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Report No: PAD3879

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$105 MILLION

TO

INDIA

FOR A

KERALA SOLID WASTE MANAGEMENT PROJECT

February 11, 2021

Urban, Resilience And Land Global Practice
South Asia Region

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The World Bank

Kerala Solid Waste Management Project (P168633)

CURRENCY EQUIVALENTS

(Exchange Rate Effective {December 31, 2020})

Currency Unit = Indian Rupees (INR)

INR 73.07 = US\$1

FISCAL YEAR

April 1 - March 31

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ABBREVIATIONS AND ACRONYMS

AIIB	Asian Infrastructure Investment Bank	KSIDC	Kerala State Industrial Development Corp.
AMRUT	Atal Mission for Rejuvenation and Urban Transformation	KSPCB	Kerala State Pollution Control Board
AT	Annual Triggers	KSWMP	Kerala Solid Waste Management Project
BDW	Biodegradable waste	LSGD	Local Self Government Department
BG	Basic Grant	M&E	Monitoring and Evaluation
C&D	Construction and demolition	MCF	Material Collection Facility
C&T	Collection and transportation	MIS	Management information system
CA	Constitutional Amendment	MTR	Midterm review
CAG	Comptroller and Auditor General	MRF	Material Recovery Facilities
CFC	Central Finance Commissions	NGT	National Green Tribunal
CKC	Clean Kerala Company	NBDW	Non-biodegradable waste
CPCB	Central Pollution Control Board	O&M	Operations and maintenance
CPF	Country Partnership Framework	OSR	Own Source Revenue
DA	Designated Account	PA	Participation Agreement
DPMU	District-level Project Management Unit	PD	Project Director
DPC	District Planning Committee	PDO	Project Development Objective
DPR	Detailed Project Report	PIM	Project Implementation Manual
DMP	Disaster management plan	PIU	Project Implementation Unit
EIA	Environmental Impact Assessment	PMC	Project Management Consultant
EIRR	Economic Internal Rate of Return	PPSD	Project Procurement Strategy Document
ENPV	Economic Net Present value	PPP	Purchasing Power Parity
EPR	Extended Producer Responsibility	PSC	Project Steering Committee
ERR	Economic Rate of Return	RAP	Result and Performance
ESDU	Environment and Social Development Unit	RKI	Rebuilding Kerala Initiative
ESIA	Environmental and Social Assessment	RKDP	Resilient Kerala Development Program
ESMF	Environmental and Social Management Framework	RPF	Resettlement Policy Framework
ESMP	Environmental and Social Management Plan	RRF	Resource Recovery Facility
FM	Financial Management	SA	Social Assessment
GBV	Gender-based violence	SBCC	Social/ Behavior Change Communication Strategy
GDP	Gross Domestic Product	SCD	Systematic Country Diagnostic
GHG	Greenhouse gas	SGIMS	Safeguards Information Management System
GoK	Government of Kerala	SLF	Sanitary landfill facilities
GoI	Government of India	SOE	Statement of expenditure
GRM	Grievance Redress Mechanism	SPAO	State Performance Audit Officer
HKS	Haritha Karma Sena	SPMU	State-level Project Management Unit
HKM	Harith Kerala Mission	SM	Suchitwa Mission
IVA	Independent Verification Agency	STEP	Systematic Tracking of Exchanges in Procurement
IEC	Information Education Communication	STSB	Special Treasury Savings Bank
IDA	International Development Association	SUP	Single-use plastic
IFR	Interim Financial Report	SWM	Solid Waste Management
IG	Incentive Grant	TA	Technical Assistance
IP	Indigenous People	TPD	Tons of waste Per Day
IPF	Investment Project Financing	TDF-SMF	Tribal Development Framework-Social Management Framework
KILA	Kerala Institute of Local Administration	ToR	Terms of reference
KLGSDP	Kerala Local Govt Service Delivery Project	TSC	Technical Support Consultant
KMA	Kerala Municipality Act	ULB	Urban Local Body
KSAD	Kerala State Audit Department	WSA	Water-shed areas
KSDMA	Kerala State Disaster Management Plan		



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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
India	Kerala Solid Waste Management Project	
Project ID	Financing Instrument	Environmental Assessment Category
P168633	Investment Project Financing	A-Full Assessment

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
09-Mar-2021	30-Jun-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

To strengthen the institutional and service delivery systems for solid waste management in Kerala

Components

Component Name	Cost (US\$, millions)
Institutional development, capacity building and project management	39.74



Grant support to ULBs for SWM	150.00
Development of regional SWM facilities	110.00

Organizations

Borrower: India
 Implementing Agency: Local Self Government Department, Government of Kerala

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	300.00
Total Financing	300.00
of which IBRD/IDA	105.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	105.00
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Non-World Bank Group Financing

Counterpart Funding	90.00
Borrower/Recipient	90.00
Other Sources	105.00
Asian Infrastructure Investment Bank	105.00

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2021	2022	2023	2024	2025	2026	2027
Annual	0.00	15.00	20.00	20.00	20.00	25.00	5.00
Cumulative	0.00	15.00	35.00	55.00	75.00	100.00	105.00



INSTITUTIONAL DATA

Practice Area (Lead)

Urban, Resilience and Land

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● High
6. Fiduciary	● Substantial
7. Environment and Social	● High
8. Stakeholders	● High
9. Other	● Moderate
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Safeguard Policies Triggered by the Project

Yes

No



Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36		✓
Pest Management OP 4.09	✓	
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10	✓	
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description
Conditions of disbursement

The first disbursement of the funds allocated to the financing of Category (2) (Sub-grants under Part 2 of the Project) is subject to the satisfaction of the following conditions: (i) the PSC, the SPMU and the 14 DPMUs have been established and the PMC has been recruited; (ii) one Participation Agreement has been signed; (iii) there is no default under the safeguard obligations at that time; (iv) the PIM has been adopted; and (v) the Annual Work Plan and Budget for the period has been prepared (LA, Schedule 2, Section III.B.1(b))

Sections and Description
Dated covenants

No later than two (2) months after the Effective Date, the PSC shall be established (PA, Schedule, Section I.A.1(a)).

No later than two (2) months after the Effective Date, the SPMU and 14 DPMU shall be established (PA, Schedule, Section I.A.2(a)).

No later than two (2) months after the Effective Date, the Project Implementation Unit shall be established in each of the Participating ULBs (PA, Schedule, Section I.A.4(a))

No later than two (2) months after the Effective Date, the PMC shall be recruited (PA, Schedule, Section I.A.3).

No later than six (6) months after the Effective Date, the independent verification agent shall be recruited (PA, Schedule, Section I.B.4(a)).

No later than one (1) month after the Effective Date, the PIM (including section on protection of personal data, if any) shall be adopted (PA, Schedule, Section I.F.1).

By January 15 each year, Annual Work Plan and Budget submitted to the Bank as drafts and by March 31, Annual Work Plan and Budget finalized taking into account the Bank’s comments, except the first year of implementation (Effective Date + 1 and 2 months, respectively) (PA, Schedule, Section II.B)



No later than thirty-six (36) months after the Effective Date, a midterm review shall be carried out (PA, Schedule, Section II.C.1) and at least one (1) month before the midterm review, a report (or reports) shall be furnished to the Bank (PA, Schedule, Section II.C.2)

Sections and Description

Standard Safeguard Covenants: compliance with the Safeguard Instruments (ESMF -which includes an RPF and a tribal development framework-social management framework- and plans which may be prepared for the Project in accordance with the ESMF), due attention to Safeguard Policies for technical assistance, reporting to the Bank and grievance redress mechanism (PA, Schedule, Section I.E).

Sections and Description

Project ad hoc covenant

Disbursement of Loan and Counterpart Funds to the Project: Both the Loan and the Counterpart funds shall be allocated as reflected in the Annual Work Plans and Budgets, and disbursed in accordance with the provisions of the Annual Work Plans and Budgets in a timely manner, notwithstanding any restriction which may otherwise be imposed by the Project Implementing Entity's treasury from time to time to control the budgetary allocations and expenditures for state activities, or any treasury ban or freeze or any decision from the Project Implementing Entity that could affect the timely availability of funds (PA, Schedule, Section 1.D.2).

Conditions



I. STRATEGIC CONTEXT

A. Country Context

1. India's Gross Domestic Product (GDP) growth has slowed in the past three years, and the COVID-19 outbreak has put significant additional strain on the economy. Growth has moderated from an average of 7.4 percent during FY15/16-FY18/19 to an estimated 4.0 percent in FY19/20. The growth deceleration was due mostly to unresolved domestic issues (impaired balance sheets in the banking and corporate sectors), which were compounded by stress in the non-banking segment of the financial sector, and a marked decline in consumption on the back of weak rural income growth. Against this backdrop, the outbreak of COVID-19 and the public health responses adopted to counter it have significantly altered the growth trajectory of the economy, which contracted sharply in FY20/21. On the fiscal side, the general government deficit is estimated to have widened sharply – with the deficit of the central government rising to 9.5 percent of GDP in FY20/21, owing to weak activity and revenues and higher spending needs (as well as the inclusion on budget of off-budget transactions). However, the current account balance is expected to improve in FY20/21, reflecting mostly a sizeable contraction in imports and a large decline in oil prices. With capital inflows remaining robust India's foreign exchange reserves have risen sharply and will remain very comfortable over the medium term.

2. Although India has made remarkable progress in reducing absolute poverty, the Covid-19 outbreak has reversed the course of poverty reduction (see Annex 1 for impact of Covid-19 on the country). Between 2011-12 and 2017, India's poverty rate is estimated to have declined from 22.5 percent to values ranging from 8.1 to 11.3 percent. Recent projections of GDP per capita growth rate indicate that as result of the pandemic, poverty rates in 2020 have likely reverted to estimated levels in 2016. The extent of vulnerability is reflected in labor market indicators from high frequency surveys. Data from the Centre for Monitoring Indian Economy (CMIE), shows urban households are facing greater vulnerabilities: between September-December 2019 and May-August 2020, the proportion of people working in urban and rural areas has fallen by 4.2 and 3.8 percentage points respectively. Approximately, 11 and 7 percent of urban and rural individuals, identifying themselves to be employed in the recent period, have performed zero hours of work in the past week. Short-term employment outlook is contingent on whether these temporarily unemployed workers can fully re-enter the labour force. Overall, the pandemic is estimated to have raised urban poverty, creating a set of new poor that are likely to be engaged in non-farm sector and receive at least secondary or tertiary education, as compared to existing poorer households who are predominantly rural with lower levels of education.

3. India's economic growth is being accompanied by an unprecedented urban transformation. For the first time since independence, India is seeing an absolute increase in urban population with the number of towns increasing from 5,161 in 2001 to 7,935 in 2011, with 500 cities hosting populations over 100,000 and with 53 cities having over 1 million people. With an expected urban population of 600 million people in a few years, the challenges for making Indian cities livable, productive, and competitive are enormous. Indeed, this massive urban transformation defines one of India's development challenges, which is to provide housing, urban services, employment opportunities, and a decent and healthy quality of life for up to 10 million additional urban dwellers per year. Facing these challenges will require concerted efforts, especially from the state governments, since urban development is entirely a 'state' subject.

4. Since the 74th Constitutional Amendment (CA) in 1992, Urban Local Bodies (ULBs) in India are meant to have become key institutions of political representation and service delivery. Numerous urban governance and institutional reforms have been accorded a national priority for more than two decades. The implementation of the national urban missions and Central Finance Commission's recommendations have resulted in an unprecedented four-fold increase in fiscal flows to ULBs since 2007/08. However, despite efforts at central and local levels, the decentralization reform agenda for implementation of the 74th CA remains unfinished. In general, the pace of decentralization and the development of robust municipal management, governance, financing and service delivery systems have been uneven



and slow.

B. Sectoral and Institutional Context

5. Kerala has been urbanizing more rapidly than the national average. According to the last census, from 2001 to 2011 the percentage of urban population nearly doubled, with an Annual Growth Rate of urban population of 6.5 percent and a population density - 859 persons/sq. km, thrice the national average - 382 persons/sq.km. About 48 percent of the state's population lives in urban areas (covered under 93 ULBs, and notified urban agglomerations), with 52 percent of population concentrated in mid-small sized ULBs between 20,000-100,000 people, and the remaining 48 percent in bigger ULBs of over 100,000 people.

6. Kerala is one of the leading states in the implementation of 74th CA and has decentralized 17 out of 18 urban functions to the ULBs. Fiscally, Kerala follows a highly decentralized approach providing a substantial portion of the annual state budget as fiscal transfers to local governments (in FY19, 24.5 percent of the total annual state budget was devolved to local governments). Despite Kerala's decentralization, the State has not yet been able to tap on the potentials of rapid urbanization. In terms of service delivery, the coverage of all core municipal services including access to drinking water supply, waste-water management, solid waste management (SWM), storm water drainage and municipal roads are substantively below the prescribed national service level benchmarks (Kerala's 2016 AMRUT State Action Plan). Key reasons for the poor access to core services include: (i) weak investment planning and budgeting processes that pushes ULBs towards hasty annual planning and identification of multiple small investments; (ii) long and cumbersome approval and sanctioning procedures; and (iii) inadequate technical manpower and weak project execution systems and capacities. As a result, all the ULBs tend to utilize major fraction of the development funds in roads and social infrastructure rather than focusing on core municipal service delivery.

7. SWM services are particularly constrained owing to lack of adequate infrastructure and service delivery systems across the value chain. While several agencies have been created and policies have been put in place to support waste management, SWM services in Kerala are very limited with local governments having partial waste collection systems and lack of treatment and disposal facilities. ULBs in Kerala generate ~3,750 tons of solid waste per day (TPD), out of which ~82 percent is biodegradable waste (BDW) and the remaining ~18 percent is non-biodegradable waste (NBDW). Out of the 3,000 TPD of BDW, only ~20 percent is treated at household or community levels, and the remaining ~80 percent is not properly treated and disposed. Likewise, ~60 percent of the NBDW is dumped illegally or burned, while the remaining waste is collected informally by rag-pickers. A minor fraction (~3 percent) is recycled at the community level. The State has no engineered landfills and/or centralized waste management facilities for municipal waste. Consequently, a major fraction of municipal waste has been openly dumped in public spaces, low-lying lands and water bodies for many years now, resulting in creation of numerous illegal open dumpsites that pose serious environment and public health hazards. A survey carried out by GoK in 2018 confirmed that 73 percent of the water sources in Kerala are contaminated. The survey identified solid waste from households, markets and hotels/restaurants as the largest source of pollution (~52 percent). Likewise, open burning has also been a major contributor (~30 percent) to air pollution in the State. Surveys show that more than 40 percent of the population burns plastic waste, while another 30 percent open dump the plastic waste. The consequences of this mismanagement of solid waste was evidenced in the floods from 2018 and 2019, wherein the openly dumped waste increased the flood retention period, and the state had to also faced the challenge of dealing with the post-disaster SWM problem arising from lack of processing and disposal facilities.

8. Recognizing the urgency for improving SWM services, GoK has taken several measures, such as: (i) the establishment of a state-wide cleanliness mission (Harith Kerala Mission, HKM) which includes SWM as one of its core priorities; (ii) promoting a decentralized SWM approach by asking local governments to improve source segregation, and provision of subsidies to households for managing BDW through composting or bio-digestion; (iii) engaging women self-help groups like Harith Karma Sena (Green Task Force) under the State's women livelihoods mission (Kudumbashree) and



HKM for primary collection of plastic waste; (iv) establishing community level material collection facilities (MCFs) and resource recovery facilities (RRFs); and (v) developing community level compost plants. Overall, the state has earmarked 15 percent of its development grants to local governments, as per the annual planning guidelines, in support of SWM and sanitation initiatives.

9. Despite GoK's efforts, the SWM situation in Kerala is characterized by almost non-existent treatment of BDW due to lack of primary collection and transportation systems, low capacity of community-level BDW treatment facilities, and lack of centralized processing and disposal facilities. NBDW services are also inadequate as they focus primarily on high-value plastics, with intermittent collection (most of the collection is being done by HKS women without formal contracts with ULBs), that eventually results in a very low percentage (~3 percent) of NBDW collected and recycled at MCFs/RRFs.

10. The coverage of waste segregation at source is quite high in Kerala. However, there are several shortcomings at both decentralized and centralized levels. At the decentralized level, ongoing practices at household and community levels have not yielded desired results because (i) adopted solutions (such as pipe-composting or pit-composting) are not suited for Kerala's climatic conditions, (high humidity, monsoons, and ambient temperature) and waste characterization (high composition of meat and spices); (ii) the value chain integration remains poor, both upstream in collection systems, downstream in market linkages for waste by-products (compost and recyclables) and safe disposal of rejects; (iii) the infrastructure facilities at community level are inadequate ; and (iv) the lack of monitoring and evaluation (M&E) and operation and maintenance (O&M) systems. At the centralized level, the challenges have magnified by the lack of a single disposal facility in the entire state and neighboring states no longer accepting unprocessed waste in their cement plants and waste treatment facilities. The lack of centralized treatment and disposal facilities in the State has resulted from a combination of a lack of a strategic policy for management and disposal of waste, lack of engagement with stakeholders, the scarcity of suitable land for dedicated facilities, and social sensitivities (NIMBY syndrome). Social sensitivities are attributed to failed attempts to adequately operate and maintain centralized facilities, resulting in environment and public health issues for the communities residing near the facilities. These constraints, driven by a legacy of failed outcomes from poor operations and management, have influenced the shift in the State's approach to more decentralized systems.

11. The decentralized approach has also encountered institutional challenges. ULBs in Kerala despite mandated to provide SWM services, lack resources and institutional capacity to comply with the National SWM Rules 2016 issued by Gol under Environment Protection Act, ensuing orders issued by National Green Tribunal (NGT) and Kerala Municipality Act. Local Self Government Department (LSGD) has issued SWM Operating Guidelines in 2017 and a state SWM policy in 2018, however, there are several inconsistencies and contradictions amongst the national rules and the state policy and operating guidelines. Numerous state-level agencies have been created or tasked to strengthen the service delivery systems in ULBs including HKS for primary collection of NBDW; Suchitwa Mission (SM) for technical support, monitoring and capacity building; and the Clean Kerala Company (CKC) for the storage and treatment of NBDW, primarily plastic waste. However, weak coordination of these agencies with the ULBs and between them has led to fragmentation across the value chain and poor accountability to citizens. Organizational capacity of these state-level institutions to support the ULBs and strengthen the waste management systems is also limited.

12. Even though the state has promulgated multiple regulations, policies and guidelines and has established institutional coordination and monitoring committees at the state and district level, enforcement and compliance with these have been weak. Weak enforcement has been a consequence of heavy reliance on decentralized systems in a largely unregulated manner and inadequate waste processing and safe disposal infrastructure. Involvement of multiple agencies (as noted above) has also weakened the accountability mechanisms at state and local level for regulatory enforcement. Lastly, the monitoring mechanisms of Kerala State Pollution Control Board (KSPCB) for regulatory enforcement are weak and inadequate to hold the service delivery institutions and citizens accountable for illegal



practices (dumping, open burning etc.) and non-compliance with the state and national SWM laws and regulations.

13. Financially, ULB fiscal architecture is not conducive for addressing SWM issues. First, the annual planning guidelines do not require ULBs to undertake a multi-year capital investment planning and implementation approach that is critical for addressing core service delivery priorities, including SWM. Second, the 15 percent earmarked funds for sanitation (that include SWM) prescribed in the annual planning guidelines is insufficient to meet the SWM investment requirements (both capital and O&M) by the ULBs. For the last 3 years (FY17-19), out of the average annual per capita fiscal transfer of US\$50 provided by state government, ULBs only planned US\$2.50 per capita for SWM investments, of which they spent less than US\$1 per capita. This means that ULBs on an average spent less than 2 percent of their annual fiscal transfers on SWM, against the team's per capita expenditure estimation of US\$30-35. Third, ULB's SWM expenditures focus primarily on scaling up the decentralized SWM systems comprising subsidies to households for BDW treatment equipment, community level compost plants, MCFs/RRFs and transporting waste to dumpsites. In the last three years ULBs have not assigned any resources to infrastructure in primary collection, processing and disposal facilities. Fourth, high-risk investments and lack of political and policy commitment for PPPs have resulted in marginal formal private sector participation across the SWM value chain, with sporadic involvement in pilot/small scale processing facilities and secondary transportation of waste. Lastly, the formal cost recovery mechanisms for SWM services are almost non-existent in ULBs – HKS groups charge directly to the households for sporadic collection of plastic waste but these charges are not related to the cost structure of the services provided. The state policy provides some guidance to ULBs on user charges, but with a narrow affordability perspective, as it suggests flat rates not linked to the quantum and type of waste. The findings of primary surveys carried out in sample ULBs indicate that households are willing to pay affordable rates linked to the amount and type of waste, provided waste collection services are regular and timely.

14. Under the Bank supported Resilient Kerala Development Program (RKDP), GoK has undertaken policy actions to address these institutional and policy constraints by reforming the annual fiscal and spatial planning systems for ULBs to undertake multi-year and resilient infrastructure investments, and by adopting a new state strategy for solid and plastic waste management that follows an integrated service delivery approach. The new state SWM strategy suggests (i) streamlined institutional framework for SWM at state-level, (ii) policies, institutional and financial systems required at the ULB level for improving SWM services, and (ii) technical solutions that include a combination of household and community level systems for waste minimization and recycling and centralized systems for waste processing and safe disposal. The project will build upon this enabling framework by providing policy, institutional, capacity building, and investment support at both city and state levels.

15. **Plastic waste and marine litter.** The consumption of plastic in Kerala has seen an upward trend due to raising income levels, rapid urbanization and consumerism. Kerala generates close to 330 tons of plastic waste every day, which is approximately 9 percent of the total municipal solid waste. Currently, a small portion of the plastic waste (3 percent) is collected by HKS on fortnightly/monthly basis and transported to the MCFs/RRFs, where it is shredded, bailed and sold for road construction and to recyclers. The remaining plastic leaks into the environment, causing a plethora of problems. As witnessed in the 2018 and 2019 floods in Kerala, plastic products block waterways and exacerbate flooding. In Kerala, plastic waste is burned for heat or cooking, exposing people to toxic emissions. Plastics are also a significant contributor to the marine pollution in Kerala, and affects economic activities such as tourism, fishing, etc. The impact of plastic waste on oceans is substantial as Kerala has a 570 km coastline and an extensive network of waterbodies. It is estimated that close to 1.7 billion plastic pieces, with weight of around 1,000 tones, are littered along its coasts. An estimated 53 percent comes from Single Use Plastic (SUP). The average litter index (number of plastic litter pieces in a plot divided by area of the plot) in the coastal region of the state is 1,660 pieces per km compared to the global average of 573 pieces per km. According to Kerala University of Fisheries and Ocean Studies, the Vembanad lake, for example, has a high concentration of macro-plastic litter in the bottom sediments, amounting to 4,276 tons (60 tons/km²).



16. To deal with plastic waste, GoK has undertaken several policy interventions including state-wide ban on SUP products, establishing Extended Producer Responsibility (EPR) framework for taking back the plastic products introduced by the producers, and setting up CKC as a Special Purpose Vehicle for managing NBDW, with a focus on plastics. With an operation of 488 MCFs and 107 RRFs, CKC has produced over 750 Tons of shredded plastic since 2017, of which 574 tons have been sold to the Public Works Department contractors for road construction. However, there are still major gaps in ensuring compliance with National Plastic Waste Management Rules to reduce plastic waste, ensure full collection, scale up and formalize the plastic recycling/upcycling activities, and ensure safe disposal of residual plastic waste to avoid littering and burning, resulting in land, air and water pollution.

17. **COVID-19 Pandemic.** Kerala has outperformed other Indian states in flattening the COVID-19 curve by practicing immediate response in a timely manner, conducting aggressive testing, comprehensive hotspot identification, state-wide lockdown strategies, and protection of vulnerable population. Kerala has adopted a citizen centric and decentralized approach to manage COVID-19 pandemic by empowering ULBs to manage the emergency response and recovery activities by setting up isolation and quarantine facilities, health care centers, community kitchens, rapid testing centers and kiosks, etc. The LSGD that has been coordinating the crisis management and emergency response activities at the local level has issued various guidelines to contain the spread of infection (lockdown, social distancing, etc.), ensuring continuity of essential supplies (food, medicines, etc.) and core services (especially on waste management and sanitation, which are critical for containing the infection spread), and mass sensitization programs. Going forward, ULBs must develop institutional systems and undertake critical capital and maintenance expenditures required to sustain adequate waste management, sanitization, public hygiene and cleanliness activities for better health risk preparedness. The existing biomedical waste management systems in urban areas are inadequate to manage the medical waste in compliance with the national bio-medical waste management rules and the new national COVID-19 medical waste management guidelines issued by Central Pollution Control Board (CPCB). Lastly, vulnerable groups such as waste-pickers, women SHGs involved in waste collection and management services, are exposed to health risks and economic risks related to loss of livelihoods, which need to be supported by the ULBs on a priority basis through additional protection and financing measures.

