

November 14, 2019

Closing Date: Thursday, December 5, 2019 at 6:00 p.m.

FROM: Vice President and Corporate Secretary

## Indonesia Improvement of Solid Waste Management to Support Regional and Metropolitan Cities

### **Project Appraisal Document**

Attached is the Project Appraisal Document regarding a proposed loan to Indonesia for an Improvement of Solid Waste Management to Support Regional and Metropolitan Cities (R2019-0258), which is being processed on an absence-of-objection basis.

Distribution: Executive Directors and Alternates President Bank Group Senior Management Vice Presidents, Bank, IFC and MIGA Directors and Department Heads, Bank, IFC, and MIGA



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Report No: PAD2539

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

# PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

# IN THE AMOUNT OF \$100 MILLION

TO THE

**REPUBLIC OF INDONESIA** 

FOR A

# IMPROVEMENT OF SOLID WASTE MANAGEMENT TO SUPPORT REGIONAL AND METROPOLITAN CITIES

November 7, 2019

Environment & Natural Resources Global Practice East Asia And Pacific Region

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective October 31, 2019)

Currency Unit = USD

# IDR 14,008 = US\$1

FISCAL YEAR January 1 - December 31

Regional Vice President: Victoria Kwakwa Country Director: Rodrigo A. Chaves Senior Global Practice Director: Karin Erika Kemper Practice Manager: Ann Jeanette Glauber Task Team Leader(s): Frank Van Woerden

# ABBREVIATIONS AND ACRONYMS

AMDAL	Analisis Mengenai Dampak Lingkungan (environmental impact assessment)					
APBD	Anggaran Pendapatan, dan Belanja Daerah (local government budget)					
APBN	Anggaran Pendapatan dan Belanja Negara (national government budget)					
BAPPEDA	Municipal Development Planning Agency					
Bappenas	Ministry of National Development Planning					
BLUD	Badan Layanan Umum Daerah (public service unit)					
CDM	Clean Development Mechanism					
CHS	Complaint Handling System					
CNANAAL	Coordinating Ministry of Maritime Affairs and Investment – Kemenko					
CIVIIVIAI	Maritim dan Investasi					
COP 21	Paris Climate Change Conference 2015					
CPIU	Central Project Implementation Unit					
CPMU	Central Project Management Unit					
DES	Directorate Development for Environmental Sanitation (MPWH)					
DGHS	Director General for Human Settlements (MPWH)					
DLH	Dinas Lingkungan Hidup (municipal environmental agency)					
DWM	Directorate of Waste Management (MOEF)					
ERIC	Emission Reduction in Cities Project					
ESIA	Environmental and Social Impact Assessment					
ESMF	Environmental and Social Management Framework					
ESMP	Environmental and Social Management Plan					
INDC	Indonesia's Nationally Determined Contribution					
IPPF	Indigenous Peoples Planning Framework					
ITF	Intermediate Treatment Facility					
GRS	Grievance Redress Service					
Kemenko Ekonomi	Coordinating Ministry of Economic Affairs					
LARPF	Land Acquisition and Resettlement Policy Framework					
LARAP	Land Acquisition and Resettlement Plan					
LGF	Landfill Gas Flaring					
Jakstranas	National Waste Management Policy and Strategy					
MBTF	Mechanical Based Treatment					
MDTF	Multi-Donor Trust Fund					
MEMR	Ministry of Energy and Mineral Resources					
Kemenko Maritim	Coordinating Ministry of Maritime Affairs and Investment (CMMAI)					
dan Investasi						
MIS	Management Information System					
MOEF	Ministry of Environment and Forestry					
MOF	Ministry of Finance					
МОН	Ministry of Health					

MOHA	Ministry of Home Affairs			
MPWH	Ministry of Public Works and Housing			
MRF	Material Recovery Facility			
NAHP	National Affordable Housing Program			
NSUP National Slum Upgrading Program				
NUSWP	National Urban Water Supply Program			
NUWP	National Urban Wastewater Program			
PASA	Programmatic Advisory Services and Analytics			
PIU	Project Implementing Unit			
PMU Project Management Unit				
PPSD	Project Procurement Strategy for Development			
ססס	Percepatan Pembangunan Sanitasi Permukiman (Acceleration of Urban			
FFJF	Sanitation Development Program)			
RDF	Refuse-Derived Fuel			
RIDF	Regional Infrastructure Development Fund			
RP	Resettlement Plan			
RPJMN	National Medium-Term Development Plan			
RT/RW	Rukun Tetangga / Rukun Warga (neighborhood associations)			
SECO	Switzerland State Secretariat for Economic Affairs			
SSK	Strategi Sanitasi Kota (City Sanitation Strategy)			
SUPD	<i>Sinkronisasi Urusan Pemerintahan Daerah</i> (Synchronization of Regional Government Affairs)			
TCAF	Transformative Carbon Asset Facility			
ТРА	Tempat Pembuangan Akhir (landfill)			
TPS	Tempat Pengolahan Sampah (intermediate collection facility)			
TPS-3R	Tempat Pengolahan Sampah - Reduce, Reuse, Recycle (intermediate			
	recycling facility)			
UKL/UPL	окитеп Upaya Pengelolaan Lingkungan/Upaya Pemantauan Lingkungan (environmental management and monitoring documents)			
UPTD	Unit Pelayanan Teknis Daerah (regional government technical service unit)			
Vfm	Value-For-Money			
WEIGO	Global Alliance of Waste Pickers and Women in Informal Employment: Globalizing and Organizing			



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# DATASHEET

BASIC INFORMATION						
Country(ies)	Project Name					
Indonesia	Improvement of Solid Waste Management to Support Regional and Metropolitan Cities					
Project ID	Financing Instrument	Environmental Assessment Category				
P157245	Investment Project Financing	A-Full Assessment				

#### Financing & Implementation Modalities

[] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[] Fragile State(s)
[] Disbursement-linked Indicators (DLIs)	[ ] Small State(s)
[] Financial Intermediaries (FI)	[] Fragile within a non-fragile Country
[] Project-Based Guarantee	[] Conflict
[ ] Deferred Drawdown	[] Responding to Natural or Man-made Disaster

[] Alternate Procurement Arrangements (APA)

Expected Approval Date Expected Closing Dat
---------------------------------------------

05-Dec-2019 30-I	Nov-2025
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Bank/IFC Collaboration

No

## **Proposed Development Objective(s)**

The Project Development Objective (PDO) is to improve solid waste management services for urban populations in selected cities across Indonesia.

#### Components

**Component Name** 

Cost (US\$, millions)



Institutional and Policy Development	2.70	
Integrated Planning Support and Capacity Building for Local Government and Communities	18.20	
Solid Waste Infrastructure in Selected Cities	297.00	
Implementation Support and Technical Assistance	8.10	

## Organizations

Borrower:	Republic of Indonesia
Implementing Agency:	Bappenas Ministry of Environment and Forestry Ministry of Public Works and Housing Ministry of Home Affairs Coordinating Ministry for Maritime Affairs and Investment

# **PROJECT FINANCING DATA (US\$, Millions)**

### SUMMARY

Total Project Cost	326.00
Total Financing	326.00
of which IBRD/IDA	100.00
Financing Gap	0.00

#### DETAILS

World Bank Group Financing							
International Bank for Reconstruction and Development (IBRD)							100.00
Non-World Bank Group Financing							
Counterpart Funding							226.00
Local Sources of Borrowing Country							226.00
Expected Disbursements (in US\$, Millions) WB Fiscal Year	2020	2021	2022	2023	2024	2025	2026



Improvement of Solid Waste Management to Support Regional and Metropolitan Cities (P157245)

Annual	1.29	5.99	7.70	12.76	21.01	29.83	21.41
Cumulative	1.29	7.28	14.98	27.74	48.75	78.59	100.00

Practice Area (Lead)	<b>Contributing Practice Areas</b>
Environment, Natural Resources & the Blue	Urban Basiliansa and Land
Economy	orban, resilience and Land

## **Climate Change and Disaster Screening**

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

#### **Gender Tag**

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

# SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	<ul> <li>Moderate</li> </ul>
2. Macroeconomic	Moderate
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	Substantial
8. Stakeholders	Substantial



9. Other		
10. Overall	<ul> <li>Substantial</li> </ul>	
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		
Safaguard Balicias Triggarad by the Project	Voc No	
Environmental Assessment OP/BP 4.01	$\checkmark$	
Performance Standards for Private Sector Activities OP/BP 4.03	$\checkmark$	
Natural Habitats OP/BP 4.04	$\checkmark$	
Forests OP/BP 4.36	$\checkmark$	
Pest Management OP 4.09	$\checkmark$	
Physical Cultural Resources OP/BP 4.11	$\checkmark$	
Indigenous Peoples OP/BP 4.10	$\checkmark$	
Involuntary Resettlement OP/BP 4.12	$\checkmark$	
Safety of Dams OP/BP 4.37	$\checkmark$	
Projects on International Waterways OP/BP 7.50	$\checkmark$	
Projects in Disputed Areas OP/BP 7.60	$\checkmark$	

# Legal Covenants

#### Sections and Description

Loan Agreement. Schedule 2.Section I.C.1: The Borrower shall: (a) prepare and furnish to the Bank by June 30 in each year starting in the Fiscal Year 2020 - a proposed Project's consolidated annual work plan and budget for the following Fiscal Year (b) taking into account the Bank's comments, finalize the plan and furnish it to Bank for its approval not later than August 31 in each year starting in the Fiscal Year 2020; and (c) adopt the plan as shall have been approved by the Bank (Annual Work Plan and Budget) and thereafter ensure that the Project is carried out in accordance with each of such Annual Work Plan and Budget, in a manner satisfactory to the Bank.



