk of contamination of groundwater resources and associated disease risk.  

Potential negative impacts from construction activities can be readily managed through the preparation and stringent application of the project ESMP to be prepared in collaboration with ADB. This will require ongoing citizen engagement to ensure inconvenience is minimized and any resettlement issues are appropriately managed.  

Brine discharge from the desalination plant has the potential to cause negative environmental impacts near the discharge point. Brine will be introduced to the sewerage system, ensuring a level of dilution within the system prior to discharge through the existing, rehabilitated sewage outfall diffusing 30 meters deep after the reef platform.
The environmental impacts associated with the project are readily manageable with well-designed mitigation measures and close contract supervision. Social impacts associated with placement of solar panels and, in particular, existing squatters in the water reserves will require careful consideration with non-resettlement options to be considered. It is considered that there are achievable solutions for managing environmental and social impacts and there are no significant adverse environmental impacts that are sensitive, diverse, or unprecedented.

<table>
<thead>
<tr>
<th>Performance Standards for Private Sector Activities OP/BP 4.03</th>
<th>No</th>
<th>The project does not finance private sector-led economic development activities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Habitats OP/BP 4.04</td>
<td>Yes</td>
<td>While the project involves management and conservation of water resources these are solely groundwater sources and are not linked to particular natural habitats. Some vegetation clearance may be required in the Bonriki water reserve; however, this will only involve selective clearing of crop trees that do not provide significant habitat value. There is a potential risk to marine natural habitats from brine discharge however this will be mitigated by ensuring the discharge infrastructure facilitates adequate mixing with receiving marine waters to reduce salinity levels to background levels. The brine will be discharged together with the municipal sewage with the outfall situated at 30 meters below the ocean surface beyond the reef platform. Hence, the higher salinity brine will be rapidly dispersed into the surrounding ocean waters and will not have any significant implications for habitat values.</td>
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<tr>
<td>Forests OP/BP 4.36</td>
<td>No</td>
<td>While the project may involve the selective clearance of vegetation within the Bonriki water reserve for the solar array the characteristics of the existing vegetation do not meet the definition of “forest” in OP 4.04.</td>
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<tr>
<td>Pest Management OP 4.09</td>
<td>No</td>
<td>The project will not involve the use of pesticides.</td>
</tr>
<tr>
<td>Physical Cultural Resources OP/BP 4.11</td>
<td>Yes</td>
<td>Tarawa atoll includes a number of historical relics from World War 2. While it is anticipated that known relics can be avoided by design there is the potential for chance finds of historical and other PCR items. The potential for impacts on known PCR will be determined during the preparation of the ESMP,</td>
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which will guide project management, procurement and monitoring processes to mitigate risks of PCRs destructions or disturbance. No impact on the burial sites of the Bonriki water reserve is anticipated. Consultations will include engagement regarding burial sites to ensure these areas are avoided in site/route selection.

<table>
<thead>
<tr>
<th>Indigenous Peoples OP/BP 4.10</th>
<th>No</th>
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<tr>
<td>Project activities will take place in South Tarawa where the population is not considered to meet the characteristics of OP 4.10.</td>
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The vast majority of land on South Tarawa is under customary ownership with the Government leasing portions of private land under the State Acquisition of Lands Act in the ‘public interest’. Water transmission and distribution infrastructure will likely be subject to lease arrangements; whereas land access arrangements for the desalination facilities and photovoltaic array will need to be confirmed once the infrastructure design is completed. The concept designs suggest the use of government leased lands for the desalination plant and the solar PV array (0.2 and 3 hectares respectively) and suggest that the solar PV array layout will avoid the need for any resettlement of water reserve occupants.

<table>
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<tr>
<th>Involuntary Resettlement OP/BP 4.12</th>
<th>Yes</th>
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<tr>
<td>Because the exact number of people affected is not known at this stage, the Government will prepare either a Resettlement Plan (RP) or an Abbreviated Resettlement Plan (ARAP). An ARAP can be prepared where impacts on the entire displaced population are minor (where affected people are not physically displaced and less than 10 percent of their productive assets are lost, or fewer than 200 people are displaced). In other instances an RP is to be prepared. Accordingly, the resettlement instrument to be prepared will be dependent upon the design details and anticipated severity and scale of impacts. A resettlement framework (RF) has been prepared which details the requirements for future instruments. Resettlement impacts are expected to be limited under the project, and will be managed through the preparation and application of RPs/ARAPs. Social</td>
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assessments and citizen engagement will be central elements in RPs/ARAP design and implementation.