18. **Climate and Disaster Resilience.** Service delivery in Kerala is increasingly affected by numerous natural hazards resulting from climate change. Sea level is projected to rise 15 to 30 cm by mid-21st century and annual mean surface temperature is expected to increase up to 4.5 °C in 100 years (Kerala State Disaster Management Plan, KSDMA). While an average monsoon precipitation has decreased over time in the region, extreme rainfalls have increased as exemplified in 2018, which exceeded the 95th percentile of the average between 1951 and 2017 (Mishra et al. 2018). KSDMA has identified Kerala as a multi hazard prone state. Geographically, its 570 km-long coastal area is prone to erosion, monsoon storm surges and sea level rise, whereas the mountainous areas (highlands) experience frequent landslides during the monsoon season. Floods are the most common natural hazard in Kerala, with 14.5 percent of the state's area prone to floods and some districts having 50 percent or more flood prone areas. In August 2018 Kerala, especially cities in coastal and river-basin areas, suffered widespread floods affecting 5.4 million people, with 491 casualties reported, and significant losses in infrastructure and productive sectors estimated at US\$3.0 billion. The highlands of Kerala are prone to the debris flows landslides which are initiated by heavy precipitation. The increase in surface temperature is also resulting in the combustion of the waste at the dumpsites leading to fire hazards. The lack of SWM infrastructure and inadequate service delivery is leading to the clogging of drainage systems and waterways, which aggravates the overall impacts of heavy precipitation/flooding. The coastal towns that are prone to floods, sea level rise and storm surges are particularly at high risk due to mismanaged solid waste problem. The devastating consequences of the increasingly frequent natural hazard events call for urgent actions to improve the systems of planning and implementing climate smart and disaster resilient infrastructure, including SWM infrastructure.

19. **Gender:** Kerala records highest number of women job seekers with very low placement rates and this has pushed



women to low productivity and labor-intensive sector and this gender gap is pertinent in the SWM sector. Women are a key service provider in the SWM value chain often considered for roles that include collection, sorting, cleaning, and separation of the waste. Women in SWM are predominately informal workers and work in unsanitary conditions¹. Women are lower in the value chain, are over-represented amongst informal workers, doing the sorting, collecting, etc. and men are higher in the chain, occupying more technical job roles. This has implications on working conditions, access to skills and opportunities to transition to technical job roles.² Despite efforts from HKS and Kudumbashree to combine SWM with entrepreneurship development, the Kudumbashree members engaged in SWM are still relegated to performing tasks like scavenging, waste collection and segregation; these women still lack adequate skills, are poor, belong to lower castes, and have low education levels (SM estimates 3800 HKS workers across 93 ULBs). Further, caste-based stigma attached to the women workers often traps them into these roles for life.

C. Relevance to Higher Level Objectives

20. The Project is consistent with the World Bank Group Country Partnership Strategy FY18-22 discussed by the Board on September 20, 2018 (Report 126667-IN). Due to the impact of COVID-19 Pandemic, the World Bank Group, in line with its global response, is also closely supporting GoI's strategy (see annex 1). The Systematic Country Diagnostic (SCD) recognize the role of efficient cities as a direct contributor to a resource-efficient growth path for India and identifies numerous policy decisions like reduction of environmental impacts; strengthen city finances; and strengthening the public sector to make cities more productive and livable. Similarly, area I of CPF on "promoting resource efficient growth" focuses on creating urban footprints that are more green, livable, and productive to create more livable and sustainable cities and improving disaster risk management and resilience to climate change. Further, the project will also support the World Bank Group's strategic objectives of improving human endowments and removing constraints for more and better jobs. The project will consider opportunities for waste-pickers to move into safer and more regulated/formal jobs in and outside the waste sector. The project will also address gender gaps in opportunities for jobs with improved work conditions.

21. The project is also aligned with the long-term State Partnership Strategy between the World Bank and the GoK, that focuses on building climate smart and disaster resilient urban infrastructure in Kerala as one of the core priorities under the Rebuilding Kerala Initiative (RKI). As mentioned earlier, the project will build upon the enabling policy frameworks being put in place by the government under the RKDP and provide operational support for implementation.

22. The project supports the GoK's climate policy objectives as articulated in the State Action Plan on Climate Change. It will also contribute towards climate mitigation by providing an integrated SWM service delivery model. The integrated model includes enhanced collection, waste treatment and safe disposal facilities, which could reduce methane generation from business-as-usual scenario. For climate change adaptation, the project supports the country's key focus on waste minimization and treatment, and by designing and siting the SWM infrastructure considering climate and disaster resilient factors thereby reducing the vulnerability of SWM facilities to climate risks. The enhanced service delivery model will also be designed to handle the surges in waste generation due to extreme weather events. The climate change adaptation and mitigation agenda will be mainstreamed in the design of the SWM plans thereby, reducing the vulnerability of the investments prioritized to extreme weather events, as well as in capacity building activities (see Annex 4). Improved waste collection resulting from program activities will also enhance urban flood drainage capacity in project locations. Activities financed by this program contribute directly to reducing greenhouse gas (GHG) emission from the solid waste sector. The project supports the Bank's global initiative and corporate commitment to tackle the land-based

¹ In the 12 Municipalities surveyed, the sanctioned staff for HKS is around 669 i.e., 55 per Municipality. The formal staff range between 15 to 38 persons, mostly women who undertake collection whereas men were involved in segregation and sale. This baseline survey also shows that 25% of women that had been involved in work in the past year in 34 municipalities, were engaged for less than 6 months.

² Women in Informal Employment: Globalizing and Organizing in Delhi (2016); Co-operation amongst workers in informal economy; ILO/WEIGO (2017).



plastic pollution and reduce contribution to marine litter, as described above.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

To strengthen the institutional and service delivery systems for solid waste management in Kerala

PDO Level Indicators

- 1) Number of people with access to improved solid waste management services (Number)
- 2) Solid waste disposed safely in engineered landfills as per National SWM Rules 2016 (Metric Tons/year)
- 3) Number of ULBs that accessed incentive grants for improving SWM services.

B. Project Components

23. To address the key institutional, financial, service delivery and infrastructure constraints in the SWM system in Kerala, the project adopts an integrated service delivery value chain approach. It provides a combination of technical and financial assistance to the participating ULBs and to the state agencies to improve their institutional and financial capacities, and their infrastructure and service delivery systems for SWM. The project will support a hybrid approach of decentralized and centralized solutions to improve SWM service delivery. At the local level, participating ULBs will have a lead role in delivering SWM services including, generator-level waste segregation and treatment, primary collection and transportation, waste processing and recycling. The project will provide technical assistance and incentive grants to ULBs for undertaking key institutional reform actions and investments that are critical to strengthening the ULB's capacity for delivering SWM services. Owing to the demographic and geographic profile of the state, characterized by closely located medium and small-sized ULBs and peri-urban areas with high population density, the project will also support a regional approach for SWM processing and disposal. The project comprises three components as described briefly below (detailed project description provided in Annex 4).

24. *Geographical coverage:* The project will support all 93 ULBs across all 14 districts in Kerala, with a total population of over 7.5 million people. The regional shared infrastructure facilities to be developed under the project, would follow a spatially integrated planning approach and may include other local governments in peri-urban/urban agglomeration areas for economies of scale and sustainability.

Component 1: Institutional development, capacity building and project management (Total: US\$39.74million, IBRD: US\$14.74million, AIIB: US\$15million; GOK: US\$10 million)

25. This component will include (i) provision of technical assistance (TA) to state agencies: (a) LSGD for policy, regulatory and institutional reforms, (b) SM for identification, planning, design and implementation of regional SWM and COVID-19 medical waste projects, and (c) KSPCB for compliance with national rules through strengthening of regulatory monitoring and enforcement mechanisms for SWM; (ii) provision of technical assistance and capacity building activities to ULBs for improved solid waste management in the areas of institutional and policy reforms, financial strengthening, planning, budgeting, reporting, preparation of subprojects, local level enforcement and compliance, and gender disaggregated analytics; (iii) provision of SWM skilling, training and awareness generation, information, education and communication support including skilling and training directed to the relevant officials and technical experts at the State, District and local levels and women sanitation workers; and communication and awareness generation activities through the implementation of a State-wide communication and awareness generation strategy; and (iv) provision of support to the entities involved in the implementation of the Project for the management, coordination and monitoring of Project activities and the appraisal, preparation, implementation, operation and monitoring of SWM investments. The technical support to LSGD, SM and participating ULBs will also include (i) developing guidelines and systems for COVID-19 related



waste management, sanitization and public hygiene practices to be rolled out across all urban areas, and (ii) carrying out social awareness, sensitization and training programs for key stakeholders and citizens. Key activities include:

26. *Sub-component 1.1: TA to state agencies:* This activity will provide TA to LSGD for policy, regulatory and institutional reforms and to SM for identifying, planning, designing and implementing regional SWM and COVID-19 medical waste projects. TA to LSGD would include, inter alia (a) updating the state's SWM operating guidelines; (b) drafting revisions to the Kerala Municipality Act (KMA) and Rules, and drafting Government Orders for model SWM organizational structures at ULB level; (c) updating annual planning guidelines periodically to facilitate multiyear investments for SWM; (d) developing guidelines for public space cleaning and sanitization in the context of COVID-19, as well as guidelines for compliance with safety standards for labor-force involved in waste management activities in the aftermath of COVID-19 crisis; (e) undertake annual local government cleanliness surveys and performance monitoring for ULBs; and (f) developing guidelines and operating procedures for women sanitation workers including access to safety equipment, information on SWM practices and technologies, and access to finance. This will also include standardized procedures for ULBs to follow to partner with Kudumbashree and/or HKS women groups for SWM services. TA to SM will aim at (a) strengthening its organizational capacity and institutional systems to assume its role as lead agency in SWM; (b) monitoring and supervising all activities at the ULB level; and (c) supporting design, implementation and management of regional SWM facilities, and coordinating all the participating ULBs and peri-urban LGs in the use of these facilities.

27. In addition, this activity will provide dedicated support for strengthening the regulatory enforcement and compliance monitoring systems by (i) strengthening the inter-institutional coordination mechanisms between LSGD, KSPCB and Environment Department and the functioning of the state level monitoring committee, (ii) strengthening the district level monitoring systems including the functioning of district level monitoring committee, (iii) developing and operationalizing comprehensive SWM data collection and information management systems to strengthen reliable data collection and analysis for service performance and compliance monitoring, and (iv) conducting annual cleanliness surveys and disclosing the results publicly to enhance accountability of ULBs for SWM and fostering competitive spirit to deliver better services.

28. *Sub-component 1.2: TA to ULBs:* This activity will provide TA to participating ULBs for, inter alia (a) strengthening the organizational capacity for SWM; (b) drafting SWM by-laws in compliance with national SWM rules and state SWM strategy; (c) preparing city-wide long-term SWM Plans to identify the priority investments and service delivery targets for the project; (d) strengthening the financial systems including cost recovery mechanisms; (e) achieving the eligibility criteria and institutional results to access the full incentive grants under component 2; (f) annual fiscal planning, budgeting, fund utilization and reporting; (g) subproject planning, designing and implementation; (h) incorporating climate change mitigation measures into subproject design; and (i) establishing clear mechanisms for ULBs to formally engage with Kudumbashree groups as service providers of solid-waste management, including collection and transportation. This activity would also support developing ULB systems for undertaking COVID-19 waste management, cleanliness/sanitization activities, and strengthening the systems for ensuring the safety and health risk reduction of the sanitation workers including women.

29. In addition, this activity will support the local level enforcement and compliance mechanisms to improve SWM services, implement SWM bye-law and prevent open dumping, littering and burning practices by (i) institutionalizing a ULB level enforcement committee comprising select councilors and technical staff, (ii) expanding the technical staff (health inspectors etc.) to be able to do site visits, spot checks and compliance monitoring, (iii) adopting technology based systems to identify waste hotspots in each ward and undertake close monitoring, (iv) implementing punitive measures such as spot-fine system as per KMA's provisions, (v) deploy advanced tools like GPS enabled waste collection vehicles for real-time monitoring, and (vi) share information amongst citizens and communities to foster voluntary compliance with the SWM regulations. The project will also prepare a baseline report on gender inclusion including (i) number of



women engaged in the value chain of SWMs, (ii) existing income levels and skills and (iii) opportunities for socially excluded women to access other verticals of SWM value chain including business opportunities, for regular monitoring of the gender inclusion interventions at the local level.

30. Sub-component 1.3: SWM Skilling, Training and awareness generation/Information Education Communication (IEC) support: This activity will support SWM and COVID-19 related skilling and training to the relevant officials and technical experts at the state, district and local levels. SM will prepare annual training plans based on consultations and needs-assessment and identify the training service providers and training institutions (the Kerala Institute of Local Administration (KILA) for general ULB trainings and other specialized training institutions for specific topics in SWM) to develop training curriculum and deliver class-room and on-line trainings on the key priority areas identified through training needs-assessment. An online skilling program will also be developed in vernacular language for certification courses for ULB officials. This activity will also support the skills development and capacity building for women sanitation workers on technological solutions, safe management practices, access to finance, management of performance-based contracts and entrepreneurship development opportunities in the SWM sector.

31. This activity will also support communication and awareness generation activities through the implementation of a state-wide communication and awareness generation strategy. The strategy will focus on (i) overall state-wide awareness generation about the project interventions, national regulations, need and importance of good SWM services; and (ii) subproject specific communication and consultation with the residents and communities to enhance social consensus, acceptance and ownership of the proposed interventions. The strategy will also reach all the stakeholders including elected local representatives, ward members, community representatives, households, service providers and adopt a communications approach consisting of a multitude of instruments such as broadcasting, interactive communication, and influencer driven techniques.

32. Sub-component 1.4: Project Management support: This activity will provide project management, coordination and monitoring support to the implementing agencies. A dedicated State-level project management unit (SPMU) will be established at SM and District-level project management units (DPMU) at each of the 14 districts to cover all their respective ULBs. Further, a dedicated Project Implementation Unit (PIU) will be established in each participating ULB comprising ULB staff. Project management activities will support the implementation, coordination, and monitoring of all project activities including appraisal of State and ULB level investments and due diligence, quality control and reporting on fiduciary, environmental and social safeguards and technical aspects of the investments. A Project Management Consultant (PMC) team will be hired to support project management functions at the SPMU and DPMU levels.

Component 2: Grant support to ULBs for SWM (Total: US\$150million, IBRD: US\$49million, AIIB: US\$49million, GoK: US\$52million)

33. The component will provide grants to the participating ULBs for the improvement of their SWM systems and capacities. The component will focus mainly on (a) primary collection and transportation systems for solid waste, including the provision for performance-based contracts with Kudumbashree and HKS women groups as SWM service providers, (b) source segregation and treatment for BDW at decentralized level, (c) rehabilitation of existing MCFs/RRFs and development of new integrated MRFs, (d) development of BDW management facilities, (e) closure/remediation of existing dumpsites and development of disposal cells as interim disposal facilities, (f) public space cleaning, sanitization, waste removal activities as well as cleaning and sanitization of government offices, hospitals, community level waste recycling and processing facilities (in the context of COVID-19), (g) protective gear, equipment, masks, chemicals, disinfectants etc. for sanitation and waste management workers, (h) operations and maintenance payments for performance-based contracts and tipping fees for regional disposal, and (i) implementation of environment and social risk mitigation actions as per Environmental and Social Management Framework (ESMF).

34. ULBs will be required to sign a Participation Agreement (PA) to confirm their participation. Grants will be provided

to the participating ULBs over and above their existing plan fund allocations. A two-tranche system will be established, comprising a basic grant (BG) and an incentive grant (IG). Grants will be allocated to ULBs on a per-capita basis, based on indicative sector investment needs in SWM for the project duration – per capita amount may differ for the 6 MCs and 87 municipalities depending on the activities they need to undertake, and will be finalized during preparation of Project Implementation Manual (PIM). 40 percent of the total proceeds at the ULB level will be allocated as BGs and 60 percent as IGs according to the eligibility criteria presented in Table 1. Eligibility criteria for IGs are one-time activities targeted towards strengthening the institutional systems of the ULBs for planning, implementing and managing climate-smart and disaster-resilient SWM infrastructure and services. BG and IG will be used by ULBs to finance two separate set of SWM investment activities at the local level. Track I (T1) activities will be funded by BG and comprises investment subprojects which do not require land and/or access to disposal facility and can be initiated by the ULBs immediately. Track II (T2) activities will be funded by IG and comprises investment subprojects which require land and access to disposal facility. The details of T1 and T2 activities are provided in Annex 4.

Table 1. Eligibility criteria of grant allocations

Grant allocation ceiling	Eligibility Criteria
Basic Grants (40 percent)	Available once ULBs sign a PA
Incentive Grants (40 percent)	ULBs must have fulfilled all following three conditions: <ul style="list-style-type: none"> • Prepared a 5-year city-wide plan for climate-smart and disaster-resilient SWM, which has been approved by SM • Issued SWM by-laws that incorporate the principles of GoK’s new SWM strategy • Confirmed access to/use of facility for safe disposal of waste
Incentive Grants (20 percent)	5 percent grants on fulfilling each of the following four conditions: <ul style="list-style-type: none"> • Hired top two-level staff as per SWM org. structure approved by GoK • Signed performance-based contracts for waste collection and transportation (C&T) services • Plan developed for levying user charges and O&M budgeting • Implemented M&E including grievance redressal mechanism

35. The verification of eligibility criteria will be done by an independent verification agency (IVA) based on milestones and verification protocol outlined in the PIM. Achievement of the eligibility criteria will provide ULBs access to a grant allocation ceiling for the whole duration of the project. Subprojects to be financed by the grants will be identified in the five-year SWM plans prepared by the ULBs at the beginning of the project and validated on an annual basis as part of the ULBs’ annual development plans. In addition, ULBs will also need to comply with a set of five Annual Triggers (ATs) to be able to access the annual grant allocations as per the annual development plans. Compliance with ATs will be annually checked by the DPMUs for all ULBs to ensure that the subprojects are part of the eligible investment menu and are designed and implemented in compliance with basic technical, fiduciary and safeguards systems as outlined in the PIM and ESMF. DPMUs will submit the AT compliance reports for all ULBs to the SPMU, who will then authorize the grant funding for the next FY. The details of the full grant cycle are provided in Annex 4 and will be further detailed in the PIM.

Component 3: Development of regional SWM facilities (Total: US\$110million, IBRD: US\$41million, AIIB: US\$41million GoK: US\$28million)

36. This component will finance construction, rehabilitation, closure, remediation, and equipment (as the case may be) of facilities servicing more than one ULB, such as: (a) processing and recycling facilities; (b) construction and demolition (C&D) waste management facilities; (c) transfer stations and regional sanitary landfills for municipal solid waste disposal; (d) closure and remediation of existing waste dumpsites and development of incremental waste disposal cells; and (e) biomedical waste management facilities. All the facilities will be developed on a regional basis, including multiple ULBs and peri-urban local self-governments. These downstream activities aim at completing the value chain. They will be implemented and managed by SM in compliance with the National SWM Rules 2016 and the guidelines issued by CPCB. The biomedical waste management facilities will be supported to expand the state’s capacity to deal with increased volumes of biomedical waste in the context of COVID-19 pandemic.



37. A cluster approach will be adopted for the planning, design and development of regional facilities. For each of the planned regional sanitary landfills, a waste-shed areas (WSA) will be established around the land parcels identified and inter-municipal agreements will be implemented by SM for coordination and cost sharing amongst the participating ULBs in each WSA. For the detailed planning, design and development of the regional landfills, SM will carry out the required feasibility assessment (technical and environmental including climate change mitigation and adaptation), preliminary engineering designs and Environmental and Social Impact Assessment (ESIA) studies to be financed under Component 1. Likewise, regional processing and recycling facilities will be planned and developed based on the land availability, technical and financial feasibility and waste generation profile of participating ULBs based on inter-municipal agreements led by SM. The regional facilities will be developed as part of integrated systems for collection, transportation, processing/recycling/resource recovery and safe disposal and in coordination with the local level subprojects being undertaken under component 2. SM will be responsible for ensuring that there is proper coordination between the local and regional subprojects at the cluster level through an integrated framework.

38. Closure/remediation and rehabilitation of existing dumpsites will be financed contingent upon adhering to screening criteria of technical, environment and social considerations. The selection of the dumpsite and the technical solution will depend on access to a waste disposal facility for the rejects from the dumpsite, land reclamation potential and other technical, environmental and social considerations established in the PIM and ESMF. Rehabilitated dumpsites and reclaimed land may be used for interim regional disposal facilities and other waste processing facilities to optimize the utilization of available land. The interim regional disposal facilities are an important element of the incremental approach followed by the project as will enable concurrent improvements in local level collection, transportation and processing systems while developing long-term regional waste disposal facilities.

39. **Plastic waste and marine litter reduction interventions:** The project will adopt a mix of preventive and responsive measures to address mismanaged plastic waste problem in urban areas (particularly in ULBs along the coastline or adjacent to water bodies). Key interventions include (a) strengthening the segregation, collection and transportation systems for plastic waste, (b) upgrading and augmenting the plastic recycling and resource recovery systems at local level, (c) creating enabling policy and regulatory framework for plastic consumption reduction and introducing circularity for improved resource efficiency, (d) developing plastic waste treatment and disposal systems as part of overall SWM services, (e) public awareness generation and communication for reducing plastic consumption and improved recycling, and (f) implementation of guidelines for regulatory enforcement of key policy decisions like SUP ban and EPR.

40. **Climate smart and disaster resilience interventions:** Based on a comprehensive state-wide SWM assessment on quality of infrastructure and resilience aspects (including revision of the adequacy of the guidelines and policies governing SWM infrastructure), and in line with the second core objective of the WBG Action Plan on Climate Change Adaptation and Resilience 2019, the project fully mainstreams climate change and disaster resilience throughout the entire investment cycle. Specifically, SWM infrastructure envisioned under components 2 and 3 will incorporate resilient planning, sustainable design, construction and O&M of facilities in areas prone to extreme weather events, adapting to the climate change vulnerability and disaster risks (see table A10 in Annex 4 for more details). Also, improvements in waste management envisioned by the project will prevent leachate, blocking of waterways and hence would address flood and pollution. For climate change mitigation, capacity building measures will be provided under component 1. The project is expected to reduce GHG emission by: (i) 453,595 tCO₂e per year through improved SWM service delivery system; and (ii) 19,110 tCO₂e from dumpsite remediation (See Annex 4 for detailed GHG accounting).

41. **Private sector participation in SWM:** In Kerala the role of the private sector across the SWM value chain is limited owing to (i) the limited opportunities at a scale that ensures financial viability, (ii) high-risk perception by private operators due to the history of public protests, and (iii) weak project development and contractual modalities that lack objective performance metrics, clearly defined obligations and risk sharing mechanisms. However, integrated solutions



for SWM call for an active participation of the private sector in (i) upstream activities such as collection and transportation through the engagement of small-scale private operators, and (ii) downstream, technologically intensive activities like, processing and disposal that may attract stronger and experienced private actors at the national and international levels.

42. The project seeks to enhance private sector participation in SWM services by (i) providing TA for robust project structuring and adoption of performance based contracting modalities for SWM services, (ii) providing support for formalizing the regional coordination mechanisms for PPP projects through inter-municipal agreements with clearly defined responsibilities and cost-sharing frameworks, (iii) building SM and ULBs' capacity for robust PPP contract management and supervision systems, (iv) setting up revenue security and viability gap funding mechanisms in subproject structures to reduce the private sector's financial risks through escrow and intercept mechanisms, (v) strengthening regulatory enforcement mechanisms to enhance compliance with technical specifications and service level benchmarks, (vi) facilitating frequent interaction, as well as project sounding events/roadshows with private sector during the project development and contracting cycle and (vii) setting up robust monitoring and grievance addressal mechanisms for PPP subprojects.

C. Project Beneficiaries

43. Three main target groups will directly benefit from the Project: (i) over 7.5 million residents of the 93 ULBs, through increased access to improved municipal solid waste services and environmental, social and health conditions; (ii) municipal staff in 93 ULBs, through improved institutional capacity for planning, implementing, and financing SWM systems; and (iii) sanitation workers through improved working conditions and better livelihood opportunities in SWM.