Conditions



## I. STRATEGIC CONTEXT

### **A. Country Context**

1. Indonesia is the fourth most populous country in the world and the tenth largest economy in terms of purchasing power parity. It is undergoing a process of rapid urbanization that will be one of the key drivers that shape its economic prospects and will also put heavy pressure on the provision of basic services and infrastructure. From 2000 to 2010, the urban population increased at an annual pace of about 3%. In 2016, the urban population reached about 142 million people or 55% of the total population. Almost 4 million people are added to urban populations every year and by 2025 about 68% of Indonesians will live in urban areas. Currently, around 10 million poor people live in urban areas (representing 36% of the Indonesian poor). However, the proportion of urban to rural poor is growing, with the number of urban poor projected to overtake the rural in absolute numbers by 2030. While urban poverty has declined from 15% (2002) to 10% (2010), increasing urbanization will result in increasingly absolute numbers of urban poor<sup>1</sup>. Therefore, the urban poor represent an increasingly important target population for poverty reduction policies.

2. Despite their importance in future economic development, urban areas have suffered from an "infrastructure gap" with severe under-investment overall and an under-developed role of the private sector. Infrastructure gaps are hardly restricted to the solid waste management sector. For example, according to World Bank estimates only a mere 1% of urban dwellers are served by sewerage systems, with only 12 cities having a substantial sewerage system. Furthermore, although infrastructure spending is currently low, where the amount of infrastructure investment has been increased, improvements in outputs and outcomes have been disappointing. This has been attributed to a combination of poor regulations, vested interests, and governance issues, especially around land administration and spatial planning.

3. Solid waste management is increasingly being viewed as critical for the rapidly developing Indonesian economy, particularly as it relates to tourism. The Government, in the National Medium-Term Development Plan (RPJMN) 2015-2019 and through President Joko Widodo's public addresses, has set aggressive objectives to increase the role of tourism in the Indonesian economy. However, promotion alone without policy reform and targeted infrastructure investments for multiple destinations, can overcrowd established destinations (e.g. Bali), erode natural and cultural resources, and spoil the Indonesian "brand". In fact, Coordinating Minister for Marine Affairs Luhut Panjaitan stated, "increasing plastic waste threatens to ruin Indonesia's tourism sector"<sup>2</sup>. Unfortunately, solid waste management infrastructure has not yet been planned at the scale needed to address existing aesthetically displeasing conditions or to support future tourism expansion.

4. For the broader population, inadequate solid waste management brings a plethora of other deleterious impacts to the country's economic growth. When urban solid waste is not collected, it is often openly burned, informally buried, or disposed in streets, canals, rivers, and parks. Solid waste burning can be a significant and costly source of air pollution in urban areas. Waste burning contributes to respiratory infections for urban residents resulting in significant health damages and lost working days. In addition, uncollected waste in municipal areas leads to the promotion of pests and diseases, lower property values and decreases the city's attractiveness

<sup>&</sup>lt;sup>1</sup> World Bank (2013): Urban Poverty and Program Review, Policy Note

<sup>&</sup>lt;sup>2</sup> Tempo. Plastic Waste Threatens Indonesian Tourism Industry, says Minister. February 23, 2017



to outside investments. Poor and vulnerable populations are the most likely to suffer from inadequate sanitation due to uncollected waste, which can be a heavy financial burden through health-related expenditures and lost productivity.

5. When uncollected waste enters into drainage and sewer systems, it can also cause blockages and eventually urban flooding. To avoid flooding, dredging of garbage from drainage canals is a significant cost for many coastal cities. Even if local flooding events are avoided, the ultimate destination for most of this waste is the ocean. In the ocean, 95% of plastic waste is eventually disintegrated into visually unrecognizable forms and appears no longer a problem. However, plastic particles persist in the environment for hundreds of years and are absorbed or ingested by marine life. With an estimated 8 million tonnes of plastic entering the ocean annually<sup>3</sup>, this poses a risk to the entire global marine ecosystem, fishing industry and human health, with Indonesia likely the world's second largest contributor behind China.

6. For the solid waste that is collected by formal systems, the consequences of widespread open dumping and unsanitary landfills have been well demonstrated in recent years. Most dramatically, Bandung's landfill became infamous globally in 2005 when the second worst ever "waste avalanche" buried 71 nearby houses and killed 143 people. Less dramatically, but more widespread, local news regularly report landfill fires and explosions that expose adjacent communities to harmful airborne carcinogens and particulate matter pollution. There are many examples of landfills or open dumping sites polluting groundwater used for residential water supply, as well as surface waters. Furthermore, there are tens of thousands of "waste pickers" on landfills across Indonesia working in very hazardous, sometimes fatal conditions (estimated 6,000 waste pickers just at the *Bantar Gebang* landfill servicing the Jakarta Province). Joining waste-pickers on most landfills are a multitude of cows, goats, pigs, and chickens – often sold for human consumption. While waste-pickers are generally considered a vulnerable sub-population, female waste-pickers start from a position of heightened vulnerability and have less alternative livelihood options compared to male waste-pickers due to higher female illiteracy, higher poverty, time restrictions due to household chores, lack marketable skills and limited access to information (such as on the value of materials, safety measures, public programs from which they could benefit).

7. Women represent a small minority of formal waste collectors, as men are preferred by employers (including community organizations) to carry heavy loads and travel long hours on trucks.<sup>4,5</sup> Processing companies, however, typically hire women for sorting and separating activities. National surveys support the evidence that women significantly dominate the share of waste sorters in both formal and informal sectors.<sup>6</sup> Although data is unavailable for Indonesia specifically, global evidence suggests that private sector contractors are more likely to underpay women compared to men – a situation that is not common when workers are hired by public agencies<sup>7</sup>.

<sup>&</sup>lt;sup>3</sup> Jambeck et al. (2015). Plastic waste inputs from land into the ocean. Science, 347:6223.

<sup>&</sup>lt;sup>4</sup> Anecdotal information from Indonesian solid waste experts suggests less than 20% of formal waste collectors are female. A recent study in Indonesia showed that the share of male collectors in the formal sector was 97.2%. See: GA Circular and Ocean Conservancy 2019. *The Role of Gender in Waste Management. Gender Perspectives on Waste in India, Indonesia, the Philippines and Vietnam.* June 2019.

<sup>&</sup>lt;sup>5</sup> Other social norms influence the small number of women in the collection activities, such as the expectation that women have stay at home to take care of children and other household chores. For example, a case study at the Randegan Landfill, Mojokerto, Indonesia, "observed that the number of male waste pickers (70%) was higher than female waste pickers (30%). They reasoned that the women have more important role in the family and better staying to work at home. Otherwise, the waste picking and collection is the physically hard work and fully in un-comfort condition for dirty and smelly."

<sup>&</sup>lt;sup>6</sup> For example, 77% of plastic waster sorters in cities including Mojokerto, Banyuwangi, Jombang, Depok, Bekasi, Cianjur and Bandung, are women. (UNDP Indonesia, 2017)

<sup>&</sup>lt;sup>7</sup> World Bank (1996) Toolkit on Gender in Water and Sanitation. p 21.

Women's participation is much higher in the informal SWM sector, which allows them to bring young children along, and flexibility in the working hours. Although the numbers vary across Indonesian cities, surveys show that informal waste pickers who collect recyclables directly from households are mainly male (up to 80%), while female waste pickers tend to collect discarded materials from dumpsites and landfills, including sites with a small majority of female waste pickers.<sup>8</sup> Women's participation is reported as high as 75% in the Waste Bank Initiative Program, which encourages citizens to collect household recyclables in return for credits that can eventually be transferred into cash and other services.<sup>9</sup> Male waste pickers can negotiate better prices for their collected materials as well as trade in larger volumes than women. Women tend to collect lower value recyclables, leaving heavier more valuable materials to their male counterparts. Additionally, male waste pickers have access to more equipment in general, such as vehicles and carts, while women tend to use bags and baskets.<sup>10</sup> This contributes to women's limited access to more profitable materials, less quantity of collected recyclables and limited ability to travel further distance to seek the highest buyers.<sup>11</sup> Additionally, women are likely to be disproportionately exposed to health and safety risks. Female waste workers in the informal sector rarely wear safety gear (such as mask, gloves and boots) and have limited awareness on potential health risks when compared to most male waste collectors.