The project will advise the Govt of Kiribati on measures to protect and manage the water reserves at Buota and Bonriki, which are subject to encroachment by squatters. Approximately 100 squatter households have been identified across the two water reserves. Customary landowners previously occupying the water reserves were resettled in the early 2000's in a designated zone adjacent to the water reserve. The Bank has engaged with GoK to determine an approach to the squatters, noting that GoK has made previous attempts to evict these households. Given GoK’s past difficulties in resettlement of squatters, it has expressed the preference not to relocate people from the water reserves during the life of the project and to focus on soft measures such as community awareness about potential water contamination from household activities, education on behavioral change and prevention of further in-migration. These measures will be incorporated in Sustainable Water Reserve Management Plans. Appropriate citizen engagement throughout the life of the project will be determined in the environmental and social engagement process to provide adequate information to the squatters and consult them on the design of the proposed measures. Any of the soft measures likely to cause economic displacement (e.g. restrictions on fertilizers, husbandry) will be managed in accordance with OP4.12. It is not expected that resettlements would take place as part of, or in parallel to the project.

Notwithstanding GoK’s commitment to the proposed “soft measures” approach there is the possibility that GoK may seek to resettle people from the water reserves during the project lifetime. The RF incorporates measures to manage this eventuality to ensure that any resettlement linked to STWSP or aligned with its objectives is undertaken in accordance with OP 4.12 requirements. Any decision to resettle shall only be taken once all other options and mitigation measures have been reviewed and ruled out.
KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The potential environmental impacts associated with the project are related to infrastructure siting, construction activities and brine discharge from the desalination plant during the operation phase. Infrastructure will include a 2 megawatt (MW) solar array which will require a land area of approximately 2.5 hectares. It is proposed to site the array within the Bonriki water reserve where non-vegetated areas of sufficient size are available. This will likely include co-location with an existing solar array within the water reserve. There may be a requirement to remove selected immature crop trees; this will not result in a denudation of the overall environmental and livelihood values of the water reserve.

Construction activities will involve installation of water reticulation infrastructure within existing urban and peri-urban areas. Standard environmental management measures for erosion and sediment control, air quality and noise management, and community health and safety will adequately mitigate these potential impacts. The desalination plant will be established on a cleared site that was until recently being used as a construction laydown area. The desalination plant will produce brine as a by-product and this will be discharged into the existing sewage outfall adjacent to the plant site hence no additional construction (other than a pipeline road crossing) will be required.

Brine from the desalination plant has a salinity level slightly higher than sea water and therefore has the potential to impact marine habitats at the discharge point if not adequately diluted. Brine will be discharged into the municipal sewage effluent stream allowing initial dilution within the pipeline. The combined sewage and brine effluent will be discharged 30 meters below the ocean on the seaward side of the reef platform. At this depth there is only limited coral and other marine habitat and in any case the effluent will be rapidly diluted via the ocean currents facilitated through the outlet diffuser.

Social impacts of the project will be overwhelmingly beneficial and associated with the provision of reliable, potable water to currently un-serviced or under-serviced households. There will be some minor disruption at the household level during the construction of the reticulation pipework and some assets will need to be temporarily relocated; no resettlement impacts are anticipated from this activity. Any damage to assets caused by the construction activities will be compensated by the civil works contractor.

The establishment of the solar array within the water reserve may require minor clearing of vegetation such as pandanus and other crop trees. Only limited clearing will be required and crop tree owners will be compensated in accordance with Government of Kiribati compensation schedules.
The Bonriki and Buota water reserves are currently occupied by significant numbers of informal settlers undertaking various domestic activities including crop cultivation, dwelling establishment, informal sanitation and drinking water collection. All these activities have the potential to impact on the water quality of the underlying freshwater lens. Hence the Project will support the formulation and implementation of Sustainable Management Plans (SMPs) in consultation with the reserve occupants, to mitigate pollution risks. SMPs will include measures such as community awareness about potential water contamination from household activities, education on behavioral change and prevention of further in-migration. Measures such as restriction on fertilizers or husbandry may cause economic displacement and thus shall be managed according to OP 4.12. GoK has committed not to resettle occupants during project lifetime. Should GoK still seek to resettle water reserve occupants to support Project activities or for reasons aligned with Project objectives, the RF incorporates measures to ensure that this is undertaken in accordance with OP 4.12 requirements.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