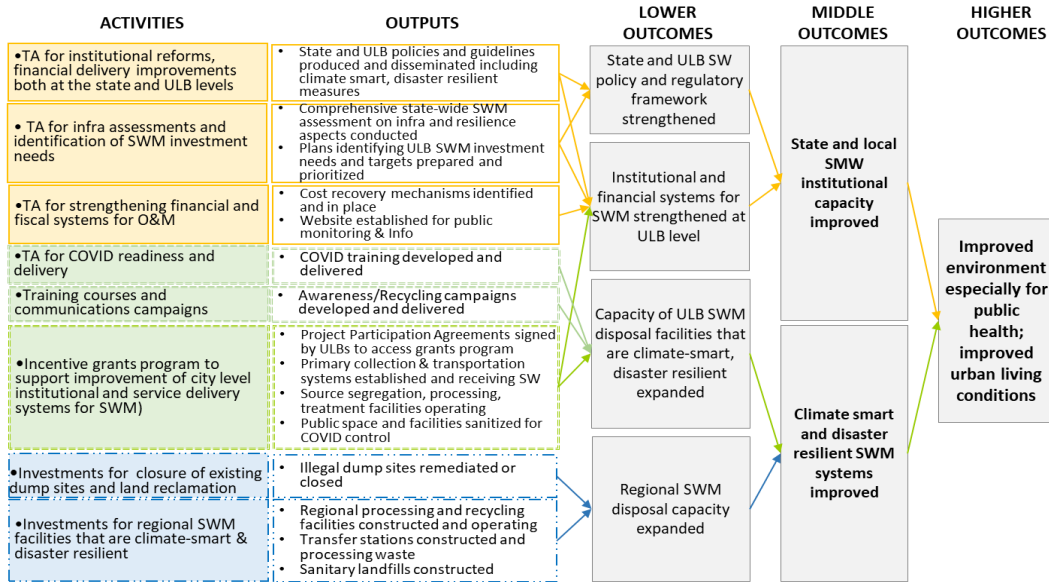
D. Results Chain

44. The project seeks to strengthen the institutional and service delivery systems for SWM by: (i) improving the policy and regulatory framework at state and ULB level; (ii) improving the institutional and financial systems at ULB level; (iii) developing climate-smart and disaster-resilient infrastructure and service delivery systems for integrated SWM; and (iv) improving environmental, social, and health conditions. To achieve these outcomes Component 2 and 3 will enable the participating ULBs and SM to access financial resources for planning and implementing integrated SWM infrastructure projects at the city and state level respectively. In parallel, Component 1 will provide TA for institutional strengthening and project management. The links between the project activities, outputs and outcomes are presented in Figure 1.



Figure 1. Results chain of KSWMP

CHALLENGES: i) Weak planning, financial systems, policy environment and inadequate enforcement; ii) inadequate, fragmented SWM systems; and iii) illegal dumping leading to problematic public and environmental health



ASSUMPTIONS: i) State and ULBs can enforce regulations and collect fines; ii) cost recovery mechanisms are enforced to provide some sustainable level of financing; iii) public will participate in source segregation and recycling schemes; iv) cities can meet criteria for accessing infra grants and incentives are adequate; and v) private sector will participate in transport and processing of waste; vi) land can be identified, purchased, and cleared for landfill sites in timely manner; and vii) all infra comply with climate smart, disaster guidelines, and are operated appropriately

E. Rationale for Bank Involvement and Role of Partners

45. The World Bank expertise in the SWM sector in over 80 projects globally since 2014 puts the Bank in a strong position to offer integrated SWM solutions to Kerala. In addition to SWM, the Bank has vast expertise and numerous resources on different aspects of the project including private sector participation in the delivery of local services; high standards of environmental and social safeguards; regulation of informal waste pickers; and the strengthening of service delivery capacities of ULBs, amongst others. For strengthening the SWM capacity of ULBs, the project will draw on its eight years of prior experience in the implementation of the Bank-financed Local Government Service Delivery Project (KLGSDP), which supported all the ULBs in the State. The KLGSDP built systems and strengthened government capacities to provide services across the state, which will be built upon under this project. The implementation of the project will also be embedded in the long-term programmatic partnership on resilience, headed by the RKI.

46. The rationale for this operation directly addresses the following key developmental challenges in Kerala: the underleverage of private financing; the reduction of plastics and marine litter; managing and responding to COVID-19 crisis and the resilience against the impacts of natural disasters and climate change. Through the maximizing finance for development approach the project will stimulate the private sector participation in the SWM sector by providing good investment opportunities in the form of PPP or management contracts. On plastics and marine litter, the project is well placed to advance the World Bank’s commitment to protect the marine and coastal resources. The project also received resources from the PROBLUE Multi-Donor Trust Fund launched by the World Bank in 2016 to address “the threats posed to ocean health by marine pollution, including litter and plastics”. By improving SWM services across coastal cities and urban areas adjacent to rivers, this project would prevent litter reaching water bodies, which supports addressing one of the world’s most pressing issues regarding its oceans.

47. The Project is jointly co-financed by the Asian Infrastructure Investment Bank (AIIB). The World Bank has been the leading multi-lateral agency supporting local governments in Kerala for the last decade. German Agency for International Cooperation has supported several policy interventions and capacity building activities in SWM in Kerala, including a state sanitation strategy from August 2015 and the model SWM plans. Asian Development Bank (ADB) implemented an urban



project (Kerala Sustainable Urban Development Project) that intended to finance several SWM facilities but had limited results. IFC, through their city's platform work, have started to engage with Kerala State Industrial Development Corporation (KSIDC) to explore financing opportunities of a state initiative to establish waste to energy plants. IFC is also looking to support the Kerala Infrastructure Investment Fund Board on financing urban infrastructure projects, potentially including SWM, and is keen to partner in upstream work on plastic recycling with private sector participation.

F. Lessons Learned and Reflected in the Project Design

48. *Importance of following an integrated service delivery approach.* Like many other countries, provision of SWM services in Kerala is the ULB's responsibility. Projects across the globe have proved the need for local governments to adopt an integrated service delivery approach for improving SWM (collection, transportation, recycling/processing and safe disposal). It has been widely accepted that broken value chain systems are a major reason behind waste leakages, leading to numerous environmental and public health hazards, and eventually negatively impacting the livability and competitiveness of cities in the long run. Global experience in the sector also emphasizes on the importance of enabling policy, regulatory and institutional frameworks and financial sustainability mechanisms for an integrated and efficient SWM system. Therefore, the project has adopted an integrated approach to support state government and ULBs in addressing all the above-mentioned aspects of the service delivery system in a coordinated and planned manner. This includes combining investments with policy/institutional changes at state and city levels to facilitate the integration amongst the key players. At the city level, policy changes, institutional reforms and critical investments for SWM are linked through incentive grants to stimulate institutional change.

49. *Land availability.* While waste minimization through the 3R (reuse, recycle, reduce) approach must be at the core of any sustainable SWM system, engineered landfill facilities are always necessary for safe disposal of inerts, rejects and other residual waste. This is particularly required for urban areas which are rapidly expanding, and where a zero-waste approach is a long-term objective. While Kerala has taken bold decisions to treat BDW at source and has set up systems for waste minimization and recycling, these alone will not solve existing waste disposal problems in the short and medium term. International experience shows that volume reduction is limited, unless significant effort in recycling are made, which considerably increases the costs of waste management services. Thus, in all circumstances, although to different degrees, sanitary landfills are essential for final disposal. In Kerala, land is a major constraining factor to infrastructure investments across sectors, and it will be a limiting factor to the siting of regional treatment and disposal facilities. Construction of waste processing and disposal facilities under the project can only start when land ownership has been secured and permits have been obtained for waste management facilities. Hence, the government will pursue multiple options to secure land for processing and disposal facilities and develop interim solutions to ensure that the waste management services can be improved concurrently in an incremental manner.

50. *Strong communication strategy, community participation and citizen engagement* Waste management is about habits, perceptions, fears, expectations, and coordination but it is also about service delivery supported with infrastructure for which land is required and engagement with multiple stakeholders connected to waste generation and its management. It is well recognized that the necessary change is a complex process of shifting the public perception and ensure social acceptance for SWM treatment and disposal systems. To address it, the project will adopt a social and behavior change communication (SBCC) strategy for planning, implementation and monitoring of the program. The modest results from the ADB urban project in Kerala point to the lack of extensive and continuous public consultations and community-driven prioritization of interventions right from the design phase until project completion. The institutionalization of a permanent two-way-communications campaign is essential to ensure public ownership and support for climate smart and disaster resilient SWM operations. This calls not only for a comprehensive communications program that includes redressal systems for constant communication with the program authorities, but also for a phased approach of the implementation of potentially NIMBY investments to showcase the need and the benefits of a sustainable system, based on multiple approaches and technologies, where waste reduction is at the core, and where



there is a concerted effort to change behaviors and make generators aware of the ultimate fate of the waste. Trust needs to be built around potential economic benefits and jobs related to the SWM sector, including the improved living and job conditions of waste pickers and surrounding residents. The SPMU will house a Public Information Cell to ensure continuous and dynamic flow of information and engagement with people, leaders, authorities and media.

51. *Financial sustainability and affordability.* Any proposed solution to SWM must be analyzed both technically and financially. Financial analysis must aim at clearly identifying the full cost structure of the SWM system, including capital and O&M expenses for the integrated value chain. While experience in middle and low-income countries shows that costs often exceed the revenues, robust financial sustainability plans must be worked out with clear and transparent allocation of revenues and expenditures. Given that operating costs in the SWM sector are high, clear revenue streams must be identified upfront to ensure that O&M is covered preferably from own-revenues (dedicated waste fees or municipal taxes) or through budget support and/or subsidies. At any rate, transparent financial sustainability plans must be put in place to increase cost-recovery overtime. The project's incentive grants system will reward the preparation of such plans as eligibility criteria to access the incentive grants. The project will support ULBs in developing cost recovery mechanisms to assign a dedicated stream of revenues for SWM that will ensure the financial sustainability of the SWM services.

52. *Regulatory enforcement and service delivery performance monitoring.* Success in some of the past World Bank SWM interventions has been associated with support to robust and advanced regulatory enforcement and performance monitoring systems. This is critical in highly decentralized contexts, like the one of Kerala, wherein higher tiers of government must play a key role in the monitoring, evaluation, and regulation of core public services at the local level. State agencies in Kerala (LSGD, KSPCB, SM) lack institutional systems, organizational capacity and reliable data on the regulatory compliance and performance of the SWM systems, owing to which they are not able to regulate and curb illegal dumping and open-burning practices. The project will focus on strengthening the regulatory enforcement and monitoring systems by investing in the development of sector Management information system (MIS) systems for M&E, grievance/compliant handling systems, annual independent audits and surveys, that will be the basis for assessing the performance of the ULBs.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

53. SM under LSGD will be the primary implementation agency for the project and will be responsible for the implementation, management, coordination and monitoring of KSWMP at the state level. The Executive Director of SM will act as Project Director (PD) and a dedicated SPMU is being established under him supported by a full-time Deputy PD and a team of core technical staff for carrying out core functions of the project related to (i) SWM engineering, (ii) procurement and contract management, (iii) environment safeguards, climate change and disaster resilience, (iv) social development, gender, stakeholder engagement and communications, (v) financial management, and (vi) M&E including MIS. SM will be responsible for the implementation of components 1 and 3, and ULBs will be responsible for the implementation of component 2. Detailed implementation arrangements are mentioned in Annex 2.

54. To monitor and coordinate the activities of ULBs, SM will set up DPMUs in each of the 14 districts of the state, housed in the District Collector's office. Each DPMU will comprise the following staff: (i) district coordinator/SWM engineer, (ii) financial management expert, (iii) M&E expert (iv) environment engineer and (iv) social development and communications expert. The DPMU staff, appointed by SM, will be responsible for coordinating, monitoring and supervising the annual fiscal planning and reporting; investment subproject planning and implementation; TA and capacity building activities at the ULB level; and reviewing and submitting subproject related documentation to the SPMU



for clearance and approvals as per the operational procedures designed in PIM and ESMF³ and ensuring that the investments are designed considering the climate and disaster resilience aspects. DPMUs will also be responsible for monitoring the expenditures undertaken by the ULBs and ensuring that they are eligible as per the project guidelines. The DPMU will work closely with the District Collector's office and District Planning Committee (DPC) as per the government systems and procedures. DPMU will also be responsible for carrying out all the periodic monitoring and reporting, including both physical and financial progress, of all the activities at the ULB level. A district co-ordination committee headed by the District Collector will be set up to coordinate and resolve implementation issues. At the local level, all the participating ULBs will be required to constitute a PIU under the Secretary (executive head) of the ULB. The PIU shall comprise a SWM Engineer, a Finance/Accounts Officer and 1-2 technical staff, responsible for handling SWM services in ULBs.

55. The SPMU and DPMUs will be supported by a PMC firm, hired by SM, for carrying out the project management, coordination and supervision activities at the state and district level. The PMC will comprise a team of experts in Trivandrum to support SPMU and 14 teams in each of the districts to support the respective DPMUs. The state level team will support the SPMU in all areas of project management including: (i) administration of the ULB grants under component 2; (ii) implementing all the SWM focused institutional and policy reforms; (iii) developing SM as a State level nodal sector agency for SWM; (iv) planning and implementing formal training activities under component; (v) implementing and supervising all the investment projects under component 3, and (vi) review and appraise project documents such as DPRs, FR and bid documents, ESIA/ Environmental and Social Management Plans (ESMP/RAP), fiduciary, environment and social safeguards reports, and physical and financial progress reports, utilization certificates prepared by ULBs. At the district level, the PMC team will support the DPMUs in undertaking district level project coordination and monitoring activities. In addition, district-level Technical Support Consultant (TSC) teams will be hired in each district to provide end-to-end technical support to the participating ULBs in their respective districts in carrying out all the annual fiscal planning, budgeting and reporting activities; subproject specific planning, design and implementation activities including preparation of all technical documents duly incorporating climate and disaster resilience, environment and social impact assessment as per ESMF, procurement, contract management and implementation supervision.

B. Results Monitoring and Evaluation Arrangements

56. The lack of comprehensive M&E system in Kerala has limited proper collection of SWM data. The Project will establish an MIS system that will enable collection of data related to quantity of waste, place of generation, and how much residents are paying for SWM services. The design and implementation of such a system will require capacity building across the different tiers of government. The production of timely and accurate data would allow to measure city performance on several standards/parameters. Data will be generated/collected at the ULB level and the information will be publicly accessible online. The collected data at the ULB level be reported to the SPMU through the DPMUs. SPMU will have the overall responsibility of results monitoring and evaluation for the project. Detailed M&E arrangements will be included in the PIM, including defined responsibilities and the templates for periodic and annual progress reports. Results and data verification of eligibility criteria for the incentive grants will be conducted by an IVA.

C. Sustainability

57. The project adopts a comprehensive approach for improving SWM systems by addressing the key infrastructure gaps and service delivery systems along with institutional/organizational and financial systems in ULBs which ensures long-term sustainability of SWM services. The grant design will incentivize ULBs to address key institutional constraints

³ ESMF comprises Part I: Strategic Environment Assessment, Part II: Executive Summary of ESMF, Part IIA: Environment Management Framework; Part IIB: Tribal Development Framework-Social Management Framework; and Part IIC: Resettlement Policy Framework



to access the financial resources. In addition, the project will provide TA and capacity building to ULBs to implement these institutional reforms. In order to ensure that the SWM facilities are financially and operationally sustainable, the project will support regional facilities for waste processing/recycling and disposal. Investments will be designed in a technically and financially sustainable manner and are expected to attract private sector operators for SWM.

58. Sustainability will also be pursued through setting up appropriate budgeting and financial systems for medium to long term cost recovery in the SWM sector. As the development of an end to end service delivery solution takes off, costs will increase and ULBs will be required to develop and implement financial sustainability plans as part of the city level SWM plan, with a full cost structure and identification of all revenue streams (both a dedicated SWM fee/charge and an earmark from the ULB general budget) to incrementally meet the O&M costs. O&M cost recovery in the initial years of project implementation will mostly come from an expansion in the number of SWM users/payers (domestic, institutional and commercial). Operational sustainability is expected to be reached by 2030 and will consist of both a dedicated SWM user fee/tariff and an earmarked portion of ULBs general budget (see annex 3 on financial analysis).

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

Technical Analysis

59. The project follows a framework approach, wherein the specific investments and capacity building interventions will be determined based on the state and local level SWM planning, citizen engagement and implementation readiness including identification of suitable land parcels for all the SWM facilities. Implementation of all project activities will be done in compliance with the national SWM rules 2016, state's new SWM strategy and other relevant regulations.

60. Based on the institutional capacity assessment undertaken it has been ascertained that (i) the state government needs to undertake a number of institutional and policy reforms to provide a coherent and clear policy direction and to be able to effectively undertake the role of regulatory enforcement and compliance monitoring and (ii) ULB's organizational and financial capacity, service delivery systems and accountability/service performance mechanisms need to be strengthened to improve service delivery in the SWM sector. Further, SM and participating ULBs do not have prior experience and capacity for undertaking the identified project activities by themselves. Hence, the project has designed a dedicated component to provide TA and capacity building support to the state as well as ULBs in planning and implementing the project activities related to reforms, investments and project management.

61. The technical design of the project is informed by the findings of a detailed sector diagnostic assessments and sample field surveys/consultations at the state and local level. Based on the gaps identified in the diagnostic assessments, the project has adopted an integrated service delivery approach including segregation, collection and transportation, recycling/processing and safe disposal. The project will support a hybrid service delivery model by supporting both decentralized and centralized waste management solutions with customized suite of technology options suited to the geographical and demographical context of Kerala. ULBs will have the complete authority and responsibility to deliver SWM services by (i) adopting an optimal mix of generator-level, community-level and city level waste management solutions through a city-wide SWM planning exercise, (ii) strengthening the systems for primary collection, transportation, processing and recycling of waste, and (iii) ensuring safe disposal of residual waste (inerts/rejects) by participating in a regional landfill. Owing to the urbanization profile, population density, land scarcity and weak ULB capacity, the engineered landfills will be developed by SM exclusively at the regional level based on a WSA planning approach considering the land availability, waste profile, secondary transportation distances and technical/ financial viability. Since, some of the participating ULBs are small and may not be able to develop, afford and sustain stand-alone city level waste treatment/recycling facilities, the project will also support regional treatment/recycling facilities at



WSA/sub-WSA level. The sector assessments have also identified existing open dumping practices as a major issue, which has eventually led to the emergence of multiple waste dumpsites across the state. In compliance with the national SWM rules and the recently issued orders by the National Green Tribunal to GoK, the project will support the closure/remediation and/or rehabilitation of select major waste dumpsites in the urban areas with the objective to carry out proper environmental rehabilitation and reclaim land that may be used for future waste management facilities including interim disposal facilities. Land reclamation through dumpsite remediation/closure is expected to help the state in addressing one of the fundamental binding constraints of land availability for waste management and disposal.

62. The ULB financing system under Component 2 provides formula-based incentive grants to the participating ULBs, linked to critical readiness conditions and institutional reforms required for improving SWM services. The grant mechanism design was informed by the lessons from KLGSDP and international good practices in other urban service delivery improvement projects. The readiness conditions and institutional reforms were identified from city level assessments, and the eligible investments from the hybrid service delivery model described above. The city-wide SWM plans will be the main instrument to plan the city level SWM systems in a manner that minimizes the residual waste that needs to be disposed-off in landfills by following the 3R approach (reuse, recycle, reduce). Detailed technical guidelines will be developed as part of PIM to provide guidance and support to the ULBs to plan, design, implement and manage these city level solutions. The grant system is designed to support ULBs to initiate SWM improvement in an incremental way through T1 activities and complete the readiness and institutional activities for T2 activities.

63. *Coordination between local and regional SWM systems:* To ensure that the local and regional investment subprojects are implemented in a planned and coordinated manner, the project has adopted a cluster approach, wherein an integrated inter-municipal arrangement will be finalized within each WSA to formalize an integrated SWM service model including (i) source segregation, collection and transportation, community level processing and recycling within the municipal boundaries, (ii) centralized processing and recycling facilities at WSA or sub-WSA level depending on the land availability and technical and financial viability, (iii) incremental disposal cells as interim regional disposal facility (with capacity for 5-6 years) at rehabilitated dumpsites, and (iv) long-term regional disposal facilities with adequate capacity for 20-25 years. Activity (i) will be undertaken by the ULBs and activities (ii), (iii) & (iv) will be led by SM in coordination with the ULBs in a cluster. ULBs will plan and implement the local level activities under component 2 based on the SWM plan and will either develop stand-alone processing facility with adequate capacity within its jurisdiction or join a cluster of ULBs identified by SM and pay a treatment fee. For the regional waste disposal systems, all the participating ULBs in the WSA will be required to commit to provide minimum quantum of daily inert/rejected waste and pay a fixed per unit disposal fee to the regional disposal facility operator contracted by SM. The disposal facility operator will also have the responsibility to undertake secondary/tertiary transportation of inert/residual waste from designated secondary collection points (either processing facilities or transfer stations). This will ensure clear delineation of the responsibilities of the ULBs and the regional facility operator and ensure smooth coordination. A detailed feasibility assessment will be carried out to assess various alternative models for developing a well-coordinated, planned and integrated system within a WSA for a cluster of ULBs, based on which the final contractual modality and procurement package will be finalized.

64. *Phased approach for waste disposal systems:* Long-term regional disposal systems will be developed in an incremental and phased manner and are likely to take time to come up since there will be a lot of upstream preparatory work needed for land identification, seeking clear title ownership and permission/environmental clearances to initiate construction as well as technical studies and inter-municipal coordination arrangements. Hence, the disposal systems will include: (i) incremental disposal cells to be developed at the dumpsites which are being remediated and rehabilitated to serve as interim safe disposal facility for a smaller cluster of ULBs for the next 5-6 years, which will allow them to initiate improving the upstream SWM services for segregation, collection, transportation and processing/recycling and dispose-off the rejects/inert safely, and (ii) long-term regional disposal facilities to be developed as the final solution



depending on the land parcels identified for 20-25 years of time horizon. There will be clear transition plan developed from interim to long-term disposal facilities by aligning the WSA planning for the interim and long-term disposal facilities. This phased approach for disposal systems is critical to ensure that the project is able to support the participating ULBs in incrementally improving the SWM services across the value chain, without waiting for the long-term regional disposal systems come up. Also, these interim disposal facilities will serve as a good opportunity for SM to pilot the regional approach, demonstrate the successful way of developing and managing the regional disposal facilities, and develop wider acceptance in communities and ULBs to scale-up this model in a phased and planned manner.

65. *Land requirement:* As noted in earlier sections, availability of unencumbered (without any formal or informal claims, and with no occupants or people who use the land for economic purposes) and suitable land parcels is going to be crucial for timely implementation of the subproject at local and regional level. To address the land availability risks in the project, the following concurrent alternative tracks will be pursued by the implementing agency: (i) identification of unencumbered government land for new local and regional level processing and disposal facilities, (ii) identification and rehabilitation of existing dumpsites which qualify the land siting criteria and safeguards risk screening process, to reclaim land and develop incremental cells as interim disposal facilities for 5-6 years, and (iii) identification of private land parcels for acquisition under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. It is proposed that the government land transfer process will be facilitated through the State level Project Steering Committee (PSC) chaired by Chief Secretary to ensure timely transfer of land and all people dependent on the land will be fully compensation and rehabilitated in accordance with the Resettlement Policy Framework (RPF), prior to transfer. For private late acquisition, SM would need to coordinate with the Revenue Department to complete the SIA within the stipulated timeframe as per the Act and consult/negotiate the rates for the land following the section 11 of the Act. The RPF lays down the detailed procedure to facilitate negotiated purchase of land for subprojects. Other important risks including objections by host community, decrease in neighborhood land prices, stigma associated with waste management sites within proximity of settlements (NIMBY issue) have been assessed and ESMF includes appropriate mitigation measures for citizen engagement, community participation and awareness generation/IEC during the site selection process.