### **B. Sectoral and Institutional Context**

8. Concerns about Indonesia's solid waste management are increasingly high on the national agenda and subsequently Indonesian governments have made a myriad of ambitious commitments to improve performance. This is exemplified in the RPJMN 2015-2019 "100-0-100" targets of eliminating all slums and providing universal access to water and sanitation (including solid waste collection) by 2019<sup>12</sup>. In addition, the government has published the Presidential Regulation No. 83/2018 on "Indonesia's Plan of Action on Marine Plastic Debris 2017-2025" that pledges to reduce plastic and other marine waste by 70% by 2025, which is strongly linked to overall 100% urban collection targets on land. Furthermore, the Presidential Regulation No.97/2017 on National Waste Management Policy and Strategy (*Jakstranas*) also targets 30% waste reduction and recycling by 2025. Solid waste management is included as the third most important sector in Indonesia's Nationally Determined Contribution (INDC) prepared for the 2015 Paris Climate Change Conference (COP 21). In addition, according to the Waste Management Law 2008, all opening-dumping sites should already have been closed by 2013 and all large cities should exclusively be sending their waste to sanitary disposal facilities. If Indonesia could achieve any of these commitments, it would be exemplary considering its current wealth, population, and geography.

9. Unfortunately, these targets appear distant from realization at the present time. It is roughly estimated that only 60% of Indonesia's 142 million urban residents have access to waste collection services and only 55% of

<sup>&</sup>lt;sup>8</sup> Ahmed and Ali (2004); Madsen (2006), and Mitchell (2008).

<sup>&</sup>lt;sup>9</sup> These Waste Banks are mainly women-owned and operated, as clients tend to be women who collect and sell household recyclables for the in-kind or cash benefits. However, the share of male-owned junk shops and waste banks is still significantly high in Indonesia – 83.3 percent. (GA Circular and Ocean Conservancy, 2019)

<sup>&</sup>lt;sup>10</sup> GA Circular and Ocean Conservancy (2019).

<sup>&</sup>lt;sup>11</sup> "Women are paid based on how much plastic waste they can process per day. A survey conducted in seven cities in West and East Java has found that while 95% of men workers get paid more than one million rupiah per month, 89% of women workers are paid below one million rupiah (\$80 USD) per month." UNDP Indonesia 2017. Jobs, At What Cost. The impact of electronic waste management on health. Available at: *https://undpindonesia.exposure.co/jobs-at-what-cost.* "Average prices and quantities sold for high-value recyclables such as PET are generally lower for women in the early stages of the material value chain." See also GA Circular and Ocean Conservancy (2019). <sup>12</sup> The "100-0-100" target refers to 100% household access to water supply; zero slums; and 100% household access to sanitation (including waste water treatment and solid waste collection).

urban solid waste is handled at a transfer station or processing facility. Recent data suggests that approximately 105,000 tons of municipal solid waste is generated daily in Indonesian urban areas and quantities continue to rapidly increase with an expected 150,000 tons of waste produced daily by 2025<sup>13</sup> (45% increase over 12 years). Hence, not only does Indonesia need to increase collection to include roughly 40% of existing urban households currently with no service access but will also need to contend with the annual increase of about 4,000 tons of solid waste produced every year due to increasing urban populations and rates of waste generation. There seems to have been little improvement in collection rates over more than a decade. Nowhere are the effects of uncollected waste more prominent than the Citarum River Watershed. Infamous for years as the one of the most polluted places in the world<sup>14</sup>, the longest river in West Java is also inundated with municipal solid waste that contributes to frequent flooding. According to the government's *Adipura* (2017) data, the cities and districts in the upper portion of Citarum Watershed (hereafter referred to as Metro Bandung) have around 8 million residents and unacceptably low collection rates, with around 2,000 tons of waste unaccounted for every day<sup>15</sup>.

10. Other aspects of Indonesian solid waste management do not perform any better. According to the Ministry of Environment's 2014 analysis, 57% of metropolitan city landfills (*TPAs*) are predominately considered "controlled" with the remaining 43% of landfills considered "open dumping" sites (none are "sanitary" as mandated by the Law No 18/2008). Across all other city sizes, open dumping is still the normal paradigm despite its illegality. Open dumping is reported for 86% of large cities, 70% of medium cities, and 88% of small cities. Almost 100% of waste in Indonesia ends up in non-sanitary facilities. To make matters even more difficult, the search for any new disposal sites is becoming increasingly problematic due to land shortages within suitable distances from large urban centers, particularly in Java. If Indonesia is successful in increasing collection rates, this will exacerbate an already dire need for new disposal sites, as most cities will require new landfill investments by 2025 regardless of whether Indonesia achieves its waste reduction and recycling targets<sup>16</sup>.

11. As can be expected, waste reduction and recycling are also not performing anywhere close to government targets and receive even less financial support than collection or disposal activities. At present, almost all future investment and operating funds are still directed towards basic collection, transfer and disposal activities. The only recycling scheme supported by the government that has any data is the Ministry of Environment and Forestry's (MOEF) Waste Bank initiative, which encourages communities to segregate and/or collect their household recyclables in return for credits that can eventually be transferred into cash and other services. In the well-known case in Malang, recycling deposits are exchanged for medical vouchers. In Bali, recyclables are exchanged for English lessons and extra-curricular youth activities. In total, however, this type of waste generated. There are also TPS-3Rs (very basic structures where waste workers can manually sort through mixed waste recovering recyclables) supported by MPWH. However, there have been approximately 1,000 TPS-3Rs constructed nationally by 2016 and it's estimated that more than 70% are not operating or performing poorly.

12. Following decentralization reforms in the early 2000s, city and district governments were transferred the institutional responsibility for solid waste collection, transport, recycling, and disposal. All provincial, district, and city governments issue their own laws (*perda*) and regulations (*perkada*) concerning solid waste management,

<sup>&</sup>lt;sup>13</sup> World Bank (2012): What a Waste: A Global Review of Solid Waste Management

<sup>&</sup>lt;sup>14</sup> https://www.channelnewsasia.com/news/asia/indonesia-citarum-river-worlds-most-polluted-toxic-waste-10124436

<sup>&</sup>lt;sup>15</sup> Reported waste collection rates: Bandung District 19%; West Bandung District 39%; Cimahi 43%; Bandung 80%.

<sup>&</sup>lt;sup>16</sup> According to World Bank analysis (2017), 67% of cities and districts do not currently have the land required to dispose of their waste until 2025 (68 out of 100 largest cities and urban districts)

which are not always consistent with national laws and targets. The BAPPEDA (municipal planning agency) and *Dinas Lingkungan Hidup (DLH)* (environmental services unit) are the key local government agencies responsible for the planning and implementation of solid waste management. The DLH is responsible for the transportation of waste from intermediate collection points (TPS) to the landfill and management of the landfill itself, with primary collections at the household level operated quasi-independently by community organizations (RT/RW). The community organizations are then responsible for designing household collection systems and charging fees to fund operations, which results in a wide variety of approaches to worker organization, frequency of collection, disposal patterns, and payment structures. Regardless of the local organization of waste management, there is almost always no reliable waste or financial accounting conducted. In certain exceptional circumstances the national government will assume more direct responsibility over solid waste management services. This is the case for the *Citarum* River Watershed, which was declared a "national strategic area" by Presidential Regulation No. 15/2018 on Acceleration of Pollution Control and Damage of *Citarum* Watershed (nicknamed *Program Citarum Harum*). The program consists of a comprehensive rehabilitation program for the river with solid waste management included as a prominent priority.

13. Despite not being the primary implementers, the national government's advisory and regulatory roles of sub-national governments are critical to realizing improved sector performance. The MPWH's role is generally limited to providing technical advice, promoting pilot projects, and supervising large-scale off-site solid waste facilities. The MOEF also has an important responsibility for developing policies, formulating regulations, and coordinating efforts in pollution control. Other ministries also have influential roles: Bappenas (National Development Planning Board), Ministry of Home Affairs (sub-national government affairs), Ministry of Health (community awareness raising), Ministry of Finance (investment budgeting), Ministry of Energy and Mineral Resources (waste-to-energy) and Coordinating Ministries (Economy; Human Development and Culture; and Maritime Affairs and Investment)<sup>17</sup>. This regulatory role is extremely vital when considering how much performance currently varies between certain cities. Some cities report 100% waste collection rates (e.g. Central Jakarta, Surabaya, Surakarta, Banda Aceh), but in sharp contrast, other urban areas will openly report collection rates below 30% (e.g. Pontianak, South Tangerang, Gresik Regency, Palopo) – seemingly unconcerned with any consequences.