It is expected that the project will result in long term positive impacts resulting from the provision of potable water to households. This – together with sanitation and hygiene education programs - will enable improved hygiene at the household level which, in turn, will reduce the incidence of diarrhea and other water-borne diseases. This will have a significant impact on the infant mortality rate and the overall health of the populace. The sanitation pilots will have associated complementary benefits. Indirect negative impacts are not anticipated.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

A number of alternative sites were considered for the desalination plant with the preferred site assessed to have the lowest potential environmental and social impacts. Similar alternative sites were considered for the solar array, with the Bonriki water reserve determined to be the most suitable. The actual layout of the solar array will be subject to final design; however, it will seek to avoid clearance of existing above-ground vegetation.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

The implementing agency will be the Ministry of Infrastructure and Sustainable Energy (MISE). This is the first time MISE has played this role on a World Bank-financed project, although the agency was responsible for the technical implementation of individual components of previous World Bank-financed projects and has experience in implementing projects financed by ADB, including safeguards requirements. A PMU has been established to support MISE in implementing STWSP. It reports to the Secretary of MISE and will appoint seven individual consultants with specialist expertise in project management, technical and social matters, procurement management, accounting, and environmental and social safeguards. The PMU will have responsibility for overseeing and managing project execution and compliance with project requirements, including those associated with environmental and social safeguards. During project implementation, the PMU will be supported as required by Project Implementation Assistance (PIA) consultants in safeguards management.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The key stakeholders for the project will be the residents of South Tarawa who will be the beneficiaries of improved water supply and sanitation. Consultations have been carried out during the preparation of the ESIA and RF with 20 community workshops in 13 villages with a total of 426 participants, a disabled group, households and organizations possibly subject to project activities on their premises. The objectives were to present the project objectives, compensation and GRM mechanisms and to provide for feedback from participants. South Tarawa residents and
organizations will be further consulted throughout the design, construction, commissioning and operation phases as the water supply infrastructure is installed and operated. Consultation will also include matters around cost recovery for water consumption which will be led by MISE. Potentially affected people include informal settlers on the water reserve and owners of the crop trees that may require removal for the solar array. Informal settlers are not expected to be unduly affected from the construction activities; however, their cooperation will be sought in implementing the proposed Sustainable Management Plans (SMP). This will require close and ongoing consultation at the individual household level to implement behavior change so as to avoid impacts on water quality. Where necessary certain activities with the potential to cause water pollution will be prohibited and further settlement will be prevented.

B. Disclosure Requirements

<table>
<thead>
<tr>
<th>Environmental Assessment/Audit/Management Plan/Other</th>
<th>Date of receipt by the Bank</th>
<th>Date of submission for disclosure</th>
<th>For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23-Aug-2019</td>
<td>30-Aug-2019</td>
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</table>

"In country" Disclosure

Resettlement Action Plan/Framework/Policy Process

<table>
<thead>
<tr>
<th>Date of receipt by the Bank</th>
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</thead>
<tbody>
<tr>
<td>23-Aug-2019</td>
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</tbody>
</table>

"In country" Disclosure

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?
Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?
Yes
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?
Yes

**OP/BP 4.04 - Natural Habitats**

Would the project result in any significant conversion or degradation of critical natural habitats?
No
If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?
NA

**OP/BP 4.11 - Physical Cultural Resources**

Does the EA include adequate measures related to cultural property?
Yes
Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?
Yes

**OP/BP 4.12 - Involuntary Resettlement**

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?
Yes
If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?
Yes

**The World Bank Policy on Disclosure of Information**

Have relevant safeguard policies documents been sent to the World Bank for disclosure?
Yes
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?
Yes
All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?
Yes

Have costs related to safeguard policy measures been included in the project cost?
Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?
Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?
Yes

CONTACT POINT

World Bank

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Senior Water Supply and Sanitation Specialist

Borrower/Client/Recipient

Republic of Kiribati

Implementing Agencies

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APPROVAL

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Approved By

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| Practice Manager/Manager: | Sudipto Sarkar | 27-Aug-2019 |
| Country Director: | Mona Sur | 07-Oct-2019 |