66. *Implementation readiness:* To advance the project implementation readiness, SM has already initiated a number of preparatory activities including the identification of investment subprojects, identification of existing dumpsites for rehabilitation and development of interim disposal facilities, identification of the land parcel for the first long-term regional disposal facility and identification of the first set of ULBs that are committed and ready to start on the SWM interventions under the project. SM has indicated that the first set of investment subprojects under component 3 would most likely focus on dumpsite rehabilitation and development of interim disposal facilities. An initial screening of 37 existing dumpsites was undertaken using the rapid site assessment criteria and 6 dumpsites have been identified for further detailed screening and technical assessment. SM has proposed to plan 2-3 WSAs covering about 50 ULBs in about 9 districts around these existing dumpsites to plan for interim disposal facilities alongside dumpsite rehabilitation. SM is also coordinating with participating ULBs to develop a list of existing SWM facilities (MRFs, RRFs, compost plants) which need to be rehabilitated, which can be started in the first year through BG under component 2.

67. As noted above, Kerala is highly vulnerable to natural disasters and is categorized as multi disaster prone. The current SWM infrastructure is constrained by lack of guidelines and capacity on the climate smart and disaster resilient design for infrastructure and SD systems. The technical design guidelines for climate smart and disaster resilient SWM infrastructure will be included in PIM, which will be adhered for the infrastructure being financed under the project. The climate resilient SWM service delivery will be mainstreamed in the SWM plans and the project will support institutional and policy reforms for disaster and climate resilience at the ULB levels.

Economic and Financial Analysis



68. GoK will provide project funds as a capital grant to ULBs, which will generate additional O&M costs that ULBs must cover from user charges or from their general budgets. As such the financial analysis focusses on determining the incremental implementation costs posed by the SWM investments on the ULBs, and on O&M cost recovery for SWM and the share of ULB's revenue surplus from general budget that needs to be set aside to cover the costs.

69. The financial analysis reveals that (i) the size of the Development Plan of the ULBs will increase by approximately 10 percent per year in FY22, FY23 and FY24 due to additional SWM investments which is not disproportionately high; (ii) the SWM operations will result in an average 15 percent increase in revenue and 26 percent increase in expenditure until FY 2030. Cost recovery through user charges will be 45 percent in FY24 and targeted to be 100 percent by FY30. User charge projections are sensitive to the willingness to pay of commercial establishments that are estimated to contribute to 47 percent of the total user charges. A SWM fee of Rs. 70 per household per month (US\$0.92) for SWM accounts for only 0.14 percent of the average household income, (iii) the shortfall in cost recovery in SWM is expected to be met by the general budget of the ULBs. An average of 25.2 percent of revenue surplus from general budget needs to be set aside to meet budget deficits in the initial years (FY24 to FY26) and the average requirement until FY30 is 11 percent. Out of the 87 ULBs, 30 would need to set aside more than 33 percent of their revenue surplus, and 9 ULBs will slip into revenue deficit after meeting SWM O&M costs; and (iv) to meet some O&M expenditures (i.e. performance-based contracts and shared facilities), that would be permitted under Component 2. The increase in cost recovery will be primarily based on expanding the consumer base and only after FY30, once services have been consolidated, user charges are expected to be substantially increased. This provides an opportunity for the ULBs to stabilize the user charges within project period, and yet maintain financial sustainability of SWM operations (see Annex 3).

70. The economic analysis has been carried out considering cost/benefit assessments related to SWM service delivery. The key economic benefits considered for the analysis include environmental improvements through GHG emission reduction and reduced contamination of surface and ground water resources; public health benefits in terms of reduced vulnerability to diseases and avoided medical expenditures; employment generation and livelihoods opportunities; improved resource recovery; enhanced disaster resilience; and land optimization due to dumpsite rehabilitation. It doesn't consider the potential interventions related to special waste (C&D waste, Bio-medical waste) as the benefits from such interventions will have cross-sectoral implications. The economic analysis is conducted on constant price basis for 2020 and covers a period of 30 years from 2020, i.e., 5 years for implementation and 25 years for operations, with future economic values (costs/benefits) discounted to present value using a 6 percent discount rate. The economic analysis of interventions across SWM under KSWMP yields an Economic Net Present value (ENPV) of USD 1,413 Million, an Economic Rate of Return (ERR) of 49 percent, and a Net Benefit-Cost ratio (B/C) ratio of 2.76. The positive ENPV, positive gap between the ERR and the discount rate, B/C ratio greater than 1 deem the project economically feasible (see Annex 3).

B. Fiduciary

(i) Financial Management

71. The Financial Management (FM) arrangements are in line with the fiduciary requirements of OP 10. The project will operate on a joint co-financing approach with AIIB covering all components. A dedicated pooled Designated Account (DA) denominated in US dollars will be opened and will be used to remit initial disbursements of World Bank/AIIB funds to the project through CAAA. The disbursement method to be used will be "Advance" and "Re-imburement" for Bank/AIIB funds. Disbursements amounting to a maximum 15 percent of the total WB/AIIB loan value, will be remitted under "Advance" method at project commencement, after which the subsequent disbursements from WB/AIIB would follow "Re-imburement" method. Under "Re-imburement" method, GoK would need to pre-finance the project expenditures related to total loan as well as GoK share, using GoK funds first and later claiming re-imburements from WB/AIIB. Disbursements will be report-based using Interim Financial Reports (IFRs). Initially under advance method, the advances will be deposited into the DA by the Bank/AIIB. Thereafter, replenishments/withdrawals from the DA will be made based on the annual forecasts in the six monthly IFRs for the maximum of 15 percent of loan value. Consolidated

IFRs for the project will be prepared by the SPMU at SM and will be submitted to Bank within 45 days following the end of each period under both advance and re-imburement method. Annual Financial Statements of the project will be prepared by the SPMU and audited annually by the Comptroller and Auditor General (CAG). These audited financial statements, together with the auditor’s report, will be submitted to the Bank within six months of the end of the fiscal year. There are no overdue audit reports or ineligible expenditures under the Bank financed GoK implemented projects.

72. LSGD already has experience of handling KLGSDP (IPF operation), that supported all LGs in the state and the FM performance of the project had a satisfactory track record. FM arrangements for components 1 and 3 of the project would be handled by SPMU, whereas FM arrangements for components 2 will be handled by participating ULBs with support from SPMU and DPMUs. For components 1 and 3, SPMU will receive funds through the state consolidated fund into a Special Treasury Savings Bank (STSB) account opened for SPMU. For component 2, ULBs would access funds based on the existing treasury system of GoK through direct allotments from the state consolidated fund. As per the FM assessment conducted, main areas that need significant improvement are FM staffing, internal audit and statutory audit by KSAD. Project will support required capacity building initiatives in these areas. In addition, a major overarching risk identified for the project is adequate and timely availability of funds for expenditures to be incurred by the implementing agencies to ensure uninterrupted project implementation. The residual FM risk is assessed to be “substantial” at this stage. Based on the key risks identified during the FM assessment, the following risk mitigation measures in Table 2 are envisaged to be carried out during advanced stage of project preparation and early stages of project implementation:

Table 2: Financial Management Risks and Mitigation Measures

Risk	Mitigation Measure
Limited FM staff capacity at SM	Hiring of suitably qualified and experienced FM specialist to SPMU with other FM support staff as required
Limited FM staff capacity at ULB	Experienced staff, who preferably have some knowledge on financial management will be deployed for a minimum period of 3 years. There will also be oversight on FM arrangements carried out by the SPMU, PMC and DPMU level. KILA will undertake initially comprehensive formal training sessions on FM systems.
Weak coverage of internal audit by SPAO/Non-existent state internal audit system	SPMU to hire a firm of chartered accountants with qualifications and experience, and under terms of reference acceptable to the Bank. In case the state establishes an internal audit system in due course, Capacity building interventions as required will also be offered under the project
Delayed audits of ULBs carried out by KSAD	Initial agreement reached with KSAD to give priority to the ULB audits. Any new capacity building interventions can also be considered under the project as required
Overall weak financial management systems	Extensive hand holding support will be provided during the initial years of the project. The PIM will include a FM chapter that will cover the detailed FM arrangements of the project
Risk of not providing required funds in adequate amounts in a timely manner.	Proportion of CF is 30 percent. The 15 percent of the total WB and AIIB funds will be provided to state in advance initially. Agreement has been reached with GoK to ensure uninterrupted funding with no restrictions being imposed. A legal covenant has been introduced in the PA to minimize the risk

(ii) Procurement

73. The Bank’s “Procurement Regulations for IPF Borrowers for Procurement in Investment Project Financing - Goods, Works, Non-Consulting Services and Consulting Services,” dated July 2016 revised November 2017 and August 2018 (“Procurement Regulations”) and the additional provisions stipulated in the Legal Agreement will be applicable for the procurement of Goods, Works, Non- Consulting and Consulting Services. The project would be subject to the World Bank’s Anticorruption Guidelines, dated October 15, 2006, and revised in January 2011 and July 2016.

74. A procurement assessment undertaken by the World Bank as part of appraisal identified capacity gaps and challenges in SM, which will be the responsible for large-value procurements under Component 1 and 3. Large procurements are envisioned for the creation of new regional landfills (5-6 in number of a value of US\$5-15million) and

the hiring of State and District levels Project Management Consultancies with a tentative value of around US\$16million. The assessment noted lack of prior experience in procurement related activities such as tendering, bid evaluation and overall contract management, absence of dedicated procurement staff and lack of a grievance redressal mechanism system. At ULB level, the engineering divisions will be responsible for all the procurement activities under Component 2 of the project. The assessment noted that some of the ULBs have previous experience of working in World Bank funded projects and with Bank Procurement Guidelines, but experience in handling high value procurements is limited. Based on the procurement assessment, the following key risks and mitigation measures in Table 3 have been identified:

Table 3: Procurement Risk and Mitigation Measures to implemented by SPMU

Risk	Mitigation Measure
Actions to be implemented before Project Effectiveness	
No Procurement Staff at SM	SPMU would hire two qualified full-time procurement specialists
Inadequate prior experience of handling capital procurements at SM	Hiring of a PMC firm at state level which would provide three qualified procurement specialists as key experts to support SPMU
Limited Staffing at DPMU	Each DPMU to hire one project management specialist with prior experience of procurement and contract management.
Limited procurement capacity at ULB level	PMC firm to provide one procurement specialist to support each DPMU
Risk of non-compliance on WB procurement regulations at ULB level	Adoption of PIM
Actions to be implemented within six months of Project Effectiveness	
No previous experience of World Bank financed Project at SM	Get SPMU staff trained on World Bank Procurement Regulations
No complaint handling mechanism.	Establishment of a Procurement Related Complaint Handling Mechanism
PPSD preparation without market consultation	Project to conduct a market consultation exercise to discuss high value procurement packages and accordingly update procurement arrangements under PPSD
Actions to be implemented on continuous basis	
Non-Disclosure of procurement information	Timely disclosure of procurement related information in public domain as per requirements of World Bank Procurement Regulations
Risk of non-compliance on WB procurement regulations at ULB level	SPMU to undertake prior review of all bid documents and evaluation reports, irrespective of whether these are to be prior reviewed or post reviewed by the Bank SPMU to operate STEP system on behalf of ULBs

75. A Project Procurement Strategy for Development (PPSD) has been prepared by SM and approved by the Bank. PPSD will be updated once specific investment subprojects are identified. The preliminary procurement approach is to make use of QCBS as preferred selection method for consultancy packages of value more USD 300K and CQS as preferred selection method below USD 300K. Other selection methods including Direct Selection can also be used on case to case basis. In case of works procurement, Admeasurement based contracting would be the preferred approach for low value packages; Design-Build contracting for a high value packages without O&M; and DBOT as performance-based contracting (pre-defined performance standards and damages) for high value packages with O&M. For procurement of goods and non-consulting services, which are envisaged as small value packages, the proposed approach is to use RFB/RFQ as selection method.

C. Safeguards

(i) Environmental Safeguards

76. It is envisaged that the project will lead to positive impacts in Kerala, where current waste management practices have negative impacts on environmental well-being, manifested in: (i) widespread pollution of air, water, land, flora/fauna; (ii) resulting human health impacts; (iii) community and worker health and safety; and (iv) overall socio-



economic impacts, particularly during the recurring disasters. The Project investments will develop an effective SWM and bio-medical waste management (for COVID-19 medical waste) that will help prevent and mitigate negative long-term impacts of unmanaged waste and improving resource efficiency (by reusing, recycling and resource recovery). The project interventions are not likely to cause any adverse, large-scale, significant and/or irreversible impacts. Expected short term localized construction and operation stage negative impacts of solid and biomedical waste management facilities, collection, and transport of wastes and bioremediation of existing dump sites could be managed by following regulations and technical guidelines, and better institutional capacities for safeguards and disaster waste management.

77. Even though the subprojects are designed to eliminate the existing and future environmental health hazards, considering some of the large project interventions at regional levels such as regional/cluster level landfill facilities and biomedical waste treatment and disposal facilities, and risks during dumpsite remediation works, the project has been assigned Environmental Category A according to the World Bank's Safeguards Policy OP/BP 4.01 (Environmental Assessment). Other environmental safeguard policies triggered by the project include OP4.04 (Natural Habitats), OP 4.09 (Pest Management) and OP 4.11 (Physical Cultural Resources) considering the baseline environmental setting of State.

78. As the exact locations of the interventions under the project are not yet known, to integrate environmental and social considerations in subprojects and effective safeguards management, the borrower has prepared a Strategic Environmental Assessment (SEA) for Waste Management Sector in Kerala and an ESMF. The ESMF describes the existing environmental and social sensitivities of Kerala State, potential impacts due to proposed development, regulatory and environmental aspects related to various SWM options to devise/guide sustainable SWM solutions for the project, suggested improvements to existing systems and interventions for better environmental and social outcomes of proposed facilities. Long term impacts on sensitive areas are avoided through exclusions and screening. The ESMF guides screening, assessing, planning, and implementing mitigation measures; supervision and monitoring mechanisms; budget for ESMF implementation, grievance redressal mechanisms and disclosure requirements, following national/state regulations and the World Bank policies and standards (the more rigorous requirements among these). A negative list of investments has been included to avoid any major irreversible environmental impacts, to be complied by SM and ULBs while planning investment subprojects. The ESMF includes guidance for interventions near natural habitats, Physical Cultural Resources Management Framework including chance find procedures in addition to indicative ESMPs for various types of interventions, guidance on Pest Management (avoiding the usage of National / State and World Health Organization's list of banned pesticides and related health and safety aspects), Environmental Codes of Practices, and World Bank Group Environment and Health Safety Guidelines for Water, Sanitation, Solid Waste Management, and Health Care Facilities. It also includes special guidance from World Health Organization and the WB guidelines on COVID-19 waste management, health care, and Civil Works and Labor management during this emergency.

(ii) Social Safeguards

79. According to a rapid social assessment⁴ the project is expected to lead to the overall wellbeing of urban population in participating ULBs; enhance the value chain of SWM leading to improved livelihood opportunities for service providers; improve working conditions for service providers; promote responsible behavior in waste generators to reduce the quantum of waste generated at the source; and reduce land requirement to process BDW and NBDW through decentralized practices for waste minimization and diversion.

80. Key social risks arise due to (i) exclusion of women, vulnerable and tribal communities from planning process as well as accessing benefits such as livelihood opportunities and skill development; (ii) poor community participation throughout the subproject cycle; (iii) incidence of GBV and inadequate response or support services ; (iv) weak accountability and transparency in service delivery; (v) health and safety risk of unorganized labor engaged in SWM; (vi)

⁴ Based on secondary literature, technical assessments and baseline information collected through survey and consultations in 12 sample municipalities.



weak enforcement of labor laws and lack of labor influx management plans (in case migrant workers will be hired); (vii) ineffective communication to bring about behavior change towards SWM; (viii) negative impact on host community at the landfill and waste management sites; (ix) loss of livelihood of the most vulnerable such as rag-pickers, informal recyclers and scrap-dealers (who are currently dependent on informal waste management activities) when SWM operations are formalized; (x) lack of adequate unencumbered land for waste management and disposal facilities; (xi) ineffective systems for community feedback and unresponsive grievance redressal systems; and (xii) COVID-19 pandemic is aggravating economic, health, education, and livelihood crisis impacting the access to basic services and pushing the already vulnerable to further margins. Indigenous People (IP)⁵ have been identified in some of the ULBs in 3 districts. The key risks to IP communities include (i) selection of sites for SWM facilities, close to the tribal groups and (ii) inadequate communication and engagement with the IP communities during the subproject planning and implementation process through culturally appropriate tools. Based on the potential impacts on land, livelihoods and IP communities, the Operational Policies on Involuntary Resettlement (OP4.12) and Indigenous people (OP4.10) are triggered.

81. Based on the social assessment, the ESMF has been prepared in accordance with OP4.12, OP4.10 and national/state laws on land acquisition. ESMF includes (i) Screening to identify social risks and impacts including specific risks and impacts on tribal communities; (ii) Social Impact Assessment based on identified risks and impacts and for preparation of SMP, TDP and RAP; (iii) Stakeholder mapping, Citizen Engagement and Social Behavior Change Communication Strategy including Free Prior Informed Consultation (FPIC) with tribal groups, awareness for social mobilization, behavior change of waste generators, participatory planning, and monitoring, strengthening local governance, accountability, transparency, social audit and a robust grievance redressal management system; (iv) Strategies to ensure inclusion of women and vulnerable groups and enhance their voice in project planning; (v) Gender Action Plan for closing gender gaps and enhancing benefits to women with a focus on women SWM workers who are the most vulnerable; (vi) GBV Action Plan for prevention and response on sexual harassment, abuse, violence in sites and institutions; (vii) Labor Management procedures for improving database, systems, accountability of hiring agencies/contractors for working conditions, rights, welfare, benefits, opportunities, and restoration of livelihoods particularly the informal/unorganized labor in SWM. This also provides code of conduct for labor camps and guidance for preparing labor influx management plans incase migrant workers are hired; (viii) Institutional mechanisms to ensure effective social management at ULB, District and State level; (ix) Screening criteria for selection of investments for infrastructure facilities and scheme cycle covering the process for planning and implementation of subprojects; (x) capacity development plan; (xi) reporting monitoring systems and indicators; and (xii) budgets

82. **Citizen Engagement:** Kerala is recognized for its conducive socio-political environment for decentralization, local governance, participation and inclusion. The People's Plan Campaign in 1996 was a flagship effort for mass mobilization to bring a new democratic and participatory culture. Regular and active ward-sabhas and committees at the local level inform citizens, disclose information on budgets, expenses and development works, create avenues for them to participate, share their concerns, demand accountability and provide feedback. The 2018 state SWM policy sets a clear direction for the decentralized management of solid waste including automated grievance redressal systems; appropriate IEC campaigns and community monitoring systems. Despite these practices, and the requirements from the Citizens Charter, Public Disclosure, Right to Services, and Right to Information, overall accountability of ULBs is still weak. Some of the identified gaps that relate to SWM include discrepancies between service provision and actual needs, and poor awareness SWM levels of service and the need to pay for the services.

83. Citizen Engagement plan builds on the people-centric approach adopted by the state through decades of decentralized practices. The project will encourage partnerships between service providers and waste generators. Some

⁵ Kerala has tribal population (1.45% of the state's total population) spread across 3 districts and 12 ULBs. Tribal population in the urban areas' accounts for 0.3% of the total urban population. The state also has Scheduled Tribe (ST) population in urban areas.



of these include public disclosure, information dissemination, participatory planning and implementation, Social and Behavior Change Communication strategy, user satisfaction survey, responsive Grievance Redress Mechanism (GRM) and social audit. Through structured and continuous process of engagement and inclusion, the project will build acceptance, collaboration, greater sense of ownership and sustainability of investments. Support organizations will be engaged for social mobilization, facilitation of ward meetings, inclusion of various stakeholders particularly the vulnerable. Minutes of meetings, attendance, representation of vulnerable groups (women, IP, unorganized labor), evidence on display and disclosure of information, and Social Audit findings will highlight the effectivity of citizen engagement. Satisfaction surveys (baseline, midterm and end-term) and quarterly review of GRM reports will help identify the lacunae in both generators and service providers thereby helping to close the feedback loop.

84. **Gender:** As mentioned in the project description, the project will provide a mix of technical and financial assistance to upgrade skills the last mile SWM women workers to improve access to employment opportunities in core SWM activities including entrepreneurial opportunities for increased income. Tracking of number of women received skill upgradation training and number of women linked to SWM value chain activities and entrepreneurial activities is essential for monitoring the gender outcome i.e. percentage increase in women SWM workers accessing services. This will be included in the result framework which will be monitored independently.

85. **Gender Based Violence (GBV).** As per the World Bank GBV risk rating tool, the project scored 6.25 rating putting it in a low risk category. However, all types of crimes against women in Kerala have been increasing. To respond to GBV grievances, which have steadily increased in the State over the past decade, GoK has developed multiple mechanisms, which the project will build upon for SWM sector. The GBV Action plan enlists that vulnerabilities and GBV hotspots need to be mapped once the project sites and subproject sites are finalized. Simultaneously, the existing response mechanisms to be reviewed in terms of efficiency and effectivity in prevention, protection, rescue, rehabilitation. Based on the review, the project will identify service providers for GBV response. As per Sexual Harassment at Workplace Act 2013, institutions in the project will constitute Internal Complaints Committee.

86. **Disclosure:** The ESMF was disclosed on the World Bank website on August 5, 2020. The Executive summary was disclosed in English and Malayalam for stakeholder feedback on the SM website on May 14, 2020 . Subproject specific documents will be disclosed in English and Malayalam.

(iii) Grievance Redress Mechanisms

87. Government of Kerala offers local level, state level, face to face, telephonic and online complaint registration services: (i) Chief Ministers Public Grievance Redressal Cell- network connecting more than 10000 officials (offices) equipped with Modern technology to receive petitions from public, (ii) The Local Self Government Department offers a complaint icon on its website (<https://pglsgd.kerala.gov.in/>) for citizens to submit online complaints, (iii) Citizen's Call Centre is a single window, IT enabled facility of Government that enables Government to Citizen interface- includes consumer toll free helpline for all government services, and (iv) ULB websites also have a complaint icon which has many options but it does not have an option for SWM or sanitation. The project will strengthen the system and augment it with a toll-free number so that it is accessible by all including women and vulnerable. All complaints (received through any means) to be digitally recorded, tracked with systems for escalation and alert generation, redressal, and closure after complainant's satisfaction. The response mechanism for environmental safeguards related complaints, labor-related complaints, and gender-based violence cases are also mandated in the project. The result indicator will target 80 percent of the complaints registered resolved within 30 days.

88. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection



Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

V. KEY RISKS

89. **The overall risk to achieving the PDO is rated *Substantial*.** The institutional capacity for implementation and sustainability, environmental and social, and stakeholder related risks are rated High. The political and governance, macroeconomic, and fiduciary systems related risks are rated Substantial.

90. **Political and Governance Risks is rated as *Substantial*.** Project implementation in Kerala is consistently affected by the electoral cycles every two and four years for state and local government elections. Political headwinds may increase with upcoming local government and state government elections over the next nine to fifteen months. As such, it is to be expected that during the six-year period of project implementation the project will go through uncertain political environment resulting from political turnover at the state and/or local level. Political risk will be mitigated through a broader set of stakeholder engagement, dissemination and IEC activities on the merits (health, environmental) of a SWM system, especially in the current COVID-19 situation. Local and districts knowledge and eventual ownership of the project can secure long term community engagement to serve as a counterbalance of political turn-over. High fiduciary standards as per the Bank's procurement and FM requirements will also prevent and eventually sanction corrupt practices.

91. **Macroeconomic risk is rated as *Substantial*.** The economic contraction brought about by the COVID pandemic has significantly affected state finances (through a combination of reduced revenues and heightened expenditure needs). Moreover, the state of Kerala was already running high deficits prior to the onset of COVID (the fiscal deficit has averaged about 3.5 percent of GSDP since FY15/16 and state debt increased sharply to over 36 percent of GSDP in FY20/21). Thus, going forward, the government of Kerala will need to streamline planned expenditures and programs. However, the residual macro-fiscal risk to achievement of project objectives is contained to the extent that the counterpart funding requirement for the proposed operation (US\$90 million over seven years) amounts to a very small share of overall annual state expenditures (which have averaged over US\$16 billion per year in recent years).

92. **Institutional Capacity for Implementation and Sustainability is rated as *High*.** There is significant risk that the weak institutional capacity of the state and ULBs for implementing and sustaining SWM investments may adversely impact the PDO. SWM subprojects are complex and require substantial operational expertise and financial resources to keep service levels and prevent future breakdowns. Investment in dumpsite remediation/closure and construction of engineered landfills have no precedent in the state so the capacity to design, implement and manage these investments will have to be built from scratch. At the local level, ULBs are not well equipped to manage their SWM responsibilities and the capacity building of the ULBs will be an incremental process inevitably. As part of mitigation strategy, the project provides a robust TA and capacity building program that supports SM and ULBs for carrying out all the investment activities and undertake institutional reforms for long-term sustainability. Four critical institutional milestones have been introduced as part of the incentive grant to build long term institutional sustainability.