14. Funds allocated by local governments generally have been critically insufficient for both investment and operational costs. Operations are heavily subsidized from local budgets, with no relationship between cost levels and revenues (e.g. tariffs). The tariff system itself is too complex and often cumbersomely split between collection and transport/disposal. On average, cities allocate 2.5% of their municipal budgets to solid waste management, whereas a substantially higher budget of up to 5% or more is normally required to provide adequate services. Always reluctant to raise service charges, local governments recognize that the investments and properly priced charges for operational costs will involve a very high tariff compared with present arrangements (currently less than 40% of O&M costs are recovered, this figure varies largely across cities in Indonesia). Local governments are always concerned about the unpopularity of raising fees before the improved quality of the service has been demonstrated. At the same time, it is not sustainable to continue the current situation of heavy subsidies, lack of suitable investment capital, poor revenue generation and expect improved performance in the future.

15. However, even when a local government is allocating operational financing to waste management systems that would be considered sufficient by international standards, sector outcomes are almost always lacking

<sup>&</sup>lt;sup>17</sup> The Coordinating Ministry of Maritime Affairs and Investment (CMMAI) is also responsible for supervising the implementation of *Citarum Harum Program*.

because of the severe deficit in infrastructure investments and technical capacity. Furthermore, the private sector is keen to partner with public institutions to address operational challenges, but a lack of confidence in the areas of public governance, operational finance, and management capacity are significant barriers for a broader and deeper involvement by the private sector. As a result, much needed private capital inflows for investments in the sector are also not currently available.

16. Given the severity of the challenge, Bappenas, MPWH, MoEF, MoHA, MENKO Maritim and other ministries are keen to support local governments and spur investments in the sector. However, to reach the RPJMN's goal of 100% sanitation coverage, MPWH estimates that new investments of approximately US\$5 billion will be needed in the solid waste sector over the next four years. With around US\$0.5 billion predicted to be available from the national government over coming years (including funding from international development agencies) and only limited additional financing available from local governments, there are considerable investment financing gaps to achieve policy targets.

17. The proposed World Bank supported national solid waste management program would complement the comprehensive set of urban infrastructure programs prepared to assist Indonesia. Along with the National Slum Upgrading Program (NSUP), National Urban Water Supply Program (NUWSP), the National Affordable Housing Program (NAHP), National Urban Wastewater Program (NUWP), and the Indonesian Regional Infrastructure Development Fund (RIDF), this proposed program is part of a well-aligned World Bank support commitment to assist Indonesian efforts to eliminate slums and provide universal access to safe water and sanitation. In addition, the rich Advisory and Analytical Services portfolio in Indonesia further strengthens the institutional capacity building components of this program. The programmatic approach for national solid waste sector development also involves the existing donor initiatives in this sector, particularly the KfW Development Bank's Emission Reduction in Cities (ERIC) Project. The World Bank recently launched the Indonesia Oceans, Marine Debris, and Coastal Management Multi-Donor Trust Fund (OMC-MDTF) with a strong focus of supporting the more accurate measurement and reduction of marine plastic waste.

18. There is a strong rationale for World Bank involvement in this sector. The World Bank's involvement will enable the Government of Indonesia to benefit from: (a) technical expertise and global knowledge on solid waste collection, marine plastic pollution, sanitary disposal, waste reduction, recycling, and advanced technologies (e.g. including incineration, landfill gas capture, anaerobic digestion, production of refuse-derived fuel); (b) effective, proven mechanisms to facilitate high-quality management and oversight of large programs, including program supervision, results monitoring, and evaluation through continued working relationships with MPWH; (c) innovative approaches tailored to the highest priorities of national and each sub-national governments; (d) strong governance controls and fiduciary oversight mechanisms in the Indonesian context; and (e) capacity building for national, provincial, and local governments to plan for and implement effective city/district wide waste management services.

### C. Relevance to Higher Level Objectives

19. The proposed program is fully aligned with the Indonesia Country Partnership Framework (CPF) FY 16-20<sup>18</sup>. The program will contribute to the *Infrastructure Platforms at the National Level Engagement Area* (Engagement Area #1). The proposed program will support a national program to act as a "platform" from which

<sup>&</sup>lt;sup>18</sup> CPF Board date: December 1, 2015 and Report number #99172

the government, development partners, and private sector will scale-up solid waste management services and investments (including support to attract private funding for advanced technologies such as waste-to-energy). Considering the critical investment deficits in the sector, an important aspect of this program's success will be to leverage additional funds from public, private, and international funds.

20. The proposed program will also strongly support the *Delivery of Local Services and Infrastructure Engagement Area* (Engagement Area #4) through the improvement of solid waste collection and disposal services. Poor populations are the mostly likely to be negatively impacted by poor solid waste services, and therefore will benefit the most from the improvements made under this program. The proposed program will strengthen the decentralization framework to improve local service delivery and sustainable urbanization. This program will contribute to the CPF development outcomes for this engagement area through the "increase in households receiving improved solid waste management in targeted cities".

21. The proposed program supports the Government's climate policy objectives as articulated in the Nationally Determined Contributions (NDCs).<sup>19</sup> For climate change adaptation, the country's medium-term strategy is to reduce risks from climate change on all development sectors, including public services, infrastructure and urban system by 2030. The program supports this objective by reducing the vulnerability of solid waste facilities to climate risks through climate-resilient designs. Improved waste collection resulting from program activities will also enhance urban flood drainage capacity in program locations. For climate change mitigation, the Government has set an unconditional emission reduction target of 29% and a conditional reduction target up to 41% of the business as usual scenario by 2030. Activities financed by this program contribute directly to reducing greenhouse gas (GHG) emission from the solid waste sector.

22. The proposed program also supports the World Bank's commitment to ensuring the protection and sustainable use of marine and coastal resources. In 2016, the World Bank launched the flagship PROBLUE Multi-Donor Trust Fund with a window dedicated to "the threats posed to ocean health by marine pollution, including litter and plastics". By improving solid waste management services across coastal cities and urban areas adjacent to rivers (e.g. Citarum River), this program would support addressing one of the world's most pressing issues regarding its oceans.

23. The program supports the World Bank Group's strategic objectives of (i) Improving Human Endowments (health, education, and social protection) and (ii) Removing Constraints for More and Better Jobs (care services and entrepreneurship). The program offers opportunities for waste-pickers to move into safer and more regulated roles in the informal sector, into formal employment in the waste sector, and/or to access retraining to access improved informal employment outside the waste sector (e.g. small enterprise management, animal husbandry). Critical activities and recommendations have been identified to address gender gaps in access to information (e.g. on safety measures, value of recyclables and market opportunities, availability of training and other public programs, among others) and opportunities for decent work terms and conditions, and to enable both women and men to more effectively exercise their potential so that inequalities in the sector are not perpetuated.

<sup>&</sup>lt;sup>19</sup> Government of Indonesia (2016), First Nationally Determined Contributions (NDCs).

#### **II. PROJECT DEVELOPMENT OBJECTIVES**

#### A. Project Development Objective

#### PDO Statement

The Project Development Objective (PDO) is to improve solid waste management services for urban populations in selected cities across Indonesia.

#### **B. Project Beneficiaries**

24. Direct and indirect beneficiaries of the project are expected to be approximately the 12 million residents of the Citarum River Watershed and an additional 16 million residents expected to be included in cities and districts under Component 3.2. These cities would include around 2.8 million poor and near-poor people, including roughly 1.4 million women. The poor and near-poor are likely to experience significant positive impacts of collected waste, decreased waste burning, decreased pollution, and sanitary disposal of waste.

25. Women and vulnerable groups currently involved in informal (and formal) waste collection, sorting, and disposal networks will be specifically targeted to ensure they benefit from re-skilling and training opportunities, with the objective of incorporating informal workers into formal waste management systems and identifying alternative and/or substitute livelihood operations.

26. Furthermore, there are likely to be significant global and regional beneficiaries of improved environmental conditions with decreases in waste entering oceans and greenhouse gas releases to the atmosphere.

#### **C. PDO-Level Results Indicators**

- 27. Achievement of the PDO will be measured by the following indicators:
  - a) Proportion of population in selected urban areas with regular household waste collection [percentage];
  - b) Landfill disposal capacity operational per defined criteria [m<sup>3</sup>];
  - c) Solid waste recycled, composted and/or treated with other techniques to reduce waste disposal volumes [percentage];
  - d) Proportion of targeted beneficiaries with rating 'Satisfactory' or above on program interventions (disaggregated by gender) [percentage].

Intermediate indicators are:

- a) Financial sustainability of waste management operations in selected cities/districts, [percentage of cities];
- b) Marine plastic waste reduction from land-based sources from selected urban populations [percentage];

- c) Cities with improved livability, sustainability, and/or management [number];
- d) Number of cities with high-quality solid waste management implementation plans [number];
- e) Number of cities addressing potential gender inequalities, including improving access of women to formal employment and better working conditions in the informal sector [number].

#### **III. PROJECT DESCRIPTION**

#### A. Project Components

28. The project will support the creation of a nation-wide, scalable platform for improving solid waste management performance that is adaptable for a variety of different urban contexts in Indonesia. The project will provide some nascent support for solid waste management policy and legislation, financial sustainability, and inclusive stakeholder collaboration across all aspects of the sector (collection, treatment, disposal, recycling and waste generation). The project is designed to support the implementation of existing sectoral programs, including MPWH's Acceleration of Urban Sanitation Development Program (*Percepatan Pembangunan Sanitasi Permukiman* - PPSP) and the National Waste Management Policy and Strategy (*Jakstranas*).

29. Although the proposed project represents a small portion of the US\$ 5 billion overall estimated nationwide sector investment needs over the six-year period of program implementation, it is designed to provide a strong foundation for future expansion when additional financing sources become available. The World Bank's value-added proposition in this program is to strengthen the outcomes of existing government funding in solid waste management through technical expertise, global knowledge, and strong governance controls for the Indonesian context. The program is based on implementation mechanisms proven in other Indonesian urban infrastructure projects to facilitate high quality management and oversight of the project, including results monitoring and evaluation. If additional financing is available, then this programmatic framework would provide a ready vehicle to expand to other cities and districts to achieve results at the national scale.

30. Through the programmatic framework, the project would prioritize its initial investment financing available to one of the most urgent urban contexts: Citarum River Watershed. Since the 1970's, population growth and industrial development have progressively increased pollution along the third largest river in Java that provides water for around 27 million people in West Java and Jakarta provinces. The solid waste management facilities in this area are insufficient and poor performance historically has resulted in low waste collection, significant plastic pollution leakage in the rivers, and fatal waste avalanches, among other negative impacts. Eight municipalities have been identified for urgent investment needs: City of Bandung, City of Cimahi, District of Bandung, District of West Bandung, District of Cianjur, District of Purwakarta, District of Karawang, and District of Bekasi<sup>20</sup>. Further analysis and financing availability will dictate whether other local governments in this region will be included for investments. Local governments in the *Citarum* River Watershed will be supported comprehensively with technical assistance and investments to demonstrate the efficacy of the program. The special initial focus of this program in the *Citarum* River Watershed will support both technical assistance and front-line investments to support the *Citarum Harum 2018-2025*.

<sup>&</sup>lt;sup>20</sup> Investments in the last four districts will only focus to improve solid waste management in the settlements adjacent to *Citarum* River (not the remaining portions of the district).

31. The project does have sufficient funds from the IBRD Loan to provide technical assistance to an additional 4-6 local governments outside of the *Citarum* River Watershed. These cities and districts will be selected on a competitive basis based on past performance and political commitments to improve its SWM performance. These additional local governments provide the foundation for this national programmatic approach to be piloted. Jakarta is expected to be one of these cities. Investment funding is for these additional cities is expected to be leveraged by the technical assistance program from national budget (ABPN), local budget (ABPD) and other sources such as private investments.

32. The PDO will be achieved through the implementation of the following program components.

33. **Component 1: Institutional and Policy Development (US\$2.7 million Total Budget; US\$0.7 million IBRD).** This component will support institutional strengthening and capacity building of central government agencies responsible for various technical and administrative aspects of solid waste management services. Ministry of Home Affairs (MoHA) will implement activities under this component using the Loan while MoEF will use government budget (APBN,*Rupiah Murni*) to fund its activities. This component focuses work around three strategic priorities: (a) strengthening the regulatory framework, sector monitoring, and regulatory oversight; (b) policy development related to waste reduction and marine litter management; and (c) institutional capacity building.

34. Strategic studies will focus on key impediments to enhancing the solid waste sector's overall performance. Identified studies for program implementation: (a) household waste reduction support (including 3Rs (reduce, reuse, recycle) and "Waste Bank"<sup>21</sup>; (b) mechanisms for incorporating the informal waste workers and wider communities in formal waste collection and recycling systems, including addressing gender gaps in formal employment; (c) a roadmap for transitioning *Dinas Kebersihan* to BLUD<sup>22</sup> institutions and regional institutional cooperation mechanisms; (d) policy and legal frameworks for promoting waste-to-energy investments; (e) strategies for leveraging additional private and public financing for solid waste management; and (f) development of policy measures to reduce land-based marine pollution. It is expected that these studies will lead to significant regulatory development and reform during the project's lifespan.

35. It is expected that the strategic study (b) on incorporating informal waste workers in the formal sector will identify potential gender gaps such as limited access to formal employment, technical training and financial assets, unequal payment, among other, providing the analytical basis for improving the regulatory framework and municipal waste management plans.<sup>23</sup>

36. **Component 2: Integrated Planning Support and Capacity Building for Local Government and Communities (US\$18.2 million Total Budget; US\$18.2 million IBRD).** Local governments in the *Citarum* River Watershed and 4-6 additional local governments that meet certain readiness criteria and demonstrate commitment to improve waste management operations (see Annex 1 for details) are eligible for technical support

<sup>&</sup>lt;sup>21</sup> A results-based financing scheme used to improve source separation and collection of waste through changes in behavior at the household level.

<sup>&</sup>lt;sup>22</sup> BLUD is defined as a regional government public service agency that is statutorily defined (UU No.28/2009) to fulfill certain administrative, financial, and substantive criteria. This type of institution provides a more suitable basis for semi-commercial service operations; capable of delivering better service with greater accountability.

<sup>&</sup>lt;sup>23</sup> This will be important to ensure equal payment for both men and women in the SWM sector, as the Indonesian law does not mandate equal remuneration for work of equal value. World Bank 2019. Women, Business and the Law. Available at: https://wbl.worldbank.org/en/data/exploretopics/getting-paid.

under Component 2. This component will finance the costs of experts and community facilitators throughout the program cycle to support capacity building (including longer-term management support, training, workshops, and knowledge exchange events between cities as well as urban sub-districts) of local governments and communities to design and manage solid waste service improvements. This component addresses one of the primary constraints to improving sector performance: the technical and organizational capacity of local governments to efficiently operate complex and costly solid waste operations. Advisory services for designing local government regulations and tariffs will also be provided to local governments. In addition, funds in this component can also be used for public awareness campaigns for waste minimization and proper disposal of their waste, which is also a high government priority. It will be especially important to target women in this, as they tend to have initial control over the generation and reuse of wastes at the household level. This component will be implemented by MPWH (US\$16.25 million) and MoHA (US\$1.95 million), all from the Loan.

37. From the very beginning, there was strong consensus amongst government leaders that the project should be structured to focus resources on cities that possess the most promise to implement waste management systems that can be a role model for all other Indonesian cities. Accordingly, project preparation has completed a comprehensive evaluation of all cities and urban districts with populations over 100,000 people to identify the top performers where national resources would be more focused. These cities were then divided into three tiers depending on their current performance and commitment to solid waste management (see Annex 1 for further details). It is expected that the additional 4-6 cities will be selected from the highest tiers of performance (Tier 1 and Tier 2).

38. Currently, almost all cities have prepared City Sanitation Strategies (SSKs) that outline a five-year strategy for citywide solid waste management service improvements, required investments, and potential financing sources. For the participating cities under the project, this component will provide support for improving the design of these strategies and prepare masterplans that include practical and achievable roadmaps with financing schemes and institutional strengthening to support their implementation. Special attention will be paid to community-based improvements in waste collection and gender issues within the waste value chain. A mandatory requirement for the preparation of the masterplans supported under the project is to survey formal and informal waste workers, to prepare a baseline and monitor changes. This social part of the solid waste management masterplans of participating cities will be required to specifically analyze gender aspects (including employment rates, pay rates, access to safety gear and other equipment, access to technical training and childcare services, etc.), risks to females in the sector and vulnerable groups, and include measures to reduce gender gaps identified in the baseline surveys. The masterplans will include specific indicators to measure improvements in narrowing the gender gaps identified within their corresponding geographical area (see section VI.E). This ensures that all subnational governments receiving funds under the project will be actively support the closing of gender gaps during project implementation.

39. In Indonesia, the most common approach is that city communities (neighborhoods) organize primary waste collection. The city government organizes waste transport from a limited number of collection points (TPSs) to disposal sites or (in some cases) intermediate recycling stations. On the one hand, a lot of waste is already 'leaking' at the community level, never entering the formal waste management system. On the other hand, the community level has a lot of untapped potential to improve waste recycling through waste separation. Some locations in Indonesia manage to achieve recycling percentages of 50% and more. Models will be developed, tested and implemented to improve waste collection rates and waste recycling at the community level and integrate community level collection into the waste management chain, both institutionally and functionally.

These models will also aim to find a good balance between incentives to support communities and improvements in regulatory oversight moving to universal waste collection coverage.