93. **Fiduciary risk is rated as *Substantial*:** The overall fiduciary risk of the project has been rated as substantial since the key implementing agencies under the project lack prior experience of procuring and managing high-value and complex SWM contracts. A robust organizational structure with dedicated staff positions in ULBs is critical to establish a



consistent and sustainable fiduciary arrangement for the project. Presently, the ULBs lack a FM unit with dedicated and experienced staff; posts are filled by staff with limited FM background who are transferred to other departments frequently. However, the fiduciary assessment showed that ULBs provided with capacity building interventions in the past have managed their accounting arrangements relatively well. Therefore, as a risk mitigation measure, sustainable training and capacity building initiatives will be implemented to strengthen the procurement and FM functionaries of the ULBs. The SPMU will design the capacity building interventions for ULBs to focus on procurement and FM issues at the ULB level. Since SM also lacks substantive capacity to carry out SWM procurements and large-sized expenditures, the PMC's team of experts will help the staff by carrying out day-to-day activities and will facilitate periodic formal training sessions to ensure a gradual and steady increase of capacity in the SPMU.

94. **Environmental and Social risks are rated as High:** The project has been accorded Environment Category A since it aims to finance complex regional infrastructure subprojects including landfills, processing facilities and dumpsite remediation. Other investments may include construction of recycling, resource recovery and treatment plants at community or city level. The construction works could potentially cause negative environmental impacts (e.g. air pollution, surface water, groundwater and soil contamination). The construction of these facilities may also lead to complaints. The project could generate negative impacts on ragpickers, aggregators and informal recyclers that rely on the waste streams for their livelihoods. Women (including female headed households) are amongst the more vulnerable groups working in the sector. The environmental and social impact assessment and management will be the responsibility of SM and ULBs that have weak capacities for safeguards. To mitigate the risk, ESMF includes detailed guidance on the process to be followed for risk screening, impact assessment, stakeholder consultations/citizen engagement and management plan preparation as well as the mitigation actions to be taken for each type of investment subproject at state and/or local level. The institutional arrangement for implementation includes dedicated Environment and Social Development Units (ESDUs) at state and district level to closely monitor, supervise and handhold the SM and ULBs in complying with ESMF. The project design and implementation arrangements have fully mainstreamed the mechanisms for monitoring of safeguards risks and mitigation actions.

95. **Stakeholder risks are rated as High.** Opposition from local communities and other key stakeholders could have a negative impact on the achievement of the PDO. While there is recognition of the need to improve SWM services and its benefits, it is yet to be seen if there would be aligned support by government agencies, civil society, and the public on the proposed solutions. Opposition is expected from party lines and the informal sector involved in primary waste collection that is operated by a single organization and may see their livelihoods altered on account of broader competition. The main activity envisioned to mitigate this risk is strong and continuous SBCC and IEC campaign and GRM to keep stakeholders informed of the activities being undertaken by the project and provide a channel to address feedback and complaints. There will likely be opposition by local landowners and neighboring communities in the siting of processing/disposal facilities. Dedicated Stakeholder Engagement Plan has been prepared as a part of ESMF that elaborates the stakeholder engagement and community mobilization procedures to be followed for adequate consultation and transparency.



VI. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: India

Kerala Solid Waste Management Project

Project Development Objectives(s)

To strengthen the institutional and service delivery systems for solid waste management in Kerala

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
To strengthen the institutional and service delivery systems for solid waste management in Kerala			
Number of people with access to improved solid waste management services (Number (Thousand))		0.00	6,000.00
Solid waste disposed safely in engineered landfills, as per National SWM Rules 2016 (Metric tons/year)		0.00	146,000.00
Number of ULBs that accessed incentive grants for improving SWM services (Number)		0.00	60.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Institutional development, capacity building and project management			
Number of cities that have issued SWM bi-laws (Number)		0.00	60.00



Indicator Name	PBC	Baseline	End Target
Number of participants in SWM training sessions (Number)		0.00	16,800.00
Number of cities with city SWM plans (Number)		0.00	60.00
Grant support to ULBs for SWM			
Household coverage of door to door segregated municipal waste collection services (Percentage)		0.00	70.00
Share of plastic waste recycled at the local level (Percentage)		10.00	50.00
Number of ULBs with improved human resource capacity for SWM (Number)		0.00	60.00
Number of ULBs that adopted cost recovery system for SWM (Number)		0.00	60.00
Number of women's groups implementing SWM services financed by the project (Number)		0.00	120.00
Share of the complaints registered resolved within 30 days (Percentage)		0.00	80.00
Number of ULBs in which beneficiary satisfaction survey is conducted (Number)		0.00	60.00
Development of regional SWM facilities			
Number of dumpsites closed (Number)		0.00	3.00
Number of landfills constructed and operational (Number)		0.00	3.00
Number of inter-municipal coordination arrangements in place for regional disposal systems (Number)		0.00	3.00



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Number of people with access to improved solid waste management services		Annual	Consolidated Progress Report by SPMU	Progress Reporting by each districts (periodic)	Prepared by DPMU (inputs from ULBs)
Solid waste disposed safely in engineered landfills, as per National SWM Rules 2016	Climate Indicator: safe disposal in engineered landfills will contribute to reduction of GHG emissions. Measures properly disposed amount of solid waste per day (TPD, ton per day) and aggregates by year	Annual	Consolidated Progress Report	State level Progress Report	SPMU
Number of ULBs that accessed incentive grants for improving SWM services	Climate Indicator: improvement in solid waste management systems in ULBs will contribute to reduction of GHG emissions	Annual	Consolidated Progress Report	Independent Verification of Eligibility Conditions	SPMU (inputs from DPMU)

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Number of cities that have issued SWM bi-laws	The bi-law is to operationalize the 2020 SWM Strategy	Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU



Number of participants in SWM training sessions	Same as indicator name. The underlying assumption is that the average number of training sessions to be provided per year is 160, and anticipated number of participants to each session is 50.	Annual	Consolidated Progress Report	State level Progress Report	PMU
Number of cities with city SWM plans	Same as indicator name	Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)
Household coverage of door to door segregated municipal waste collection services		Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)
Share of plastic waste recycled at the local level	To be measured by adding the capacity of the recycling facilities under the project. The target is 50% of the total plastic waste collected.	Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)
Number of ULBs with improved human resource capacity for SWM	To be measured by compliance with eligibility criteria related to hiring SWM staff	Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)
Number of ULBs that adopted cost recovery system for SWM	This indicator will be measured by either establishing a dedicated revenue source like SWM fee or ringfencing a part of the general budget for SWM.	Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)



Number of women’s groups implementing SWM services financed by the project		Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU
Share of the complaints registered resolved within 30 days		Annual	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)
Number of ULBs in which beneficiary satisfaction survey is conducted		Three times: 1st, 4th, and 6th year	Consolidated Progress Report	Progress Reporting by each districts (periodic)	DPMU (inputs from ULBs)
Number of dumpsites closed		Annual	Consolidated Progress Report	State level Progress Report	SPMU
Number of landfills constructed and operational		Annual	Consolidated Progress Report	State level Progress Report	SPMU
Number of inter-municipal coordination arrangements in place for regional disposal systems		Annual	Consolidated Progress Report	State level Progress Report	SPMU



ANNEX 1: Impact of COVID-19 Pandemic and Government Response

1. **In India, the pandemic and the national lockdown between March-May 2020 affected economic activity, with real GDP contracting by nearly 24 percent in Q1 FY21 (April-June 2020).** Until mid-March 2020, India was impacted indirectly via trade channels, as key imported inputs to domestic production were impeded, supply chains were disrupted, and global trade slowed. As of March 25, the GoI implemented a country-wide 'lockdown' to contain domestic contagion, and several states imposed additional curfew measures. As a result, economic activity, particularly industry and services, slowed sharply.

2. **According to the World Bank's latest forecast, economic growth is expected to decline to -9.6 percent in FY21 and recover gradually thereafter. The financing needs of the GoI are expected to rise significantly.** The sharp economic slowdown has affected revenues disproportionately (at central and state levels), with central government revenues declining by over 40 percent in the April-July period and states facing a shortfall of a similar magnitude. At the same time, expenditure needs have risen. As a result, the general government deficit is expected to rise above 12 percent in FY21 and Public and Publicly Guaranteed debt to reach above 90 percent. The bulk of the required financing is expected to be sourced from domestic markets which have enough liquidity, with minor contribution from international borrowing.

3. The COVID-19 pandemic has exacerbated the vulnerabilities for traditionally excluded groups, such as youth and women. In addition, interstate migrants are at risk of increased poverty and destitution. Estimates from the Economic Survey highlight that the magnitude of inter-state labor migration in India was close to 9 million annually between 2011 and 2016 and migrant remittances in lower-income states like Bihar accounted for 35.6 percent of gross state domestic product (GSDP) in 2011–12. MSMEs that account for the largest non-farm employment (30 percent) with about 20 percent female participation are considered to have been impacted the most due to lockdown.

4. **The GoI has unveiled a response package corresponding to 10 percent of GDP, including:**

- **Pradhan Mantri Garib Kalyan Yojana (PMGKY), to protect the poor and vulnerable impacted by Coronavirus Containment Measures,** expected to cost approximately \$23 billion.
- **MSME support** includes Emergency Credit Line Guarantee Scheme for INR. 3 trillion⁶, INR. 200 billion subordinate debt for stressed MSMEs, INR. 100 billion to provide equity funding for MSMEs with growth potential and change in the definition of MSMEs, by increasing investment limits and firm turnover, to help incentivize firms to grow.
- **Agriculture infrastructure fund - proposed financing facility of INR. 1 trillion (to be funded by NABARD) to promote post-harvest management infrastructure and, Micro-food enterprise - INR. 100 billion for technical upgrade and promotion of clusters of local products.**
- **Outlay of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) - a universal employment guarantee program, is increased by INR. 400 billion.**
- **Increased state government borrowing-limit, from 3 percent to 5 percent of GSDP (additional INR. 4.28 trillion).**
- **Long- Term Repo Operations (LTROs) and Special Liquidity window: To alleviate cash flow pressures, the Reserve Bank of India has conducted LTROs and Targeted LTROs for a total amount of INR. 9.6 trillion (about 4.5 percent of GDP) since February 2020. Moreover, a Special Liquidity Facility for mutual funds of INR. 500 billion was opened on April 27, 2020, to ease liquidity pressures on mutual funds.**

WBG support for responding to the crisis

5. **In alignment with its global response, the WBG has been closely supporting GoI's strategy,** which consists of *three phases*. *In the first phase,* the GoI tackled the health aspects, and partnered with the Bank for a \$1 billion health

⁶ Details: <https://pib.gov.in/PressReleasePage.aspx?PRID=1625306>.



project. *In the second phase*, GoI invested \$23 billion in social protection program to support the poor and vulnerable communities during the lockdown, and the Bank provided financing of \$750 million. *In the third phase*, GoI focused on economic stabilization and reducing the costs of the lockdown. This includes support to MSMEs and their workers during lockdown by committing about 1.5 percent of GDP to MSME finance. The Bank financing of \$750 million is supporting this program to provide liquidity for their balance sheets, to mitigate against potential solvency problems and job losses, and to lay the foundations for a stronger MSME financing ecosystem in the recovery phase.

6. Additionally, the Bank activated the Contingent Emergency Response Component (CERC) in five projects to support the state governments' COVID-19 relief efforts. Moreover, many projects made special provisions for COVID-19 Assistance Packages within their project scope. Going forward, the Bank will be supporting the GoI as follows:

- **Saving lives:** Other than the ongoing health programs, the Bank is a potential partner with GoI on its flagship program of Atmanirbhar Swasth Bharat Yojna which aims at strengthening the health sector in the country by strengthening healthcare services, health emergency preparedness and response and strengthen core capacities as per the International Health Regulations. In addition, the Bank is exploring innovative ways of support to the state and central governments through upcoming operations in the education and health sector.
- **Protecting poor and vulnerable people** The Bank will further support the efforts of the GoI under this pillar through the Development Policy Lending-II for social protection with a loan of \$250m. This second phase of the Social Protection program is intended to enhance coordination across schemes and ministries to build a disaster-responsive social protection system and expand the ability of India's safety nets architecture to cater to diverse needs across states and vulnerable groups. Some upcoming projects have specific COVID-19 components supporting this pillar - Chhatisgarh Inclusive Rural and Accelerated Agriculture Growth and Fisheries Sector COVID-19 Response and Recovery.
- **Sustainable growth and job creation:** The Bank is preparing for a project on raising and accelerating MSME productivity which will focus on strengthening institutions and markets to enhance MSME productivity. Job creation is a special focus under the infrastructure projects as well.
- **Strengthening policies, institutions and investments for rebuilding better:** This is an all encompassing theme under India CPF and is integrated in most of the projects. The upcoming engagement with the National Disaster Management Agency on Seismic Risk Mitigation Project is one such example.

7. The IMF does not have an active lending program in India. However, it undertakes regular macroeconomic supervision and Article IV consultations twice yearly. The Bank and IMF teams regularly exchange views and information. The partnership with other donors was brought to fruition in both the Social Protection and MSME COVID-19 response DPLs. Within the Social Protection DPL, the Bank has worked in collaboration with the Asian Development Bank (ADB), Agence Française de Développement (AFD), and Kreditanstalt Fuer Wiederaufbau (KfW). The Japanese International Cooperation Agency (JICA), Asian Infrastructure Investment Bank (AIIB), the New Development Bank (NDB) and International Fund for Agriculture (IFAD) are also exploring potential parallel financing in upcoming operations. Discussions are ongoing to expand the World Bank's TA through additional funds from the Bill and Melinda Gates Foundation (BMGF) and the United Kingdom's Foreign, Commonwealth and Development Office (FCDO).



ANNEX 2: Implementation Arrangements and Support Plan

1. At the state level, SM under the LSGD of Kerala will be the primary implementation agency for the project and will be responsible for the implementation, management, coordination and monitoring of the project. The Executive Director of SM has been appointed as the PD and a dedicated SPMU is being established under him supported by a full-time Deputy PD and a team of core technical staff for carrying out SWM functions primarily related to (i) SWM engineering, (ii) procurement and contract management, (iii) environment engineering, (iv) social development, gender and communication, (v) financial management, and (vi) monitoring and evaluation including MIS.
2. At the district level, SM will set up DPMUs in each of the 14 districts of the state, housed in the District Collector's office to monitor and coordinate the activities of ULBs. Each DPMU will comprise the following staff: (i) district coordinator/SWM engineer, (ii) financial management expert, (iii) M&E expert, (iv) environment engineer and (v) social development cum communications expert. The DPMU staff, appointed by the SM, will be responsible for coordinating, monitoring, supervising and reporting on annual fiscal planning, investment subproject implementation and TA/capacity building activities at the ULB level. DPMUs will review and submit subproject documents and technical reports to the SPMU for clearance and approvals as per the operational procedures in PIM and ESMF. The DPMU will also be responsible for monitoring the expenditures of the ULBs and ensuring eligibility as per the project guidelines. The DPMU will work closely with the District Collector's office and DPC in line with government systems and procedures. A district co-ordination committee headed by the District Collector will be set up to help co-ordinate and resolve implementation issues at the district level.
3. At the local level, the participating ULBs will be required to constitute a PIU under the Secretary (executive head) of the ULB. The PIU shall comprise a SWM Engineer, a Finance/Accounts Officer and 1-2 technical staff who are responsible within the ULB for handling SWM services.
4. The SPMU and DPMUs will be supported by a PMC firm, hired by SM, for carrying out the project management, coordination and supervision activities at the state and district level. The PMC will comprise a team of experts in Trivandrum to support the SPMU and 14 teams in each of the districts to support the DPMUs. The state level team will support the SPMU in (i) carrying out all the project management activities; administration of the ULB grants under Component 2 and reporting to the Bank, (ii) implementing the SWM institutional and policy reforms; (iii) and support the development of SM as the State level nodal agency for SWM, (iv) planning and implementing formal training activities under component 1 in collaboration with KILA and other relevant specialized institutions, (v) implementing and supervising all the investment subprojects under component 3 including upstream subproject identification, design of clusters, identification of land parcels for disposal facilities, undertake readiness assessment and screening, and hiring of specialized technical consultants for subproject specific detailed design and ESIA, and (vi) review and appraise project documents such as DPRs, FR and bid documents, ESIA, fiduciary, environment and social safeguards reports and physical and financial progress reports, utilization certificates prepared by ULBs. The district level PMC team will support the DPMUs in undertaking district level project coordination and monitoring activities.
5. SPMU will hire a district-level TSC team to provide end-to-end specialized technical support to the ULBs in annual fiscal planning, budgeting and reporting, and subproject specific planning, design and implementation activities including preparation of all technical documents including climate and disaster resilience, environment and social impact assessment, procurement, contract management and implementation supervision.
6. A high-level PSC shall be established at the state level for periodic monitoring, strategic oversight and resolution of key issues on fast track basis. The Committee will be chaired by the Chief Secretary, Government of Kerala and will



include Additional Chief Secretary, LSGD, the Principal Secretary (Urban) LSGD, Principal Secretary, Finance, the SM Executive Director, and other Secretaries when needed and the District Collectors involved in the Project activities. The committee will meet quarterly.

Component 1: Technical assistance, capacity building and project management

7. The SPMU will be responsible for implementing all the activities under this component at the state and ULB level, with the assistance of the PMC team. As mentioned above, PMC will provide the project management support to SM at the state and district level as well as the necessary TA for implementation of state-level institutional/policy reforms and for preparation and implementation supervision of investment subprojects under component 3. The TA support to the ULBs for carrying out the institutional/policy reforms, undertaking the annual fiscal planning/budgeting/ reporting and subproject level planning, designing and implementation of investment subprojects will be provided by district level TSCs. The formal training activities will be undertaken by the SPMU in coordination with KILA for general ULB trainings and other specialized institutes for SWM specific trainings.

Component 2: Grants to ULBs for improving municipal SWM services

8. The participating ULBs will receive grants from the state government and lead the implementation of the activities under this component. ULBs will be supported by district-level TSCs (funded under component 1) for carrying out all the activities. The SPMU will be responsible for managing the entire grant system including the verification of eligibility criteria, with the support of an IVA, and the ATs, confirming the total grant allocation for ULBs, annual budgeting and planning for the entire component based on the SWM subprojects included in the ULBs annual development plans approved by the DPCs, allocating the grants and seeking periodic physical and financial progress reports. The SPMU and DPMU will also be responsible for the due diligence and appraisal of the city level subproject activities. The appraisal at the subproject level will be carried out following a risk-based approach according to their technical, safeguard, fiduciary risk, value and complexity per specific procedures established in the PIM and ESMF.

9. *Verification of eligibility criteria:* Once ULBs have signed the PA, an IVA will verify the conditions for accessing incentive grants, on a quarterly basis. For this purpose, the ULBs shall submit a formal requisition (format as given in PIM) and supporting documents at any time during a financial year (till Year 4) requesting the SPMU to initiate the verification exercise which will be scheduled on a quarterly basis. Once the validation exercise is completed by the IVA, SPMU will review the results and decide on the allocation of funds (under the incentive grants) to the ULBs depending on meeting the eligible criteria. ULBs may revise their SWM plans once per year as per the provisions of annual planning guidelines.

10. *Verification of ATs:* In order to ensure that ULBs comply with the basic technical, fiduciary and safeguard (including climate and disaster resilience) systems, ULBs will need to comply with ATs for all expenditures incurred under this project. The DPMUs, supported by the PMC, will annually verify the compliance with ATs, and submit the reports to SPMU. Compliance with ATs will trigger the release of funds for next FY as per ULB's budget estimates.

11. Based on the approved 5-year SWM plans, every year, ULBs (supported by TSCs) will identify the SWM investment subprojects to be included (with a specific head in the name of the project) in their annual development plans, to be approved by the DPC, as per the annual planning guidelines. DPMUs will carry out an annual verification of all the ULBs in their respective districts to check the compliance with ATs to determine the grant level allocation for the subsequent year. Once the DPC approves and all other technical sanctions are obtained, the ULBs will upload the details of the annual plan in Sulekha (the planning and monitoring module in Information Kerala Mission) and initiate the subproject level planning and implementation process. In case of non-compliance with ATs, fund disbursements from the Treasury for the next FY will be adjusted based on ineligible disbursement/activities in question.



12. At the subproject level, the ULBs will have to follow the technical procedures and guidelines laid out in the PIM for planning, designing and implementing SWM investment subprojects and also prepare and implement ESIA/ESMP and other safeguards management plans required as per ESMF. For the procurement and contract management, the ULBs will be required to comply with the PIM. The detailed procedures for technical review and approval will be detailed out in PIM and ESMF, according to the size, level of complexity, risk, etc. of the different subprojects. Accordingly, the ULBs will be required to submit the necessary documents to DPMU for their initial review, who will then submit to SPMU for final review and approval. For the subproject activities, which require the Bank’s prior review and no-objection, SPMU will coordinate the process of submitting the required documents to the Bank and seek no-objection before authorizing the ULBs to proceed with implementation. After the project documents are cleared, the ULBs will initiate the bidding process and engage contractors for implementing the subproject activities.

13. The TSCs will support the ULBs in undertaking all the technical work for subproject preparation including planning, preparation of engineering designs and safeguards instruments etc. Once the technical approvals and clearances have been sought from SPMU on the DPR/ESIA and other technical documents, the TSC will also support ULBs in undertaking the procurement process, engaging the works contractor and supervising the subproject implementation. TSCs will assist the ULBs in awareness generation, community mobilization and stakeholder engagement activities, and in preparing periodic physical and financial progress reports. A snapshot of activities to be supported by the TSCs is illustrated below in Table A1:

Table A1: Investment activities undertaken by ULBs and supported by the TSC

Planning and screening	Implementation of subprojects	FM and Procurement compliance	Environment and Social safeguards	M&E and reporting
<ul style="list-style-type: none"> • Preparing 5-year SWMP • Developing the annual SWM plan • Identification of investments • Assessment of technical readiness • Prioritization of activities 	<ul style="list-style-type: none"> • Preparing of feasibility reports and DPRs • Assisting on procurement for identified capital works and contract management • On-boarding of the works contractor • Supervision of implementation activities 	<ul style="list-style-type: none"> • Overall planning and budgeting • Fund flow management • Accounting and reporting activities • Internal / external audit • Preparation of utilization certificates • Preparation of Works Requirements, BOQs, and bid document • Assisting on implementation of risk mitigation measures 	<ul style="list-style-type: none"> • Screening for Environment and social safeguard compliance • Undertaking Environment and Social Impact Assessment • Preparing safeguard instruments based on the category of investment • On-site review for compliance with the ESMF, ESMP/RAP etc. • Providing required data/information/ monthly reports to SPMU on ESMF implementation 	<ul style="list-style-type: none"> • Waste generation surveys • Waste flow tracking • Updating State MIS with ULB data • Periodic cleanliness surveys • GRM • Citizen feedback

14. *Fund utilization and reallocation:* Post implementation of subprojects, payments to contractors will be made directly through the existing treasury mechanisms and not directly by the ULBs. For fund release and payment to contractors, ULBs will have to submit the supporting documents (as per PIM) to DPMU which will review the grant allocations, status of AT compliance and supporting documents (original invoice, etc.) and request Treasury to release funds to the contractors. At the end of the 4th year of the project, SPMU will review the grant allocations made to the ULBs and the ULBs that have not utilized at least 50 percent of their grant allocation will be subject to reallocation. This situation may arise either because ULBs did not meet the eligibility conditions or did not incur enough expenditures. The grant allocations reduced or lapsed from ULBs as above will be pooled and reallocated by the SPMU among the eligible ULBs (ULBs that have met all criteria for BG and incentive grant as on December of Year 4) on a per capita basis, subject to a cap of twice their current expenditure under the project. The revised grant allocation ceiling will be shared with the Bank for clearance. There will be no quarterly verification of eligibility conditions post reallocation.