40. Gender-informed interventions under this project will also improve labor practices and OHS standards for waste-pickers. This labor pool can add value to waste infrastructure by supporting streamlined operations from the source to the end. Waste-pickers can be potentially empowered through hiring as employees as well as by supporting NGOS, alliance and networks that advocate for their rights<sup>24</sup>. Practical and strategic needs can be met by providing fair wages, work breaks, protection from discrimination harassment and violence, and safety equipment such as appropriate gloves, boots, respiratory masks, health and safety training and evacuation preparedness. By offering opportunities for female waste-pickers to move into safer and more regulated roles in the informal sector the program will contribute to reduce their exposure to hazardous and unsanitary environments without adequate protection and safety.

41. This component will also provide technical assistance to cities for developing feasibility studies and detailed engineering designs for priority investments. Technical assistance provided in this component will complement, but not be limited to all cities selected for physical infrastructure investments provided in Component 3.

42. This component will support cities to engage the private sector in waste management operations and investments at two levels. Firstly, the capacity building activities should develop adequate competencies in strategic planning, operational finance, regulatory oversight and contract management. These are all essential prerequisites for private sector engagement. In parallel with developing these competencies, under the master-planning supported by Component 2, specific attention will be paid to private sector engagement in waste management services. Secondly, transactions advisory services for waste incineration (waste-to-energy) investments will also be made available to a select group of cities to assist in the structuring of sub-project documents, including procurement and contract documents, and environmental standards to ensure public benefits from these private sector investments are maximized. This would directly support the implementation of Presidential Regulation No.35/2018 on the "Acceleration of Development of Waste-to-Energy in an Environmentally Sustainable Manner".

43. Climate change planning considerations, both mitigation (institutional strengthening to acquire carbon finance) and adaptation (climate vulnerability analysis) will also be supported through this component.

44. **Component 3: Solid Waste Infrastructure in Selected Cities (US\$297 million Total Budget; US\$77 million IBRD).** The immense challenges and shortages of financing necessitate a process to prioritize resources to the most urgent and impactful interventions. Every city or urban district receiving investment financing through Component 3, will also be supported with the required technical assistance package through Component 2. This is a key aspect of increasingly the quality and sustainability of investments made through the project and has been proven effective in other large Indonesian infrastructure projects assisted by the World Bank. Considering the national priority of the *Citarum Harum* and the marine plastic pollution targets, all of this project's IBRD investment funds will be channeled to the *Citarum* River Watershed.

# 45. Sub-Component 3.1: Support for Integrated Solid Waste Management Systems for Citarum Watershed

<sup>&</sup>lt;sup>24</sup> For instance, the Global Alliance of Waste Pickers and Women in Informal Employment: Globalizing and Organising (WEIGO).



*Cities* (U\$\$77 million Total Budget; U\$\$77 million IBRD). This component will provide investment financing for the cities and districts of Metro Bandung (City of Bandung, City of Cimahi, District of Bandung, and District of West Bandung) and Non-Metro Bandung (District of Cianjur, District of Purwakarta, District of Karawang and District of Bekasi) that have urgent solid waste management infrastructure needs. Under this sub-component it is expected to finance a selection of collection infrastructure and transport, transfer stations, mechanical-biological treatment facilities mostly based on composting, recycling centers, sanitary landfills (new and/or expanding and remediating existing sites), and potentially a refuse-derived fuel plant. Investments will need to be planned and designed during implementation. Cities and districts in this region have not demonstrated the considerable capacity and performance expected by "Tier 1" cities. However, the urgent and high priority placed on this region by the national government warrants these investments and it is expected that this sub-component will provide the financing required to achieve the solid waste management targets encapsulated under the *Citarum Harum*. There will be priority placed on the Metro Bandung local governments with approximately 80% of the investments in this sub-component allocated there, with the remaining 20% of investment funds allocated to the Non-Metro Bandung districts (focused in neighborhoods along the *Citarum* River).

46. **Sub-Component 3.2:** Supporting integrated solid waste management systems in Selected Cities, other than Citarum Watershed Cities (US\$220 million Total Budget; US\$0 million IBRD). This component will include all of investment financing through the Borrower's own resources (e.g. ABPN, ABPD or other sources) in cities and districts included in Component 2 (4-6 cities and districts). These cities have demonstrated sufficient capacity, operational budgets and commitment in solid waste management to justify technical assistance to assist in these local governments in investing in complex systems and advanced treatment technologies. Cities/districts selected under this component will receive support for investing from the national government (e.g. APBN) or will invest their local budgetary funds (e.g. APBD) or other resources<sup>25</sup>. All needed infrastructure aspects of solid waste management not currently in place, including collection, transfer, treatment, disposal, and waste recycling/composting, could be considered under this sub-component. This sub-component could also include financing for advanced treatment technologies, such as mechanical-biological treatment of mixed waste and refuse-derived fuel production. This sub-component is envisioned to facilitate the creation of model cities for solid waste management cities that can act as both inspirations and performance benchmarks for all other cities and districts in Indonesia.

47. Throughout all investments and solid waste sector planning, targeted gender-segregated consultation will be established to ensure sector planning is adequately consider female perspectives. In addition, the project will support activities tailored to close the gender gaps identified by the masterplans of each participating city. Formal jobs in the rehabilitated landfills and in other (non-waste related) activities will be designed to be responsive to women's issues (e.g., flexible hours, location, and provision of child care services) and training/reskilling for formal work will establish a quota of 50% women. For both formal and informal sector, these activities may include training in vocational, financial, business and leadership skills; provision of equipment/vehicles, financial assistance to women-led business such junk shops and waste banks; information campaigns on proper waste disposal, among other interventions. Thus, in addition to promoting formal job opportunities for women, the project will also improve working conditions of those women who will remain in the informal sector. When women have been provided an opportunity, they have performed well in solid waste sector jobs, so it is expected that acquiring the adequate skills with improved work conditions will improve formal employment gender gaps (also

<sup>&</sup>lt;sup>25</sup> During the project implementation period, it is expected that US\$220 million will be invested in improvements of solid waste management systems (hardware) from ABPN, ABPD and other sources.

valid for formal jobs created under Component 2).

48. **Component 4: Implementation Support and Technical Assistance (US\$ 8.1 million; US\$ 4.1 million IBRD)**. This component will finance the program management during the implementation, construction supervision consultants, monitoring and evaluation, and specific technical assistance for cities/district governments receiving the investment of Component 3. For management of the program, the DG Human Settlement (MPWH) will serve as executing agency, in which it will form Central Project Management Unit (CPMU). Besides managing the program, the CPMU will also provide technical assistance support, advisory services and training of four Central Project Implementation Units (CPIUs) at the national level (MPWH, MOEF, Bappenas and MOHA), and for Project Implementation Units (PIUs) at the provincial, city and district levels.

49. Considering the technical complexity of solid waste management systems and the broad geographic scope expected (approximately 12-14 local governments), a series of strong management and monitoring and evaluation personnel will be essential for the program's success. To ensure this can be achieved, Bappenas has been tasked to implement these activities. The estimated budget needed for these activities will be around \$4 million over six years of implementation and will be made available through APBN *murni* parallel financing. In addition to monitoring implementation progress of participating cities in Component 2 and 3 of the project, this component will also create a platform and hold regular events that will reach out to many cities and districts (beyond those 12-14 included in this project), and create opportunities for policy dialogue, discussions on system improvement models, peer-to-peer exchange of experiences, and dissemination of results from the project. These outreach activities will require specialized staff in the CPIUs of the program.

50. As mentioned earlier, specific technical assistance will be provided by SUPD II (MOHA) to help ensure the sustainability of the investment received by the eight cities/district governments receiving the investment of Component 3. Specifically, the activities of SUPD II will aim to strengthen the regulatory framework and institution capacity of local government identified to receive the hardware investments, provide support for strengthening implementation and management capacity by funding monitoring (including improvement of cost recovery, setting tariffs, and retribution), enhancing stakeholder's collaboration at all levels, and training to make substantial use of participatory and inclusive techniques for community engagement.

51. **Climate Change Co-Benefits**: All components of this project have been designed to contribute to climate change adaptation objectives. Infrastructure financed through Component 3 will incorporate improved design and construction of facilities in areas prone to flooding, adapting to the climate change vulnerability risks. All components 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 are also aimed at actions to reduce GHG and other emissions. Investments have also been designed to reduce emissions related to the transportation and disposal of waste, including landfill gas capture. Detailed information on the climate co-benefits and further analysis is provided in Annex 4.

# **B. Project Cost and Financing**

Project Components	Project Cost	IBRD or IDA Financing	Trust Funds	Borrower's Own Resources
Component 1: Institutional	2.7	0.7	0	2



Development         Component 2: Integrated         Planning Support and         Capacity Building for Local       18.2         Government and         Communities         Component 3: Solid Waste         Infrastructure in Selected         297         77         0         Component 4:         Implementation Support and	a 8.1 4.1 0	ina	Technical Assistance
DevelopmentComponent 2: Integrated Planning Support and Capacity Building for Local Government and Communities18.218.20Component 3: Solid Waste Infrastructure in Selected Cities297770	N 91 11 0	and	Component 4:
Development Component 2: Integrated Planning Support and Capacity Building for Local Government and Communities	297 77 0	ē	<b>Component 3:</b> Solid Waste Infrastructure in Selected Cities
Development	18.2 18.2 0		Component 2: Integrated Planning Support and Capacity Building for Local Government and Communities
Capacity Building & Policy			Capacity Building & Policy Development

More details on the financing sources and breakdown for each component is provided in more detail in Annex 2. During the project implementation period, it is expected that Borrower's own resources can allocate the amount of US\$226 million to be invested in improvements (hardware and technical support) of solid waste management.<sup>26</sup>

# C. Lessons Learned and Reflected in the Project Design

52. Lessons learned from the World Bank's urban operations in Indonesia and solid waste management projects globally include:

53. **Local government should be in the driving seat.** Solid waste management issues have been delegated to local governments in Indonesia. However, the decentralization of these responsibilities has not been accompanied by a transfer of resources, commensurate institutional building, investment in human resources and adequate oversight. Empowering local government, through capacity building and a widening of their political, legal, and implementation roles is key to the success of urban infrastructure and service delivery. Therefore, Component 2 has been designed to provide a comprehensive technical assistance package for all participating cities (solid waste management planning, operational management, finance, design and preparations for system improvements).

54. **Collaboration between the central government, local governments, and communities is essential.** As has been learned from previous World Bank urban projects, effective collaboration between the central government, local governments, and communities is critical for ensuring smooth project execution and accountability. For example, a World Bank administered Clean Development Mechanism (CDM) landfill gas flaring (LGF) project demonstrated unsuccessful collaboration between the central and local government resulting in a "transfer of asset" problem. In this case, the central government built the sanitary landfill facility for Makassar, but the city could not utilize it because the asset had not been transferred (on-granted) to the city. Therefore, the

<sup>&</sup>lt;sup>26</sup> This amount was estimated based on the analysis of investment planning and budget allocation for 104 cities and districts in Indonesia.

project utilizes proven mechanisms from other Indonesian urban projects for collaboration at all levels and is presented in the project's implementation arrangements.

55. **Strong monitoring and evaluation are keys to success.** Success in scaling-up some past World Bank projects (e.g. National Rural Water Supply and Sanitation Project (PAMSIMAS)) into national program platforms has to a large degree been attributable to advanced monitoring systems that have been developed to manage the program, provide early feedback on its effectiveness, and reduce fraud and fiduciary risks. The system includes a management information system (MIS), a complaint handling system (CHS), and independent audits. Developing a comprehensive monitoring and evaluation system is a key to a successful national program. Hence, Component 4 has been allocated IBRD resources to guarantee funds for monitoring and evaluation, and Component 2 will have a strong emphasis on designing solid waste and financial accounting systems at the city and district level.

56. **Financial sustainability is fundamental in solid waste management.** Solid waste management systems differ from other public services (e.g. water supply, wastewater collection and treatment) in that operating costs are higher, in both absolute terms and as compared to capital costs. This can be seen in well-known cases, such as recently in Lebanon where systems quickly collapsed after non-revenue operational funding dried up. It is therefore vital to at least ensure that funding for system operations is secure, preferably from revenues (waste tariffs collected from waste generators and the public) or otherwise from long-term budget support or subsidies before investment decisions are made. Therefore, the project has put a lot of emphasis on improving the operational finances of local governments. The process of identifying three city/district tiers to determine readiness and commitment of participating local governments relies on a heavy weighting of cities' current operational budget.

57. Waste minimization and recycling are high priorities, but these alone will not solve existing waste disposal problems and lack of operational funding. Too often, waste recycling is pursued based on unrealistic expectations of its potential to both reduce the volume of waste going into disposal facilities and to generate income. International experience shows that such expectations tend not to materialize. If there is money to be made in waste recycling (e.g. higher value recyclables), there is a good chance that informal operators are already active in these niches and large-scale recycling based on waste segregation at source tends to at best be costneutral due to the expenses of complex logistics and management efforts (e.g. Belarus Integrated Solid Waste Management Project). Also, volume reduction is limited unless significant effort and costs are made, such as in developed countries with high recycling ratios that are possible because they are in-effect paid from avoiding high disposal costs. Although. this project is designed to strongly support segregation of waste at source and waste recycling efforts. it will emphasize the utmost importance of robust basic systems, consisting of adequate waste collection, transport and disposal facilities. Therefore, the project makes strong efforts to provide basic services (universal waste collection/efficient transport and disposal that meets acceptable environmental standards), basic infrastructure investments and strengthened management structures to support these. The project supports technically, and is expected to invest in, waste recycling, waste reduction and waste segregation at source initiatives, but only when basic services are already in place.

58. **Infrastructure investments only when land ownership has been secured**. Land acquisition issues have plagued earlier, other waste management investments in Indonesia. The program will only develop investments under Component 3 when selected local governments have already secured land ownership before the city/district-level subproject is approved for treatment or disposal investments. The process of securing properties for investment can be made part of Component 2 support activities.



#### IV. IMPLEMENTATION ARRANGEMENTS

#### A. Institutional and Implementation Arrangements

59. The Development Steering Committee for Housing, Settlements, Water Supply and Sanitation (*Tim Pengarah Pembangunan Perumahan, Permukiman, Air Minum and Sanitasi Nasional*) will act as the project's **Steering Committee (SC)** at the central level. This Steering Committee is chaired by Bappenas with participation of Echelon-1 staff from other ministries, including: the Kemenko Ekonomi, MPWH, MOH, MOEF, MOHA and MOF. The SC will be responsible for the project coordination at central level as well as discuss and resolve issues which requires inter-ministerial decisions, support policy development, and monitor the achievement of national development priorities on relevant supported sectors. The project will also inform the *Citarum Harum* Task Force of implementation progress in the *Citarum* River Watershed.

60. The MPWH (Director General for Human Settlements (DGHS)) will be the executing agency and will lead the **Central Project Management Unit (CPMU)**, also consisting of representatives from other implementing agencies. The CPMU will be led by an Echelon-3 staff and be supported by technical, financial and administrative staff from the DGHS. The CPMU will establish procurement, financial management and safeguards that will conform to the World Bank's policies and regulations. CPMU will perform the following responsibilities: overall management of the project for achieving the project objective and key performance indicators (KPIs); ensure the quality of project planning, implementation and outputs both at central and local levels; carrying out timely supervision, monitoring and evaluation; facilitating cities or provinces to have sustainable solid waste services; and providing inputs to the Steering Committee for policy developments and inter-ministerial or inter-sectorial issues.

61. The **Central Project Implementation Unit** (CPIU) will be composed of four project implementation units lead by Echelon-3 staff: (i) Directorate for Solid Waste Management (DSWM) in MOEF; (ii) the Directorate SUPD II in MOHA; (iii) the Directorate Development for Environmental Sanitation (DES or PPLP) in MPWH, and (iv) Directorate of Urban, Settlement and Housing (DPPP) in Bappenas. Below, the CPIU's division of responsibilities per component (bold text), along with associated ministries expected to play a supporting role (non-bolded text), are outlined:

- a) Component 1: **MOHA**\*, **MOEF**, and MPWH;
- b) Component 2: MPWH\*, MOHA\*, and MOEF;
- c) Component 3: MPWH\*
- d) Component 4: MPWH\*, MOHA\*, Bappenas, MOEF, and Kemenko Maritim dan Investasi.

\* indicates the ministries receiving IBRD funds per component, while MOEF and Bappenas will use their own budget allocation

CPIUs will perform the following tasks: timely execution of selected activities; establishing sound procurement, contract management and financial administration; and carrying out supervision and monitoring. CPIUs will report to CPMU. Other ministry (i.e. Kemenko Maritim dan Investasi) although not included as the CPIUs will nevertheless be expected to contribute to the project's implementation through monitoring of marine plastic debris reduction.

62. A Working Group of Water Supply and Sanitation (*Kelompok Kerja Bidang Air Minum dan Penyehatan Lingkungan dan Sanitasi*) or a committee with similar function will support the **coordination at the provincial and local levels of government**. These sub-national committees will coordinate with CPMUs/CPIUs in the implementation of project-related policies, collaboration across institutions, and preparing recommendations to the Provincial or City Heads (Governor or *Bupati*) and local parliament (DPRD).

63. A **Project Implementing Unit (PIU)** will be established at every selected province and city/district and will perform the tasks similar to CPIUs. Provincial PIUs will only be established for provinces with regional subproject investments (e.g. regional landfills involving multiple cities and/or districts). City and District PIUs will be established in each participating city and district. Heads of each PIU will be the Public Work Agencies (*Dinas Pekerjaan Umum/DPU*) or the Housing and Settlements Agencies (or *Dinas Perumahan dan Kawasan Permukiman/PKP*), or Environmental Agencies (*Dinas Lingkungan Hidup/DLH*). Both Provincial and City PIUs will report to CPMU.