Component 3: Development of regional SWM facilities



15. The SPMU will be responsible for implementing all activities in this component. The SPMU, with the support of PMC, will determine the technical feasibility and implementation readiness (part of upstream subproject preparation tasks) of the identified dumpsites and land parcels for various processing and disposal facilities, and will ensure compliance of the selected sites with the siting criteria and ESMF requirements. Based on the technical assessments and environment and safeguard screening, the SPMU will prepare a tentative list of sites and will undertake stakeholder consultations. Once consensus is obtained from the stakeholders, the SPMU will use the terms of reference (ToR) in the PIM to hire technical consultants for subproject planning and design activities. Depending on the risk category, the SPMU may be required to hire a separate technical consultant for ESIA. These technical consultants will support the SPMU in preparing subproject specific DPRs, FRs, bid documents for hiring works contractors, ESIA and other safeguards instruments, etc. The consultants will submit all the documents and reports to the SPMU for appraisal, which will take the support of the PMC to review the documents and prepare a consolidated report (as per the format in PIM) for the Bank for review and no-objection. After Bank clearance, the SPMU will initiate the procurement and implementation activities of the state level subprojects. The PMC will have an implementation supervision role assisting the SPMU to undertake the bidding process, hiring contractors, implementation and progress monitoring, ensuring contract management and overall supervision. Depending on the complexity of each of the subproject, the SPMU may hire subproject specific technical consultants for providing implementation support.

Financial Management

16. **FM staffing:** The SPMU will recruit an experienced FM specialist with suitable qualifications and experience who will be responsible for overall FM coordination and monitoring project activities and for managing FM arrangements for components 1 and 3 for the project including (a) ensuring compliance with financial covenants in the DFIL; (b) initiating disbursements from the World Bank (for IBRD/AIIB funds), sending funding advance claims to the CAAA and managing such funds and monitoring transfer and availability of funds to other levels such as ULBs; (c) providing financial and audit reports to the World Bank; (d) ensuring management of payments and accounting functions of the project; and (e) coordinating and managing the internal and external audit process and any other requirements as necessary. In ULBs, KILA will undertake initially comprehensive formal training sessions on FM systems. To ensure consistency in FM arrangements in ULBs, experienced staff, who preferably have knowledge on financial management will be deployed for a minimum of 3 years. There will also be oversight on FM arrangements carried out by the SPMU and DPMU.

17. **Planning and Budgeting:** Budget provisions with adequate amounts will be provided by GoK under an appropriate account head for the funds received from CAAA in the form of advance and subsequently as well as for funds provided by GoK as pre-financed expenditures for WB/AIIB loan under re-imburement, for all components including for state funds. This will be as per the regular state practices that would involve major heads and sub heads as relevant and applicable.

18. **Fund Flow, expenditure management and payments:** The disbursement methods primarily to be used by the project would be “Advance” method and “Re-imburement” method. Initially, Bank/AIIB funds will come as advances to the DA in CAAA. Disbursements amounting to a maximum 15 percent of the total Bank/AIIB loan value, will be remitted under “Advance” method at project commencement, after which the subsequent disbursements from Bank/AIIB would follow “Re-imburement” method. Under “Re-imburement” method, GoK would need to pre-finance the project expenditures related to total loan as well as GoK share, using GoK funds first and later claim re-imburements from WB/AIIB. For initial advances received from WB/AIIB, CAAA in turn will transfer the funds to state consolidated fund using the regular treasury system of Gol.

19. At SPMU, funds will be made available (including WB share, AIIB share and state govt. share) in a dedicated Special Treasury Savings Bank (STSB) account for incurring expenditure under component 1 and 3. SPMU will keep an account of



the funds released and will include in the financial report (IFR format as agreed and included in the PIM) on the actual expenditure incurred. STSB account of SPMU will receive funds from the state consolidated fund for component 1 and 3. GoK will ensure that all payments made through the STSB account is exempted from all restrictions imposed by state for other regular funds.

20. The Kerala State treasury system and existing local government financial management systems will be used for releasing grant funds to the ULBs. The grant release/allotment (for Bank share, AIIB share as well as the relevant state share) will be made to the eligible ULBs directly from the state consolidated fund in a single annual tranche that will reconcile with the ULB annual planning cycle and aligned to the advances received from the Bank based on the annual cash forecast given in IFRs. In line with existing grants mechanisms, release will not mean the actual/physical flow of cash but will constitute an authorization limit/allotment for the ULB to incur expenditure to that (accumulated) limit over a specific period. ULBs will be given direct allotments from the state consolidated fund. ULBs can make payment to suppliers/ contractors or to any beneficiary, directly from consolidated fund of the state, by submitting bills, with relevant documents, to concerned treasury attached to the ULB. ULBs are already mapped with a treasury and bills can be submitted to that treasury. Through GoK, each ULB will maintain a project specific dedicated line to track the allotted amount under the Bank project and the information regarding the approved allotted amount per ULB will also be communicated to the treasury as well. Once expenditures are incurred at ULB level, the documentation required for payments will be transmitted to the treasury and the payments will be processed at the treasury level.

21. Considering that a portion of Bank and AIIB funds are disbursed in advance at commencement of project, also in order to ensure smooth implementation of KSWMP activities and subsequently under the re-imburement approach where GoK would need to pre-finance expenditures, the following has been agreed in principal by the state: (a) state treasury will give priority to process the payments related to KSWMP, (b) expenditure freezes applicable for other state expenditure would not apply to KSWMP, (c) would issue authorization/re-authorization as applicable in time at the beginning of each year including for previous year rolled over unutilized allotments, (d) would not impose ways and means clearance that is restricting payments being made above a certain limit for KSWMP payments. A legal covenant has been included in the Project Agreement between Kerala and the Bank, to provide for uninterrupted funds flow and availability of adequate space for expenditure utilization for KSWMP.

22. **Financial Reporting.** ULBs will maintain appropriate records and documentation of the expenditure incurred on use of grant funds and will report actual expenditure incurred to SPMU under component 2. The actual expenditure incurred by SPMU for components 1 and 3 will be separately maintained by SPMU. SPMU will collate the expenditure details for all the project components and will prepare six-monthly consolidated IFRs to be submitted to Bank. One consolidated single IFR will be prepared capturing all sources and uses of funds including AIIB funds.

23. **Carry forward of unutilized funds.** Unutilized allotment balances in the ULBs at the end of the year will be carried over to the next financial year. SPMU will reconcile the funds released and corresponding utilization made by ULBs from the information provided in the periodic progress and financial reports. Funds provided by the Bank which remain unutilized by ULBs and SPMU STSB account, on the closing date of the project will be refunded to the Bank. The administrative and financial approvals for the subprojects implemented by ULBs will be as per ULB regulations.

24. **Exchange loss/gain.** Any exchange loss or gain arising due to the timing difference between documenting expenditure and receiving of funds (in advance) will have to be absorbed by the state. If there is an exchange loss at the project closure, GoK will refund the amount along with the unused funds to India for repayment to the Bank.

25. **Internal audit arrangements:** State Performance Audit Officer (SPA0) used to be considered as the designated



internal auditor for the ULBs. However, with GoK's recent decision to abolish the SPAO, it was decided that the internal audit of the project will be outsourced to a firm of Chartered Accountants under TORs agreed with the Bank. The FM section in PIM will include the ToR for internal audit and it can also document the internal control mechanism reviewed by internal auditors that includes process of project funds being used for incurring expenditure, system of accounting and record keeping, bank reconciliations, verification and approval of expenditure and reporting, etc. Internal audits will be carried out on select sample of ULBs following a risk-based approach. The internal auditors hired under the project will also audit the expenditure incurred under Components 1 and 3 and will provide bi-annual internal audit reports for the project to the ED of SM for necessary action.

26. **Project audits/ external audits arrangements:** Project Financial Statements, which will be the IUFs for the second half of the financial year and will capture the financial information for the entire year, will be audited by the CAG of India through the Office of the Accountant General in Kerala. The Kerala State Audit Department (KSAD) is the designated external auditor for the ULBs and will be responsible for issuing the annual audit certificate to ULBs. Every year, a summary of the KSAD ULB audit findings will be prepared by the SPMU and will be made available to the project auditor. Annual audit certificates and reports will be translated into English and made available to the Bank for supervision purposes on an annual basis. In the process of determining the eligibility criteria for the ULB to receive grants, the ULB would need to fulfill the criteria required in terms of the ULB audit carried out by KSAD, i.e. to receive an unqualified or qualified opinion which does not indicate observations that indicate pervasive FM weaknesses and/or a pervasive lack of integrity of the financial statements.

27. **AIIB as joint co-financing partner:** All project disbursements would be handled by the Bank according to Bank disbursement procedures using Bank Client Connection system. All FM arrangements would also be as per Bank requirements and design. AIIB funds would fund part of the common expenditures in stipulated percentages. Accordingly, there will be one IUF, one audit report and internal audit, etc. AIIB expenditure would not be separately tracked. At the time of documenting expenditure through a Withdrawal Application, the common expenditure would be separated into IBRD share and AIIB share by the Bank disbursement unit as per the established procedures and processed accordingly. In a joint co-financing approach, AIIB funds would also need to be available at the same time when Bank funds are made available to ensure uninterrupted project implementation.

28. **FM Supervision:** Consistent with the risk-based approach, FM supervision would consist of visits by the Bank FM specialist to the SPMU and selected ULBs, desk reviews of internal and external audit reports, review of IFRs, and other relevant reviews as required to periodically assess and monitor the adequacy of the project's fiduciary arrangements. The Bank will carry out a field-level FM supervision mission at least once every six months. However, due to the prevailing pandemic situation that is expected to continue during the early stage of project implementation, the FMS will conduct virtual FM implementation support activities.

29. **Eligible expenditure:** The following Table A2 specified the categories of eligible expenditures to be financed out of the proceeds of the loan:



Table A2: Eligible expenditure

Category	Loan amount allocated (US\$)	% expenditures to be financed (inclusive of taxes)
(1) Goods, works, non-consulting services, consulting services, Trainings and Incremental Operating Costs under component 1	14,737,500	35 percent
(2) Grants under component 2	49,000,000	35 percent
(3) Goods, works and non-consulting services under component 3	41,000,000	35 percent
(4) Front End Fee	262,500	
(5) Interest Rate Cap or Interest Rate Collar premium	0	
TOTAL AMOUNT	105,000,000	

Procurement

30. **Procurement Regulations:** The Bank’s “Procurement Regulations for IPF Borrowers for Procurement in Investment Project Financing - Goods, Works, Non-Consulting Services and Consulting Services,” dated July 2016 revised November 2017 and August 2018 (“Procurement Regulations”) and the additional provisions stipulated in the Legal Agreement will be applicable for the procurement of Goods, Works, Non-Consulting and Consulting Services. The project would be subject to the World Bank’s Anticorruption Guidelines, dated October 15, 2006, and revised in January 2011 and July 2016. The SPMU at SM will be responsible for overall procurement management of the Project, including the preparation and submission of the project procurement plan in the Systematic Tracking of Exchanges in Procurement (STEP) system and will be directly responsible for carrying out procurements under Components 1 and 3, including the procurement of consulting contracts for PMC, TSC and other necessary service contracts for training and capacity building. Other than the SPMU, the ULBs, supported by PIUs and TSCs, will be responsible for the procurements under Component 2. The Bank’s Standard Procurement Documents will be used for all contracts and for consultant’s selection.

31. **PPSD and Procurement Plan:** The project has prepared a PPSD document. High value investments (construction of landfills and remediation of dumpsites) are new to the state of Kerala, so there will be a need to create market engagement. Given the framework-based approach of this project, specific investments would not be known at the time of project preparation, so the PPSD will be updated once specific investments are identified.

32. **Procurement methods and Prior-Review thresholds:** The following table A3 describes the procurement thresholds, which may be subsequently modified. There is no automatic requirement to undertake prior review for direct selection for value less than the specified thresholds. The determination of whether a contract meets the procurement prior-review threshold is based on the estimated value of the contract or the package -when the selection document contains more than one lot/slice, including all taxes and duties payable under the contract.

Table A3: Procurement Approaches and Methods

Procurement Approaches and Methods	Thresholds (US\$ equivalent)
Open international	For any value activity
Open national (works – including turnkey, supply and installation of plant and equipment and PPP)	Up to 40 million
Open national (goods, IT system, and non-consulting services)	Up to 10 million
National request for quotation (works, goods, IT system and non-consulting services)	Up to 100,000
Direct selection	No threshold; For works, goods, non-consulting services and IT system procurement: According to paragraphs 6.8–6.10 of the Regulations; For consultants: According to paragraphs 7.13–7.15 of



Procurement Approaches and Methods	Thresholds (US\$ equivalent)
	the Regulations
National Approach for Consultant Selection	Up to 800,000
Prior Review Thresholds	
Works including supply/installation of Plant and Equipment	All contracts more than or equal to US\$10 million
Goods, IT system and Non-consulting services	All contracts more than or equal to US\$2 million
Consultants	All contracts (i) more than or equal to US\$1 million equivalent for firms; and (ii) more than or equal to US\$300,000 for individuals.
Prior Review contracts irrespective of value	Irrespective of the contract value, the following procurement activities are subject to the Bank’s prior review; (a) procurement processes involving contract negotiations, as per Section VI, paragraphs 6.34-36, of the Procurement Regulation for Borrowers (b) competitive dialogue (c) sustainable procurement ; (d) selection of probity assurance providers, as described in Section III, paragraph 3.3 of the Procurement Regulations for Borrowers; and (e) best and final offer.

33. **Disclosure of procurement information.** The Project will comply with the disclosure requirements stipulated in the Banks’ Procurement Regulations including publications in UNDB. The SPMU will also publish on its websites all relevant procurement information and documents that include: (a) procurement plan and updates, (b) invitation for bids for goods and works for all Request for Bids following Open – National and Open - International methods, (c) request for expression of interest for selection/hiring of consulting services, (d) contract awards of goods and works procured following Request for Bids – Open National and Open International methods , (e) list of contracts/purchase orders placed following Request for Quotation method on quarterly basis, (f) short list of consultants, (g) contract award of all consultancy services, (h) list of contracts following Direct Contracting or Consultant Qualification Selection or Single Source Selection on a quarterly basis, and (i) action taken report on the complaints received on a quarterly basis and any other information required as per Procurement Guidelines.

34. **ESHS Risk.** Procurement Documents will include provisions, as agreed with the Bank, intended to adequately mitigate against environmental, social (including sexual exploitation and abuse and gender-based violence), health and safety (“ESHS”) risks and impacts.

35. **E-procurement.** The e-procurement system (<https://etenders.kerala.gov.in/nicgep/app>) of GoK - designed, developed and hosted by National Information Center shall be used for all works, goods and non-consultancy services. Requirements for e-Procurement will be as indicated in Procurement Plan. For procurement of consultancy services, the use of e-procurement will be subject to Bank’s approval based on capacity building on e-procurement. This system has been assessed and found acceptable by the Bank. Use of Government e-Marketplace will be allowed in lieu of RFQ as per the arrangements specified in Procurement Plan.

36. **National procurement arrangement.** National competition for the procurement of works, goods, IT system procurement and non-consulting services according to the established thresholds will be conducted as per paragraphs 5.3–5.5 of Section V of the Regulations and additional provisions specified under Procurement Plan.



Environmental and Social Safeguards

37. The project activities will be overseen by SPMU established in SM and DPMUs at each District. SPMU will have a State Level Environmental and Social Development Unit (S-ESDU) and each DPMU will have a District level ESDUs (D-ESDU). S-ESDU will have an Environmental Engineer, a Social Development Specialist and a Communications Specialist to support the implementation of the ESMF. The SPMU will be the focal point for the communication with the Bank on the safeguard's aspects of the program. D-ESDU will have an environment engineer and a social development cum communication specialist. ESDU will be supported by the PMC. The PMC will have environmental and social experts and ensure the services of biodiversity/natural habitat specialists for subprojects near natural habitats. Attached to D-ESDU, a District level support organization will be mobilized for outreach program, social mobilization and other activities to build partnership with the community through the life of the subproject cycle.

38. *Subproject preparation and implementation:* All the subprojects will go through; a) a comprehensive environment and social screening, b) identification of risks and impacts, c) environment and social impact assessment based on the risks and impacts identified during screening, d) consultations and engagement with direct beneficiaries including women, tribal and other vulnerable communities – both generators and service providers for preparation of site-specific plans, e) preparation of environment and social management plans such as ESMP-TDP and RAP, as required, f) include the impact/risk management interventions with estimated costs in DPR for implementation, g) implementation and monitoring of the environment and social management plans, and h) capacity building and IEC campaigns during the subproject cycle. This will be coordinated by concerned ESDU, with support of ULB/PIU, TSC, PMC and support organizations.

39. *ULB Level Subprojects:* Technical support for preparation and implementation of safeguards instruments at the ULB level will be provided by district-level TSCs hired by each DPMU, which will include environmental engineers and social cum communication experts. The ToR for TSCs will include the scope of work to ensure compliance with ESMF. The subprojects will need to be screened as per ESMF and results will be forwarded to the D-ESDU for confirmation on the categorization and issuance of ToR for preparation of safeguard instruments. In case of subprojects which may impact Natural Habitats, Biodiversity Management Committee of the ULB will review the screening and guide the ToR preparation. TSC will facilitate the integration of community needs, carry out FPICs required to prepare the DPRs and Safeguard Instruments. Safeguard documents pertaining to E1 category investments will be prepared by independent consultant other than the TSC who is in charge of DPR preparation. For E2 projects TSC will prepare the ESIA as part of DPR preparation. For E3 projects, TSC will compile the filled-in screening Formats and applicable Generic ESMP and will submit to DESDU for approval and records. ESIA of E1 and E2 subprojects will be sent to S-ESDU after review by D-ESDU. ESIA of E2 projects will be cleared by S-ESDU; while those of E1 category projects or any special projects/under any special circumstances will be sent to the World Bank for review and clearance after review by S-ESDU. The PIU Engineers, Health officer and support organization will directly supervise the contractor / DBOT operator and guide the implementation of ESMPs with TSC support. The PIUs will support and co-ordinate for government approvals and statutory clearances. The PIU will submit the compliance reports on clearances, permits, and environmental and social safeguards to D-ESDU.

40. *Regional Level SWM Treatment/Disposal Facilities, C&D Waste and Bio-Medical Waste Management Facilities:* S-ESDU will be responsible for screening the regional subprojects and the DPRs including safeguard documents will be prepared by independent consultants. The ESIA consultant will be responsible for various IEC activities for sensitizing the communities and undertaking consultations as part of the citizen engagement plan for wider acceptance of the proposed investments.

41. For subprojects both at ULB level and regional level, if a RAP is required, the ESDU at state level will coordinate



with the Revenue department to ensure that the required resources are committed for the preparation of RAP. The social development expert at the DPMU will coordinate with the district level empaneled SIA unit to carry out the SIA to prepare the RAP in accordance with the RPF. The safeguard instruments (i) screening, (ii) ESIA, (iii) ESMP, (iv) RAP will be included in bidding documents and other procurement documents, after clearance procedure.

42. **Monitoring and reporting.** For effective management of safeguards the project will prepare a Safeguards Information Management System (SGIMS) for monitoring ESMF compliance and recording the improvements in environmental and social parameters. This will be updated daily by PIU and DESDU and will be continuously monitored and reviewed by SESDU. SGIMS reports will be sent to the Bank every quarter, so that the Bank could effectively track E2 and E3 projects as well. The indicators will include parameters on environment and social inclusion, citizen engagement, behavior change, enterprise development, land required, livelihood of the vulnerable, labour compliance, GBV and GRM. Thematic monitoring, Annual Environment Audit and Social Audit will be carried out. The ICT tool developed to track the implementation of the subproject scheme cycle and action plans on real time and geo-referenced will be the source of data for reporting on compliance. The progress report will include monthly concurrence monitoring, thematic reports and annual of compliance of ESMF. Environmental and Social Experts of D-ESDU shall i) undertake a monthly visit to subprojects to ensure compliance with ESMPs, TDP-RAP and guide and support PIUs/TSC/Support Organization/contractors to oversee safeguards management, ii) review monthly progress reports by PIUs to resolve any issues, and iii) prepare quarterly progress reports on ESMF implementation (based on the monthly reports of PIUs and their observations during monthly visits) and submit to S-ESDU, iv) join the field visits undertaken by S-ESDU and the WB as part of monitoring of the subprojects. The WB will also review, monitor and guide ESDU as part of mission and special technical visits as required and support in training the ESDU specialists and PIUs. Annual Environmental and Social Audit will be carried out for all E1 projects, sample E2 and E3 projects to monitor ESMF compliance during preparation and implementation.

Implementation Support Plan and Resource Requirements

43. Semi-annual implementation support missions will be supplemented by additional technical missions during the first 12–18 months of project implementation. In addition to formal missions, the World Bank will provide continuous implementation support, as and when needed.

44. **First 12 months.** (a) **Technical design of the project.** For the subprojects planning and implementation activities to be undertaken in the first year, the Bank will closely support the SPMU and ULBs to comply with the technical, fiduciary, environment and social safeguard requirements, and climate and disaster resilience approaches. For implementation, the Bank will assist the SPMU and ULBs in undertaking the initial SWM planning exercise. (b) **Institutional capacity for implementation and sustainability.** The World Bank will review: (i) overall project management, coordination, reporting and implementation supervision activities as well as capacity building initiatives; (ii) investment subproject activities being undertaken by SPMU and ULBs. (c) **Fiduciary aspects.** The World Bank will provide dedicated assistance in procurement and FM systems, including both formal and informal training on the World Bank's fiduciary systems and procedures for World Bank projects. In procurement, training will be offered for updating of Procurement Plans using STEP. (d) **Environmental and social aspects.** Dedicated support will be provided for the familiarization and rollout of the ESMF, the investment project specific ESIA's, and where required, ESMPs. This will apply both to the state level investments and ULB level subproject investments.

45. **After the first 12 months.** (a) **Technical design of the project.** Most of the support provided during the subsequent years of implementation will entail working closely with the SPMU and ULBs to build a strong pipeline of subprojects to achieve the objectives of Components 2 and 3. The screening and appraisal of project is expected to require special attention. Ensuring that the right types of contracts are established and are properly managed will also require close



monitoring. Regular field visits will take place to monitor implementation including support to the ULBs for successful and sustainable implementation of subprojects, capacity-building and reform activities. (b) **Institutional capacity for implementation and sustainability.** Dedicated members of the Bank team with an institutional background will help oversee the output to ensure that institutional strengthening of the SPMU and ULBs is undertaken and appropriate capacity is built at the state and ULB levels in terms of the sustainability of the investments. Implementation support in climate and disaster resilience activities will also be provided. (c) **Fiduciary aspects.** Regular monitoring and support of procurement and FM activities will continue throughout the duration of the project. Specific activities will include procurement prior and post reviews, preparation of timely and comprehensive financial reports (annual financial statements, and annual audit reports, etc.). On-demand training and refresher courses on fiduciary aspects are also envisioned. (d) **Environmental and social aspects.** These aspects include (i) review of environmental and social safeguard documents (ESMPs and RAPs) for subprojects under Component 2 and 3 to confirm compliance with World Bank policies and the ESMF; (ii) carrying out field visits to sensitive sites with significant safeguard risks; (iii) review of environmental and social audit reports to address safeguard related risks; and (iv) prompt follow-up on satisfactory implementation of the project-level GRM and complaints received under the corporate GRS.

46. **Midterm review (MTR) and project completion.** By the end of the third year of project implementation, guidance will be provided to the SPMU to prepare for the MTR of the project and to identify any changes that may be required to the project design, per capita grant allocations to ULBs and reallocation of funds (if any) that may be required at the end of the fourth year. Towards the end of the project, additional support will be provided to ensure proper project completion and documentation, including any final evaluations and account reconciliations.



ANNEX 3: Financial and Economic Analysis

Financial Analysis

1. The current level of expenditures undertaken by the ULBs on SWM is low as the focus is primarily on decentralized systems. In addition, there is no formal system for levying and collecting SWM user charges except for ad-hoc local practices where HKS/Kudumbashree women groups collect user charges directly from the household for primary collection of plastic waste. Since the project will support ULBs in setting up a formal service delivery system for SWM this would require ULBs to assign much higher level of capital expenditure towards SWM. To avoid reducing the allocation on other expenditure priorities, GoK has decided to provide grants to ULBs for SWM in addition to the current development plan funds to ULBs. Further, GoK is also developing regional disposal and/or processing/recycling facilities. ULBs will be required to meet the O&M expenditures for the entire SWM chain; and pay tipping fees for sending waste to regional landfills and/or cluster-based facilities.

2. The financial analysis⁷ is focused on assessing: (i) ULBs ability to utilize the additional grants for SWM capital expenditure by comparing the increase in ULBs' capital expenditure to their current levels, (ii) increase in O&M expenditure compared to the current recurring expenditure of ULBs and extent of possible cost-recovery for SWM through user charges, (iii) user charges to be levied for full cost recovery and affordability/feasibility of user charges with respect to average household income, (iv) extent of shortfall in cost recovery that may need to be financed by ULB's general budget or existing revenue surplus, and (v) vulnerability of ULBs due to their current fiscal situation/stress.

Comparison of proposed capital expenditure with current capital expenditure trends

3. Table A4⁸ below presents a comparison of current capital expenditures of 87 ULBs under their annual development plan; and the additional expenditure on SWM financed under the proposed project. ULBs are expected to implement approximately 50 percent of the capital expenditure under the proposed project. This expenditure (apportioned over the project period) is compared with the projected development plan fund size of ULBs.

Table A4: Capital Expenditure at the ULB level

	Unit	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	Avg
1. Development Plan (Capital Expenditure) Size for 87 ULBs	Rs Cr	656	808	884	990	1109	1242	1391	1558	1745	1954	NA
2. Out of which, SWM expenditure	Rs Cr	11	26	18	20	23	25	28	32	36	40	NA
3. Projected CAPEX implemented by ULBs (50 percent of total CAPEX)	Rs Cr	NA	NA	NA	0	30	143	150	157	165	38	NA
Ratios												
4. Increase in Development Plan size due to additional SWM investments (3/1)	Percentage	NA	NA	NA	0	2.7	11.3	10.6	9.9	9.3	1.9	7.6
5. Increase in SWM capital expenditure (3/2)	Times	NA	NA	NA	0	1.3	5.6	5.3	5.0	4.6	1.0	3.7

4. The size of the Development Plan of the ULBs will increase by approximately 11.3 percent, 10.6 percent and 9.9 percent in FY22, FY23 and FY24 respectively. This is considering that only 50 percent⁹ of the capital expenditure under

⁷ Since ULBs receive the entire investment as a grant, FIRR calculations are not relevant, and are not presented

⁸ The analysis excludes 6 Municipal Corporations (MCs), where the interventions have not been firmed up yet. These may need to be included at a later point when the interventions for SWM services improvement are identified in the 6 MCs.

⁹ The proposed allocation to SWM under this project is additional to plan funds and is not subject to sectoral caps required to be followed under the Development Plan.



the project is implemented by ULBs and that the remaining 50 percent is implemented by State Government agencies for regional facilities (and hence will not be counted as ULBs’ allocation). The increase in capital expenditure is not disproportionately high as compared to past trends (in FY 2018, the size of development plan increased by 23.1 percent). Since ULBs’ existing expenditures on SWM are negligible, (~2.3 percent) of the Development Plan funds, the increase in capital expenditure on SWM in the project is significant, at 5.6, 5.3 and 4.6 times the likely capital expenditure on SWM without the project in FY22, FY23 and FY24.

Increase in recurring expenditure, own source revenues and impact on revenue surplus

5. Currently, the user charges are collected from residential and non-residential properties. The collection and disposal of waste services are provided by HKS, municipalities, and small private operators. The user charges vary based on the type of user i.e. household, commercial establishment and institutions, and the financial analysis assumes that that user charges vary by type of user and by level of use (generators who process waste at source are charged less). User charges for households are expected to increase gradually covering 33 percent of customers in the beginning and reaching a coverage of 100 percent of customers by year 2031. The user charges for commercial establishments are expected to increase gradually covering 24 percent of establishments in the beginning and reaching a coverage of 100 percent of customers by 2032. User charges for institutions are expected to increase gradually covering 26 percent of institutions in the beginning and reaching a coverage of 100 percent of customers by year 2032. It is assumed that the number of commercial establishments and institutions will grow by 1 percent and 0.5 percent y-o-y respectively.

6. Based on a survey conducted in 12 towns, the following user charges have been assumed (Table A5) in the financial analysis. These are in line with current practices. As a conservative assumption, tariff revisions are assumed only once in 4 years by 5 percent (1.22 percent per annum) for all user types.

Table A5. User Charges Assumptions

Particulars	User Charges (in INR/month/unit)	Tariff revision
Households	70	5 percent once every 4 years
Commercial establishments	350	5 percent once every 4 years
Institutions	1,300	5 percent once every 4 years

7. The key categories of the SWM O&M expenditure are (i) primary collection and transportation; community level BDW processing facilities, (ii) city level processing and treatment of both BDW and NBDW, (iii) secondary transportation including transfer stations, (iv) waste disposal at regional landfill and cluster facilities, and (iv) routine replacement of minor equipment such as bins, carts, etc. Average per ton cost for collection, treatment and disposal is estimated at Rs 2,989. Based on waste generation data, this translates to a per capita O&M expenditure of Rs. 630 per annum (2020 prices). Costs are expected to increase by 5 percent per annum.

8. The key findings of the analysis are: (i) SWM operations will result in an average 15 percent increase in revenue and 26 percent increase in expenditure until FY30. SWM O&M cost recovery is projected to be achieved only by year 2030, (ii) Cost recovery in FY24 is projected at 45 percent, in FY25 it increases to 60 percent and by FY 2030 it exceeds 100 percent. The average cost recovery in the first 3 years of operations is 62.5 percent and the average annual deficit until FY 2030 is Rs. 80 crores for all 87 ULBs; (iii) Households are expected to contribute around 23 percent of all SWM user charges. While this reduces social opposition, the cost recovery remains vulnerable to the willingness to pay of commercial establishments (assumed to contribute 47 percent of user charges), especially since they also have an obligation to treat biodegradable waste at their own cost within their premises, and (iv) The shortfall in cost recovery in SWM is expected to be met out of the general budget of the ULB. An average of 25.2 percent of revenue surplus from general budget needs to be set aside to meet SWM deficits in the initial years (FY 2024 to FY 2026) and the average requirement until FY30 is 11 percent. If no user charges are collected, the SWM deficits will reduce projected revenue surplus by 66 percent on an average until FY 2030. The maximum is in FY 2022 at 71.9 percent.



9. **Categorization of ULBs based on fiscal situation:** Table A6 below categorizes the ULBs based on the expected fiscal impact of SWM. The ULBs are divided into four categories based on the projected SWM deficit/ revenue surplus. While 57 out of 87 ULBs (accounting for 69 percent of urban population) face only a moderate impact, the remaining 30 ULBs will face significant reduction in revenue surplus. 9 out of the 30 ULBs will slip into a revenue deficit.

Table A6. User Charges Assumptions

SWM Revenue Deficit/ Surplus	Moderate 0 percent to 33 percent	Significant 33 percent to 66 percent	Heavy 66 percent to 100 percent	Deficit ULBs – SWM deficit is higher than revenue surplus
Number of ULBs out of 87	57	17	4	9
Share of population (percentage)	69	19	5	8

10. **Affordability Analysis:** As per the Economic Review 2018 prepared by the Kerala State Planning Board, the per capita income in Kerala is approximately Rs. 150,000 per year (approximately Rs 6,00,000 per year per HH). The user charge of Rs. 70 per household per month for SWM accounts for only 0.14 percent of the average household income.

Proposed mitigation measures in the project

11. While SWM deficits are not significant for ULBs covering 69 percent of population, risks on user charges remain; and 30 ULBs may see significant or severe reduction in their revenue surplus. For this, the project will support LSGD and SM in developing a state-wide framework for user charges to ensure uniformity across the State and to minimize social opposition. To mitigate the SWM deficits and to encourage participation in regional facilities, the project will provide O&M support for specific categories of expenditure under component 2 including – (i) Cost of new activities in the SWM value chain for which ULBs are encouraged to enter into performance-based contracts such as payments under performance-based collection and transportation contracts and payments for citywide composting facilities operated under a contract, and (ii) charges to be paid for participating in shared regional facilities including tipping fees to cluster facilities and regional landfills, and charges for secondary transportation to regional landfills. A provision of US\$20.65 Mn (INR 157 Crores) towards SWM O&M expenditure is included under Component 2.

12. The O&M support to participating ULBs will provide an opportunity to stabilize the user charge system within the project period, not rely excessively on subsidies from the general budget and yet maintain financial sustainability of SWM operations. It will bridge 50 percent of the SWM deficit between FY24 to FY26. The remaining 50 percent is expected to be met by ULBs from the revenue surplus (12.6 percent of revenue surplus to be set aside by an average ULB). This also provides adequate cushion for ULBs with less than average revenue surplus to meet the SWM deficit.

Economic Analysis

13. For assessing the range of economic benefits and costs for investments across the project a comprehensive economic analysis has been carried out to analyze the cumulative potential economic costs and ensuing economic benefits on account of addressing the sectoral needs for SWM across participating ULBs. The economic analysis has been limited to cost/benefit assessments related to SWM service delivery and doesn't consider the potential interventions related to special waste (C&D waste, medical waste). The economic analysis is conducted on constant price basis for 2020 and covers a period of 30 years from 2020, i.e., 5 years for implementation and 25 years for operations, with future economic values (costs/benefits) discounted to present value using a 6 percent discount rate.

14. **Economic Costs:** Economic costs of investments (including infrastructure creation, technological equipment, vehicles etc.; and annual O&M costs) are estimated based on normative financial cost assessment conducted as part of preparatory work. Investment costs are categorized into four categories: (i) city level waste collection and transportation, (ii) Household/community level decentralized and city-level processing/resource recovery (iii) Regional collection and transportation (iv) Regional Sanitary landfill facilities. Further, the categorization of traded components and non-traded



components is done and related shadow factors (Shadow Exchange Rate Factors, Shadow Wage rate factors and Shadow conversion factors) are applied for conversion of financial costs to economic costs. Similarly, the annual O&M costs for operations across the value chain are converted into economic terms for the economic analysis.

15. **Economic Benefits:** Investments under KSWMP in the state are envisaged to yield substantial economic benefits from the anticipated overhaul in SWM services in participating ULBs and the State. The economic benefits, listed below, have been assessed based on differential impact between the key parameters in 'project' and 'no project' scenarios (Also see Figure A1).

16. **Environmental improvement:** The economic benefits from environmental improvement include:

- Reduction in GHG from reduced waste burning and reduced untapped methane generation from adoption of controlled BDW processing technologies as well as methane capture solutions in the sanitary landfill sites. These economic benefits are assessed considering the characteristics of the avoided emissions from uncontrolled burning, methane capture potential of the BDW, and the global norms for shadow price of each type of emission (CO₂, SOX, NOX, and particulate matter). The improvement of city level collection and transportation systems, provisioning of city level processing facilities and regional level sanitary landfill facilities for safe disposal would result in annual reduction of 80 percent in GHG emissions for participating ULBs. This results in net annual economic benefit of ~US\$75 Million.
- Minimised waste leakages and reduced contamination of surface water resources and ground water in 'project scenario' viz-a-viz 'no-project' scenario on account of direct interventions related to provisioning of collection and transportation systems to households in participating ULBs, and spill over/indirect effect of interventions related regional facilities to remaining 6 ULBs. While such benefits will have a state-wide and cross-sectoral economic implication, limited benefits have been quantified in terms of 'impact on tourism' and 'impact of fishery and marine product industry'. The tourism industry in Kerala presently attracts ~1.3 million foreign tourists and ~18 million domestic tourists. Based on the correlation between the impact of SWM practices on the tourism industry, the net benefit from avoided cost of tourism reduction is valued at US\$1.6 Million annually.

17. **Public Health benefits:** The economic benefits to public health from improved SWM will accrue from:

- Reduced vulnerability of citizens to fever, allergies and skin related diseases due to decreased probability of direct exposure to mismanaged solid waste between the 'with project' and 'no project' scenario. Further, public health benefits will accrue from reduced vulnerability to water borne disease, but impacts are state-wide and have not been valued. The economic benefits of reduced exposure to mismanaged SWM has been calculated for participating ULBs in terms of 'number of man-days lost from sickness' and consequent 'economic loss of income' on account of differences between 'project' and 'no project' scenario. The project interventions will result in net annual economic benefits worth ~US\$85 Million from avoidance in man-days lost.
- Avoided medical expenditure for the estimated number of people affected with fever, allergies and skin related disease between the 'with project' and 'no project' scenario, translating into an incremental economic benefit of ~US\$8.7 Million annually. Significant but unquantifiable indirect tangible and intangible economic benefits would accrue from reduced number of man days' and avoided medical expenditures for water borne diseases, and reduced air borne diseases, but this has not been considered for the economic calculations.

18. **Employment generation:** The infrastructure creation, O&M and the overall SWM service delivery, particularly built around promoting private sector participation, in the 'project' scenario provides for significant livelihood generation. Further, intangible economic benefits will accrue from increased financial sustainability of the self-help groups (HKS and Kudumbashree) promoted under the State livelihoods program. The net economic benefits of the employment generation potential have been conservatively assessed based on manpower requirement across the value chain between the 'project' and 'no project' scenario and that results in annual economic benefits of ~US\$11 Million.



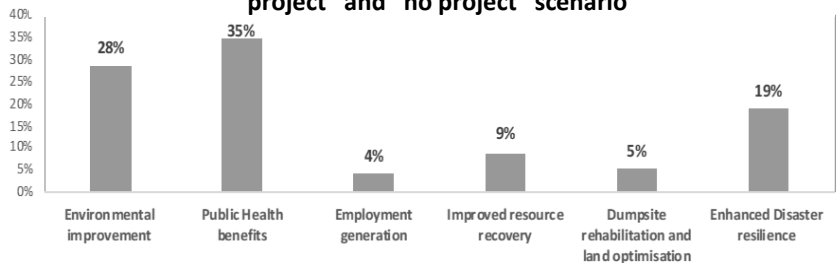
19. **Improved resource recovery:** Economic benefits will accrue from improved city level processing and recycling facilities ensuring the value enhancement required for robust market linkages for processed/recycled saleable outputs in the ‘project’ scenario. The net economic benefits are estimated based on the increased quantum of saleable outputs (compost, recyclables) and respective market prices, translating into average annual economic benefits of ~US\$24 Million.

20. **Enhanced Disaster resilience:** This relates to reduced waste littering in water resources; adoption of flood resilient engineering practices for infrastructure creation; and technology selection between the ‘project’ and ‘no project’ scenarios. The economic benefits on this include direct and indirect impact on disruption of services. The economic benefits have been conservatively valued as in terms of annual damage and rehabilitation costs, based on the probability on return period of extreme flooding events and damage reduction potential of improved SWM services. The estimated net average annual economic benefits are of ~US\$51 Million.

21. **Dumpsite rehabilitation and land optimization:** Multi-fold economic benefits will accrue in the ‘project’ scenario viz-a-viz ‘no project’ scenario due to i) land recovered through dumpsite rehabilitations; ii) improvement in land value around rehabilitated dumpsites, iii) land value improvements on account of rehabilitations of existing city level infrastructure; and iv) optimized usage for land parcels associated with planned city level and regional facilities. The economic benefits on this account has been valued for on an annual net benefit of US\$14 Million.

22. Putting it all together, the economic analysis of interventions under KSWMP yields an ENPV of US\$1,413 Million, an EIRR of 49 percent, and Net Benefit-Cost ratio (B/C) ratio of 2.76. The positive ENPV, positive gap between the EIRR and the discount rate, and B/C ratio greater than 1 confirm the economic feasibility of the project.

Figure A1. Distribution of incremental economic benefits between “project” and “no project” scenario

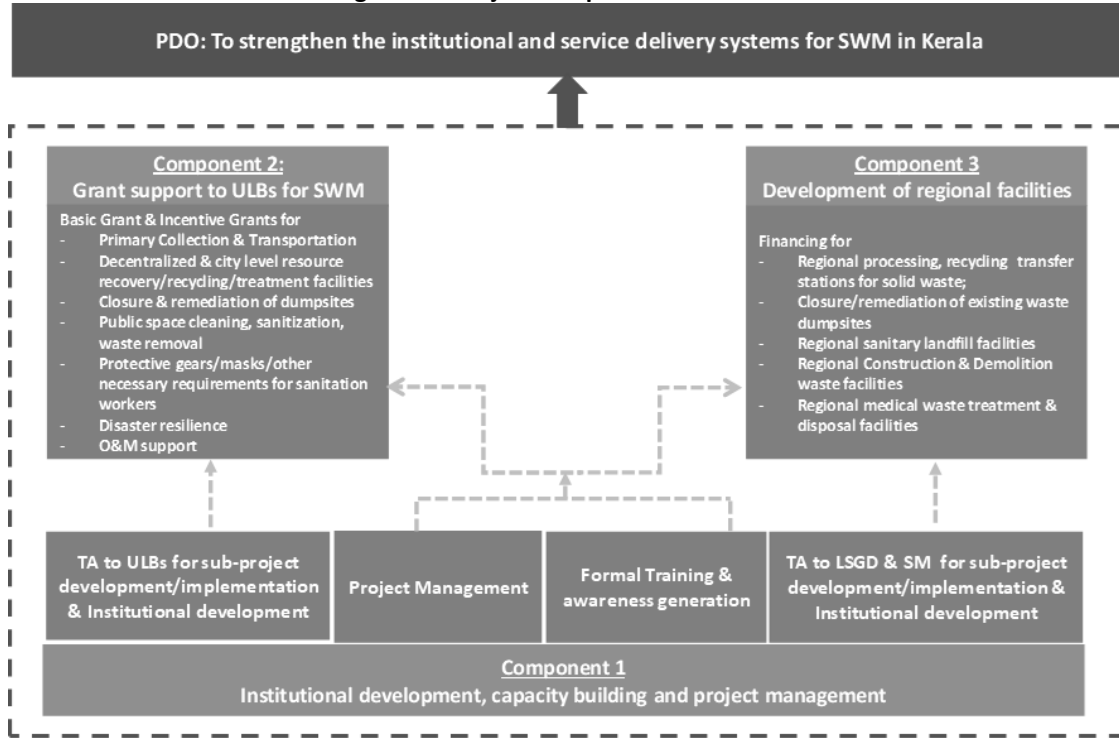




ANNEX 4: Detailed Project Description

1. The project will provide a combination of technical and financial assistance as well as capacity building support to the participating ULBs and the state government along the full value chain to improve their institutional systems, organizational capacity, infrastructure and service delivery systems for SWM and will support a hybrid approach for service delivery improvements comprising decentralized waste management systems (at generator and community level) and centralized waste management/disposal systems (at local and regional level). Aligned with the decentralized service delivery framework in Kerala, the participating ULBs will have a lead role in delivering SWM services at the local level, including facilitating generator level waste segregation and treatment, primary collection and transportation, waste processing and recycling. Owing to the demographic and geographic profile of the state, characterized by closely located medium and small-sized ULBs and peri-urban areas with high population density, the project will also support a regional approach for SWM and disposal in a technically feasible and financially sustainable manner. Accordingly, the project comprises three components, as described below in Figure A2.

Figure A2. Project components of KSWMP



Component 1: Institutional development, capacity building and project management

2. The component will finance activities to (i) provide TA at state and local level for (a) undertaking the necessary SWM sector focused institutional and policy reforms, (b) planning, designing and implementing investment subprojects for SWM infrastructure and services improvement, (c) capacity building and organizational development of participating ULBs for sustainable SWM service delivery; and (d) awareness generation, inclusion of women and vulnerable, and stakeholder engagement for improved service delivery and (ii) provide project management, coordination and monitoring support for the entire project at state, district and local level. The key activities to be supported under this component are described below.

3. Sub-component 1.1: TA to state agencies: This activity will provide TA to LSGD for policy, regulatory and



institutional reforms and to SM for identifying, planning, designing and implementing regional SWM and COVID-19 medical waste projects. TA to LSGD would include, inter alia (a) updating the state's SWM policy and operating guidelines; (b) drafting revisions to the Kerala Municipality Act (KMA) and Rules, and drafting Government Orders for model SWM organizational structures at ULB level; (c) updating annual planning guidelines to allow for multiyear SWM subproject investments; (d) developing guidelines for public space cleaning and sanitization in the context of COVID-19, as well as guidelines for compliance with safety standards for labor-force involved in waste management activities in the aftermath of COVID-19 crisis; (e) undertake annual local government cleanliness surveys and performance monitoring for ULBs; and (f) developing institutional guidelines and operating procedures for women sanitation workers including access for safety equipment, information on evolving SWM practices and technologies, and access to finance. TA to SM will aim at (a) strengthening its organizational capacity and institutional systems to assume its role as lead agency for regulating; (b) monitoring and supervising all activities at the local government level; and (c) supporting design, implementation and management of regional SWM facilities, as well as coordinating all the participating ULBs and peri-urban LGs in the use of these facilities. TA will also be provided to KSPCB for strengthening the regulatory monitoring and enforcement mechanisms for SWM to ensure compliance with national rules.

4. The TA support to LSGD for policy and institutional reforms would include updating the state's SWM policy and operating guidelines in line with the new service delivery adopted by the state as per the new SWM strategy; revising the KMA and Rules to ensure that legal and regulatory mandate articulates the roles and responsibilities of various institutions; drafting operating guidelines for COVID-19 medical waste management as per national regulations and necessary Government Orders for public space cleaning, sanitization and hygiene post COVID-19 crisis, drafting Government Orders and Notifications for model organizational structure for SWM departments at ULB level, revision in ULB staffing norms to permit SWM staff recruitment; update annual planning guidelines to ensure that there is adequate flexibility and provision for multiyear investment subprojects for SWM; undertake annual cleanliness surveys and performance monitoring exercises for all ULBs, and state budgeting and financial planning for SWM investments.

5. As part of this activity, institutional restructuring and strengthening of SM will also be supported, so as to develop its organizational capacity and institutional systems to assume the role of the lead agency within LSGD for regulating, monitoring and supervising all the activities at the local government level and also to be able to supervise the design, implementation, operation and monitoring of regional SWM facilities including coordination with all the participating ULBs and peri-urban LGs in the WSAs. As the state level nodal agency for SWM, SM will also be supported in guiding, standardizing and supervising the local level SWM institutional and financial reforms including preparation of model performance-based C&T contracts with HKS/Kudumbashree/other agencies, PPP guidelines/model concession agreements, model municipal council resolutions and SWM bye-laws to comply and implement the state SWM policy, model user charge framework, model organization structure for SWM department along with roles and responsibilities for SWM staff, model accounting, budgeting and financial management systems manual for SWM, SWM services performance tracking and MIS system roll-out across all ULBs, guidelines for compliance with safety standards for labor-force involved in waste management activities in the aftermath of COVID-19 crisis, and model frameworks for participatory planning, citizen engagement, GRM and compliance with labor laws.

6. The TA support to SM would also focus on providing all the necessary technical support for undertaking a state-level SWM planning exercise and undertaking all the necessary activities to develop regional SWM facilities under component 3. This would include identifying the available land parcels for initial regional disposal facilities based on the siting criteria and ESMF, planning WSAs around the identified land parcel(s) for regional waste disposal system design and then undertake engineering design preparation, contracting and implementation of regional sanitary solid waste disposal facilities. This would also include all the necessary technical support required for planning, designing and implementation of regional waste processing and/or recycling facilities as well as closure/remediation of existing waste



dumpsites. The TA support would be provided in an integrated manner including (i) the upstream activities – land/identification/ planning/ screening activities; (ii) technical design and preparation activities - field investigations/ surveys/ consultations to be conducted, detailed technical studies/ feasibility assessment/ engineering design preparation, environment and social impact assessment/other relevant safeguards instruments (ESMP, RAP etc.); and (iii) implementation activities - procurement, implementation supervision, contract management and reporting. In addition to policy reforms and institutional development, this activity will provide dedicated support for strengthening the regulatory enforcement and compliance monitoring systems.

7. Sub-component 1.2: TA to ULBs: This activity will provide TA to participating ULBs for, inter alia (a) institutional and policy reforms for strengthening the overall SWM service delivery system; (b) for strengthening the financial systems including cost recovery mechanisms; (c) preparing city-wide long-term SWM Plans to identify the priority investments and service delivery targets for the project; (d) for achieving the eligibility criteria and institutional results to access the full incentive grants under component 2; (e) annual fiscal planning, budgeting, fund utilization and reporting; (f) subproject planning, designing and implementation; (g) incorporating climate change mitigation measures into subproject design; and (h) establishing clear mechanisms for ULBs to formally engage with Kudumbashree groups as service providers of SWM, including collection and transportation. This activity would also support developing ULB systems for undertaking COVID-19 waste management, cleanliness/sanitization activities, and strengthening the systems for ensuring the safety and health risk reduction of the sanitation workers including women.

8. The TA to participating ULBs would focus on implementation of key institutional, policy and financial reforms to ensure long-term sustainability of SWM services such as adopting a SWM by-law to comply with the state’s SWM strategy, build organizational capacity by recruiting the key technical staff required in the ULB to manage the SWM services, develop and adopt a gradual roll-out plan to levy user charges, develop institutional systems for improving demand and collection efficiency, implement and operate a SWM MIS system including grievance redressal system and enforcement of labor laws, plan and contract HKS, Kudumbashree and/or other private agencies through performance based C&T contracts, develop in-house capacity to support, monitor and supervise the functioning of household level decentralized BDW treatment equipment. In addition to the institutional systems strengthening, the TA will also support ULBs to strengthen the local level regulatory enforcement mechanisms to improve SWM services, implement SWM by-law and prevent open dumping, littering and burning practices. The TA for institutional, regulatory and policy reforms will be provided by district level TSCs.

9. ULBs will also be supported to carry out their city-wide SWM planning exercise in the first year of the project, and then subsequently the annual fiscal planning, budgeting, fund utilization and reporting activities as a part of their annual development plan cycle. The support would also help ULBs comply with the ADCs for accessing their annual grant allocations under component 2 (as detailed later). ULBs will also be supported in the planning, designing and implementation of subprojects including all the technical investigations/surveys/consultations, technical studies, engineering designs, feasibility assessment, environment and social impact assessment, community mobilization, awareness generation, social (and gender) inclusion and citizen engagement activities, bid document preparation, procurement, implementation supervision, contract management and periodic reporting to district and state PMU on physical and financial progress. The TA for fiscal and physical planning and implementation activities will be provided by TSCs.

10. Sub-component 1.3: SWM Skilling, Training and awareness generation/Information Education Communication (IEC) support t: Under this activity, formal trainings will be provided to all the relevant officials/technical experts at the state, district and local level on SWM service delivery issues and ESMF. Formal training would also be provided for strengthening the local level systems and practices for managing medical waste (COVID-19 related), robust protocols for



ensuring continuity of waste management services and use of protective gears/equipment by sanitation workers to minimize health risks. This activity will also support the development of skills and capacity building activities for women sanitation workers on technological advances, access to finance, management of performance-based contracts, and entrepreneurship development opportunities in the SWM sector. The activity will be led by SM. SPMU will identify key topics for formal training based on training needs assessment and consultations at the district and local level, develop annual training plan comprising the number of training sessions on each topic in each district and outlining the profile of eligible participants. SPMU will then identify the training service providers/training institutions who will be engaged for specific topics to develop and localize SWM training curriculum (content), design and mobilize Train the trainers program and facilitate training of all the key SWM stakeholders (e.g. SM, ULB staff, elected officials, HSS, HKS, CKC, other collection and transportation agencies, generators). Additionally, the SPMU will coordinate with KILA, wherever relevant for undertaking the formal training sessions and will also empanel specialized external institutions and capacity building agencies for technical trainings on specific topics in SWM.

11. This activity will also support evidence-based communication strategy for awareness generation, attitudinal and behavior change by creating an understanding about benefits of better SWM practices and addressing key social perception issues. Awareness generation and sensitization programs will be supported for health risk preparedness, responsiveness and safe practices for COVID-19 response and recovery. SM will engage an IEC agency to develop and implement a state level IEC and awareness generation strategy for SWM based on a thorough analysis of key issues such as NIMBY, willingness to pay, adoption and management of decentralized waste management practices, benefits of waste minimization and recycling, etc.

12. Sub-component 1.4: Project Management support: Under this activity, project management, coordination and monitoring support will be provided to the implementing and coordinating agencies at state, district and local level. This activity will support a dedicated project management team established in the SM (SPMU) and at each one of the 14 districts (DPMU) for managing, coordinating and monitoring the project activities, including due diligence, quality control and reporting to the bank on fiduciary, environmental and social safeguards and technical aspects. The project management activities financed under this component will enable SPMU to prepare annual work plans, manage overall fund flow and disbursements, utilization and reporting, prepare project documentation in standard formats for the Bank's review and no-objection, develop financial reports and procurement compliance reports, ensure compliance with environmental and social safeguards as per ESMF, technical guidelines as per PIM, undertake M&E of the project and periodic review of project documents. In addition to the overall project management coordination, SPMU will also be responsible for undertaking the due-diligence and appraisal activities for all the subprojects being implemented at the ULB level under component 2 and ensure compliance with the requirements set forth and agreed in the PA.

Component 2: Grant support to ULBs for SWM

13. Grant to the participating ULBs: Financial assistance will be provided to participating ULBs over and above their existing fiscal transfers (provided as plan funds), as dedicated grants through a two-tranche system comprising (i) Basic Grants (BG), which the ULBs can access after they sign the PA with the LSGD/SM, and (ii) Incentive Grants (IG), which the ULBs can access upon qualifying a pre-defined eligibility criteria as described below. The grants will be allocated to ULBs on a per-capita basis (with a differentiation between 6 MC and 87 municipalities).

14. The eligibility criteria are targeted towards building the institutional systems of the ULBs for planning, implementing and managing climate-smart and disaster resilient SWM projects and hence are targeted towards a set of key institutional results and technical readiness activities, which have been identified based on detailed technical assessments and field work as part of project preparation. Incentive grants can be accessed by ULBs in two stages based on eligibility criteria, comprising of one-time institutional activities to be completed by ULBs (as presented in section II of



the PAD above). The qualification of ULBs against the eligibility criteria will be verified by an IVA.

15. Determinants of actual grant expenditures: ULBs will be informed on their grant allocation ceiling for the project period right at the beginning of the project, so that they can undertake a multi-year investment planning exercise to prepare city-wide 5-year SWM plans. The specific grant allocation will gradually increase as ULBs meet their eligibility criteria. During the project period, the ULB can incur eligible expenditure within its authorized grant ceiling, phased as per 5-year SWM plan, only subject to the compliance with the ATs described below. The funds are non-lapsable till the year 4 of the project after which Grant Allocation Ceiling will be adjusted once.

16. Eligible Investments: The eligible investment menu follows the assessment of the current systems and identifications of key gaps and is in line with the service delivery model adopted by the State as per the new SWM strategy. ULB subproject investments will be segregated into (a) Track I (T1) activities will be funded by BG and comprise investments that can be initiated by ULBs upon signing the PA - for expanding the coverage of decentralized BDW management systems (generator and community level), upgrading the existing MCFs/RRFs, closure remediation of existing dumpsites and development of incremental disposal cells as interim facility, routine public space cleaning/sanitization and other waste management activities related to COVID-19 like procurement of protective gears, and equipment for sanitation workers, financial support to existing women SHGs engaged for ongoing waste collection services, O&M support for tipping fee for regional disposal facilities and (b) Track II (T2) activities will be funded by IG and comprise investments that can be initiated only when the ULBs have achieved the eligibility criteria, – these would include establishing/strengthening primary waste collection and transportation systems, developing new waste management/processing facilities and new MRFs/recycling facilities for NBDW. The investments will be picked by ULBs from this menu as part of city SWM plans.

17. City level SWM Investment Planning: Based on the grant allocation ceiling, each ULB will prepare a city-level SWM plan (SWMP) in the beginning of the project, as per the national guidelines, state level SWM strategy and the detailed stepwise guidance provided in the PIM. The SWMP will be based on sector-wide integrated approach for improving the SWM services in a climate-smart and disaster resilient manner and will identify the infrastructure and service delivery interventions across the entire value chain. The ULBs will have the flexibility to modify and update the SWMP once during the implementation period and seek approval from the municipal council and SPMU for the modifications. The objective of the SWMP will be to optimize the SWM service delivery and minimize the waste disposal to landfills through resources recovery by following the 3R approach – Reduce, Reuse and Recycle.

18. The SWMP will identify interventions to increase the source segregation and will promote decentralize treatment of BDW, promoting climate smart and disaster resilient SWM solutions when feasible. The SWMP will also plan for safe disposal of residual waste aligned with regionalization/ cluster approach, and wherever needed will also propose interim solutions for waste disposal through rehabilitation/conversion of existing dumpsites. The plan will also detail the mechanisms to ensure full coverage of collection and transportation systems. The SWMP will also detail out the treatment capacity requirements, treatment options, and options for rehabilitating the existing treatment systems for both BDW and NBDW to minimize the final waste disposal to the landfills. The investments will be prioritized based on implementation readiness (specifically land identification with social consensus), technical feasibility, extent of addressal to climate change, service delivery value chain integration, environment and social safeguards screening, compliance with national regulations and financial sustainability. The SWMPs will be developed as per the standard technical guidelines included in the PIM with detailed activities for each of the 5 years duration of the project and in compliance with the national SWM 2016 rules, state SWM strategy/policy and other relevant regulations. An environmental and social assessment will be carried out as part of the SWMP preparation as per ESMF. SM will need to review, appraise and approve the SWMPs for all the ULBs.



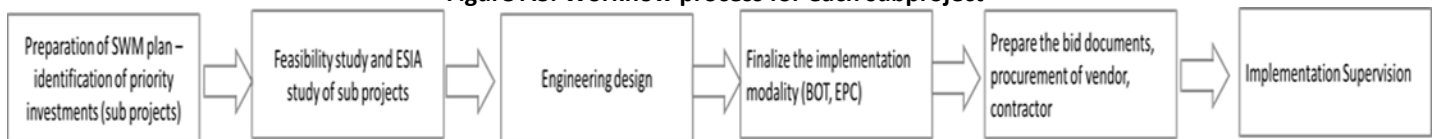
19. **Annual Grant Cycle:** The project will follow the GoK’s current system of annual planning, budgeting and disbursement that is being used for providing fiscal transfers to the local governments under the current planning guidelines. Prior to beginning of each fiscal year, the ULBs will identify the investment subprojects from their SWMP to be taken up for implementation in that year and include their proposed capital expenditures under the Annual Development Plan. The Annual Plan for the project will include the annual budget for the ULBs to design and implement SWM subprojects under the project, which they can access subject to qualifying the eligibility criteria and ATs.

20. **Annual Triggers (ATs):** At the beginning of each financial year, an assessment of whether a ULB has complied with ATs up to the third quarter of the fiscal year will be carried out. At the same time the ULBs will also prepare and submit their Annual Development Plan for expenditure under the Project for the next financial year, in line with GoK’s existing Annual Planning Guidelines. Approval of the Annual Plan for the Project will depend on whether the ULB has complied with the ATs. DPMU will carry out an annual verification exercise of the ATs for the ULBs in their respective districts and submit the report to SPMU. Depending on the nature of non-compliance with ATs, the whole or part of the Annual Plan proposed for the next FY may be suspended temporarily until corrective actions are taken. During the financial year, the ULB may rectify the non-compliance and to that extent, the access to the Grant Allocation or part hereof may be restored. Thus, the ULB will be able to incur expenditure up to its Grant Allocation less any unrestored suspended amount. Suspended amounts can be restored during the FY without waiting for the next annual assessment in January.

21. In order for ULBs to get actual payment releases from the program, they will have to comply with five ATs (conditions to incur expenditures), relating to compliance with (a) Environmental and Social Safeguards systems as per ESMF; (b) external statutory audit; (c) procurement systems as per PIM, (d) technical guidelines in PIM and national/state regulations, and (e) eligible investment menu. In the case of non-compliance with each AT the remedial actions impacting the approval of the annual plan for the next FY will be taken.

22. **Subproject planning, design and implementation system:** The ULB will be primarily responsible for planning, design and implementation of the subprojects prioritized in the SWMP and will be provided adequate TA for design and implementation supervision by the DPMUs through dedicated district level TSCs financed under component 1. However, the ULBs will also have the option of reaching out to SM for delegating this responsibility to SPMU for complex investments or where a group of ULBs and neighboring LGs plan to collaborate for a cluster/regional approach for waste treatment/disposal. The subproject workflow is presented below in figure A3.

Figure A3. Workflow process for each subproject



23. For each subproject, the ULB will be required to undertake (i) feasibility assessment of the various alternative technical solutions including climate and disaster resilience, environment and social risk screening and financial sustainability assessment, (ii) firm up the preliminary engineering designs and implementation modality (DBOT, EPC etc.), and (iii) environment and social impact assessment and management plan preparation. Once the technical preparatory work is completed, the ULBs will be required to prepare bid documents and undertake the procurement process to engage a qualified contractor/vendor, and then supervise the implementation of the subprojects. TSCs will provide end to end TA to ULBs for undertaking all these activities. The technical guidelines included in the PIM and ESMF for KSWMP will guide the procedures to be followed for planning, design and implementation of various types of subprojects at the local level.

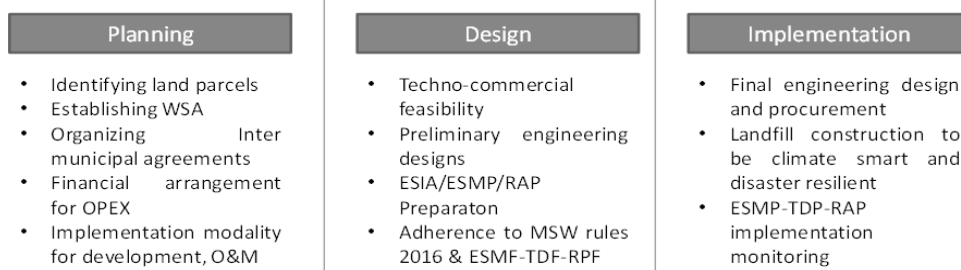


Component 3: Development of regional SWM facilities

24. The component will finance the development of regional processing and recycling facilities for municipal solid waste, construction and demolition waste and medical waste, regional sanitary landfill facilities (SLF) and transfer stations for solid waste disposal, and closure/remediation of existing waste dumpsites. All the subprojects will be implemented in compliance with the National SWM Rules 2016 and guidelines issued by Central Pollution Control Board.

25. *Regional solid waste disposal systems.* A cluster approach will be adopted for the planning, design and development of the regional sanitary landfills. The planning, design and implementation workflow is presented below in Figure A4:

Figure A4. Workflow of planning, design, and implementation



26. For each of the regional landfills, a WSA will be established around the land parcel being identified by the government and the WSA will define the number of ULBs and other local governments in the peri-urban areas, from which the respective landfills will receive the residual waste for safe disposal. The selection of the land for the development of the regional landfill will be done in adherence with siting specifications as detailed in National SWM rules, 2016, ESMF and any other relevant national/state level regulations/guidelines. The WSA for a regional solid waste disposal system will be planned by SM around the identified land parcels, based on population distribution/projections, haul distance and municipal solid waste generation. The landfill facility will be designed to cater to the disposal requirements of the WSA for 15-20 years and landfill cells will be developed in phased manner. Once the WSA is identified, SM will organize the inter-municipal agreement amongst the participating ULBs and other peri-urban LGs to establish the institutional and financial arrangements for the development, O&M and cost-sharing of regional disposal facility.

27. For the detailed planning, design and development of the regional disposal facility, SM will carry out the required feasibility assessment (technical, financial and environmental including CC benefits), prepare preliminary engineering designs and ESIA (including management plans – ESMP, TDP, RAP as needed) for each of the regional SLFs. These studies will include (a) technical solutions based on necessary field investigations and test results, (b) technical viability and financial sustainability assessment for the entire WSA and the planned regional waste disposal system, (c) the institutional framework and implementation modality for the development, operation and management of the landfill facility, (d) financial arrangements for capital investments and O&M expenses to ensure the sustainability of the system and (e) regional coordination systems within the WSA for storage and secondary transportation of the residual waste to landfill facility. All the technical studies and investigations including the engineering designs, ESIA/ESMP studies and other studies will also be financed under component 1.

28. State of Kerala being prone to natural disaster necessitates that the sanitary landfills designed be climate smart and disaster resilient. The features that needs to be considered include: (a) The site should be constructed above the High Flood Level, (b) plant to be covered from top and sides to prevent ingress of water, (c) high ground water table conditions necessitate the use of area-type landfills. The key capital expenditure items for the landfill will include (a) site preparation works including site levelling, civil works, access roads, auxiliary and maintenance facilities, fencing, green



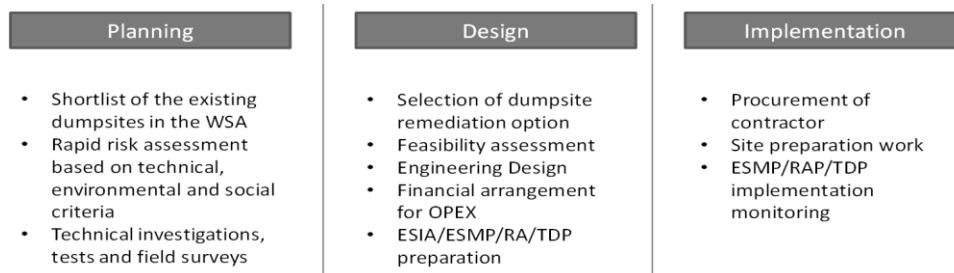
belt development etc., (b) waste pre-processing facilities infrastructure, (c) leachate collection and management infrastructure, and (d) landfill gas collection infrastructure for GHG mitigation.

29. Regional municipal waste processing/recycling facilities. Within the planned WSAs, regional processing and/or recycling facilities can be planned, depending on the land availability and waste generation profile of the participating ULBs. The regional processing facilities can be developed for various waste streams – BDW, NBDW, non-recyclable waste, etc. The regional approach will be encouraged for those participating ULBs who either are not able to identify land parcels for land-based facilities in their geographic jurisdictions, or where the individual ULB specific facilities may not be operationally and financial sustainable due to inadequate waste generation. These regional facilities can be planned either for the entire WSA or sub-areas within the WSA depending on technical feasibility and financial sustainability. SM will lead the planning, design and implementation of such facilities including the inter-municipal coordination arrangements. As part of the preparatory activities, SM will undertake all the necessary technical studies including feasibility assessment, implementation readiness assessment, safeguards screening, resilient engineering designs, environment and social impact assessment, procurement document preparation etc. Implementation supervision, contract management and reporting will also be carried out by SM.

30. Regional medical waste and C&D waste management. This activity would support the planning and development of state level waste management/recycling facilities for medical waste and C&D waste. The focus of supporting the medical waste management systems would be primarily to strengthen the capacity and systems of the state and ULBs to be able to manage COVID-19 related waste issues. Accordingly, integrated system will be developed for medical waste management including collection, transportation, treatment and safe disposal, as per national rules and CPCB/KSPCB guidelines including the COVID-19 medical waste management guidelines. For C&D waste, the focus would be on strengthening the waste collection and transportation systems and development of recycling/treatment facilities as per the national rules for C&D waste. The implementation responsibility for these facilities will lie with the relevant agencies that have the statutory mandate – C&D waste will be implemented by SM and biomedical waste will be implemented by KSPCB and SM jointly with the help of private operator. As part of the preparatory activities, the respective implementation agencies will have to undertake all the necessary technical investigations/surveys/studies including feasibility assessment, implementation readiness assessment, safeguards screening, resilient engineering designs, environment and social impact assessment as per PIM and ESMF; procurement and contract management and implementation supervision/reporting will be done as per PIM.

31. Closure/remediation of existing dumpsites. The planning, and implementation workflow is presented in figure A5:

Figure A5. Workflow of planning, design, and implementation



32. Within the identified WSAs, all the existing dumpsites will be identified and screened based on the rapid risk assessment which will comprise of set of basic technical, environment and social criteria, as detailed out in the PIM. The selection of the dumpsite remediation will also be contingent on the access to a waste disposal facility for the rejects from the dumpsite– which can either be a disposal cell in the existing dumpsite or a regional sanitary landfill. Thus, the implementation of the closure system for existing dumpsites can only be initiated after the such facilities/improvements



for safe disposal of the residuals are established. Once the dumpsites have been shortlisted based on the rapid risk assessment, SM will undertake necessary technical investigations and fields surveys of dumpsites as per national rules, technical guidance in PIM and ESMF to assess the volume of the waste assessment and waste compositional analysis (including soil contamination assessment). The dumpsite will be considered for remediation only if the soil is free of any contamination (devoid of heavy metals, chemicals or other toxic substances) and minimum of 75 percent material recovery (solid/ rocks or recyclables (metals)) is envisioned.

33. Depending on the results of the technical investigations and field surveys, the selected dumpsites can be remediated and/or closed in an engineered way through any of the following approaches: (a) biomining, (b) waste removal and transportation to the new landfill for safe disposal, (c) reshaping and capping using impermeable cap system, or (d) combination of the above approaches. Biomining as remediation option will be considered only if (a) the soil is free of any contamination (devoid of heavy metals, chemicals or other toxic substances) (pre-identified number of lab tests will have to continue to take place throughout the process), (b) there is substantial land reclamation potential through biomining, that will be used for establishment of waste management facilities, (c) there are adequate downstream linkages for the management/disposal waste being bio-mined. Once the technical solution for the remediation is selected, SM will undertake (a) detailed technical investigations, technical and financial feasibility analysis (b) preliminary engineering design and (c) environmental and social impact assessment to prepare the subprojects and then, undertake the implementation. The capital expenditure items will include site preparation works and equipment.

34. **Climate-smart and disaster-resilient interventions:** Drawing upon the climate and disaster resilience analysis form the technical assessments, Project components have been designed to assist the participating ULBs in mainstreaming climate change and disaster risk management throughout an entire investment cycle, in line with the second core objective of the WBG Action Plan on Climate Change Adaptation and Resilience (2019). SWM infrastructure financed through component 2 and component 3 will incorporate improved planning, design, construction and O&M of facilities adapting to climate change vulnerability risks (see table below). Project activities will also contribute to addressing increased leachate treatment needs and waste collection around waterways with flooding risks, preventing waste from blocking drains and causing flooding. For climate change mitigation, capacity building measures under component 1 are aimed at actions to reduce GHG and other emissions. Investments will also be designed as to reduce emissions related to transportation and disposal of waste including landfill gas capture (see Table A7.)

Table A7. List of climate smart and resilient interventions

Components/ indicative amounts	Project activities
Component 1	
IEC and citizen engagement program (US\$5 million)	<ul style="list-style-type: none"> - Educate citizens and communities on climate impacts/risks/behaviors - IEC activities and technical support to make decentralized systems efficient at HH level -Conduct capacity building of SM and ULBs for disaster management for preparation of ULB-specific Disaster Management Plans and consider disaster resilience as an integral part of planning, design, implementation and operation of SWM facilities. -Conduct climate resilience capacity building activities for SM and ULBs for preparation and implementation of climate resilient SWM investment plans. -Funding for identification and implementation of adaptation and mitigation actions to embed and enhance climate resilience and lower carbon footprint of municipal SWM sector.
Component 2	
Reducing emissions from Transportation (US\$40 million)	<ul style="list-style-type: none"> -Plan and implement efficient transportation through switching to fuel-efficient vehicles. -Strengthen decentralized waste management especially for organic fractions to reduce the need for transportation to far-off sites.



Reducing emissions from untreated organic waste (US\$50 million)	-Plan and implement community level facilities for HH not having decentralized facility for organic waste
Expanding waste collection (US\$40 million)	-Expand waste collection systems up to 100 percent HHs to avoid littering of waste and serve to prevent waste from blocking drains and causing flooding.
Component 3	
Regional Landfills (US\$30 million)	- Capture or flare the gas generated from decomposing organic waste. Although the landfills are mostly for inert waste, they are likely to receive contaminated waste such as plastics with food which cannot be efficiently put to reuse or recycle. The main impact in terms of GHG reduction will come from large scale introduction of sanitary landfilling and thus collection of landfill gas.
Dumpsite remediation (US\$40 million)	- Remediate identified dumpsites to reduce GHG emissions by mining RDF and composting organics and significantly reducing leachate, given that solid waste dump sites (SWDSs) have been recognized as major GHG emission sources in developing countries.
Floods resilience (US\$30 million)	- Upgrade/develop SWM facilities to withstand rising levels of flooding. This is critical to improve floods resilience, since large parts of Kerala are prone to flooding and risks are increasing with more frequent and peak rainfall incidents and rising sea levels. - Properly designed landfills and dumpsite remediation will also reduce the quantity of waste finding its way to water bodies thereby blocking the natural waterways and exacerbating flooding.

35. **GHG accounting from the improved SWM service delivery systems and dumpsite remediation.** GHG impact was assessed for the construction of (a) decentralized household composting systems for BDW, (b) centralized composting or anaerobic digestion facilities, (c) material recovery and resource recovery facilities, (d) regional sanitary landfill facilities for the disposal of the inert, and (e) remediation and rehabilitation of existing dumpsites. The tools used for GHG accounting were: (i) CURB: Climate Action for Urban Sustainability – Waste Disposal; and (ii) Institute for Global Environmental Strategies (IGES) GHG Calculator for Solid Waste – Waste Collection. The calculation for GHG accounting for dumpsite remediation is based on a first order decay model. Based on the assessments, the GHG emission reduction from (i) proposed SWM service delivery system is estimated as 453,595 tCO²e per year and (ii) proposed dumpsite remediation financing is estimated as 19,110 tCO²e.