64. The budgeting system for the project will follow existing government procedures that are well defined. The IBRD financing will be included in the annual government budget and line ministry budget document (DIPA). All loan funds are going to be executed under the central government budget to be implemented by MPWH and MOHA. Activities at the local level will be executed by MPWH work units in the province (MPWH Provincial *Satker*).

### **B. Results Monitoring and Evaluation**

65. Proper planning, monitoring, and enforcement of waste management are impossible without data. It is even more difficult to engage the public in a dialogue about optimal strategies and appropriate collection fees without any data. Waste management planning requires knowledge on how much waste is being produced, where it's being produced, and how much residents are paying for this service. Communities can be delegated collection responsibility as in Indonesia, but proper waste and financial accounting systems need to be a core requirement. Service standards are also essential for results monitoring so that performance can be measured across cities and districts.

66. Considering that there is currently no comprehensive monitoring system in solid waste management in Indonesia, it will be a significant part of Component 1, Component 2 and Component 4 to create and implement a monitoring and evaluation program that will require capacity building across many low-levels of government and community organizations. For example, in Bandung City (population: 2.5 million), there are 29 *kecamatan* and 9,733 community organizations responsible for organizing solid waste collection services. This will require project funds for capacity development, development of national accounting tools and systems that can be implemented locally, and increased budget for monitoring reporting. Having this information readily available would be a powerful tool in exposing poor performing cities, *kecamatan*, and communities. This information would also be indispensable in designing creative and effective waste management approaches, as well as to identify and design interventions to close gender gaps in the sector. The masterplans of the cities funded by Component 2 will include the introduction of a city-wide waste monitoring and accounting system that will also be funded from Component 2 resources.

67. National management consultants mobilized under Component 4 will be responsible for project monitoring, under the close supervision of the CPMU. As with other national urban projects, the solid waste

project monitoring will include random spot checks and complaint handling management, including for safeguards. To a large extent, data collected through the waste accounting systems of the cities participating under the project will form the basis for a monitoring database and/or results reporting made publicly accessible online. The key performance indicators of this project are synchronized with the overall Indonesian sector monitoring of national ministries, such as Bappenas, MoEF, and MPWH.

# **C.** Sustainability

68. **Government Commitment and Ownership**. As detailed earlier, improvement of solid waste management is a strong government priority and the World Bank has witnessed strong buy-in from key sector ministries (Bappenas, MPWH, MOHA, MOEF) during the preparation of this program. There have been a series of intragovernmental and external workshops hosted by Bappenas and MPWH that have shaped program priorities and objectives. The focus on the *Citarum* River Watershed area is in direct response to the strong government ownership and commitment of that sub-region's pollution issues. Government ministries played a prominent role in designing the proposed program, readily demonstrated by amassing the solid waste database, adding and excluding component activities, and altering the city selection method to considerably change the list of priority cities. The program is designed to support both short-term and long-term government commitments.

69. **Operations and Maintenance Financing.** Comprehensive capacity packages for every selected city included in the program (Component 2) will facilitate effective implementation of solid waste management services that are sustainable. The project will emphasize strengthening local government's ability to effectively increase revenues for waste management, efficiently manage existing local and national government funds, and measure government service increases. Uniform unit costs ranges will be developed for each solid waste service standard so that political decision-makers have a stronger understanding of appropriate budgets to allocate. Investments under the project will only be approved when matched by appropriate operational budgets or city council commitment to increase solid waste management budgets shortly.

70. Local Government Governance, Technical Capacity and Outreach. Component 2 technical assistance packages will also support local governments in improving their institutional arrangements (e.g. BLUDs), staff management and development, and core technical skills. Unfortunately, when solid waste management responsibilities were transferred to local governments during *reformasi* reforms, it was not accompanied by a transfer in technical or management skills. Hence, even when local budgets should be sufficient for satisfactory services, results are often lacking because of a lack of soft skills. Hence, this project is expected to significantly expand local governments knowledge in terms of organizing collection routes, proper sanitary landfill management, and advanced technology requirements. In addition, support to increase capacity to integrate gender and social inclusion concerns is needed, including social and gender analysis, gender-responsive approaches, and gender competency among staff. Awareness raising and behavioral change will also be a significant part of the program utilizing the Ministry of Health's established community networks and MoEF's platform at the national level. Community-level facilitators or social mobilizers engaged in outreach will use gender-responsive and inclusive outreach approaches and techniques to maximize participation, awareness raising, and behavior change. This will help to mitigate the risk that female-headed households may not have access to information.

71. **Environmental and Social Sustainability**. Environmental and social safeguards management will be mainstreamed in the project documents and project cycle, and will involve strong participatory mechanisms at

the community, city and district levels. Sub-projects financed under the program will require environmental and social screening, an assessment of potential and social impacts (including disaster-related) and the preparation of acceptable safeguard instruments for mitigation measures. Safeguards training will be provided regularly as part of the project's capacity building activities to all stakeholders, including project staff of the participating local governments, consultants, and facilitators. Sustainability will be further assured through the substantial inclusion and participation of urban poor communities with local governments in the lead. Guidelines will be established to achieve these inclusive and participatory consultations, with mechanisms for accountability and monitoring diversity and levels of participation. This will include disaggregated information on participants and the feedback provided by women and vulnerable groups in consultations, surveys and different forms of rapid appraisal that may be used to inform the design and implementation of proposed waste management interventions.

### **D.** Role of Partners

72. The KfW Development Bank is already implementing a solid waste management project (*Emission Reduction in Cities (ERIC) Project*) in four Indonesian cities and is currently preparing another project to provide additional cities technical assistance investments. The World Bank is regularly coordinating with KfW, including in the selection of cities/districts for investment and sharing lessons learned.

73. The embassies of both Denmark and the Netherlands are expected to contribute in-kind technical assistance with experienced national experts from each of their respective countries. These experts will be strategically integrated into Component 1 (Policy Development) and maybe Component 2 (City/District TA and capacity building). Project preparation was supported by both Australia's Department of Foreign Affairs and Trade (DFAT) and the Embassy of Denmark.

74. Furthermore, there is also an Indonesia Oceans, Marine Debris and Coastal Management Multi Donor Trust Fund (OMC-MDTF) recently delivered by the World Bank that will contribute to Component 1 as it relates to topics relevant to marine waste, such as plastic waste reduction, community-collection schemes, waste accounting, and monitoring. The MDTF is also expected to co-finance Component 2 through pilot targeted local media campaigns to raise awareness on reducing marine plastics pollution. This MDTF has currently \$2.3 million budgeted for activities to reduce the release of marine plastics in the period up to 2021.

### V. KEY RISKS

### A. Overall Risk Rating and Explanation of Key Risks

75. The overall risk is for the project is High.

76. **Political and Governance Risks: Moderate**. There is a moderate likelihood that political and governance factors could adversely impact the PDO. There is expected to be a stable political environment over the next six years, with presidential elections successfully completed in 2019. There is substantial political support for the project with clearly articulated development priorities concerning the solid waste sector. Similar to other large World Bank financed infrastructure projects; corruption risks are present with inadequate government systems present for resolving corruption when detected. The proposed project does not represent a significant threat to vested interests or political stability.

77. **Macroeconomic Risks: Moderate**. The risk of emerging or continuing external and/or domestic imbalances is moderate, and consequent macroeconomic effects would only moderately affect the achievement of the PDO if they materialize. Indonesia's government is in a position to address economic risks despite recent falls in the growth rate. At the same time, the room for maneuvering is less than in the past. Risks are particularly associated with employment and job creation, revenue collection, the sudden reversal of financial assets held in the Indonesian stock and bond markets, and exchange rate volatility and inflation. These risks, along with volatility in the global economy, could impact Indonesia more sharply if the government struggles with the pace of its own structural reform.

78. **Sector Strategies and Policies: Moderate**. Policies and strategies in the solid waste sectors are generally adequate for the purpose of the project and articulated in a clear framework (e.g. National Medium-Term Development Plan (RPJMN) 2015-2019). The MPWH, MoEF, and selected local governments have strong interests in encouraging sector investments and achieving improved sector outcomes. Funding for the sector is frequently inadequate at the local levels, but the project will use a tier-based system to target capacity building support based on local government's commitment and capacity. As waste generation, wealth, and citizen's expectations for a clean environment continue to increase, it is likely that sector strategies and policies will continue to increase in priority and quality. Furthermore, more trust fund resources are being mobilized to assist MOHA in revising key regulations structuring the national to sub-national intra-governmental relationships regarding solid waste management.

79. **Technical Design of Project: Moderate**. There is a moderate likelihood that factors related to technical design of the project may adversely impact the achievement of the PDO. Although the project's implementation will be completed in six years, delays in this sector's investments can be notoriously long particularly related to land acquisition. Hence, completing large, complex investments in Component 3 within a compressed timeline presents risks to the technical design. However, these risks are mitigated by the fact that a lot of preparation on technical design has already been completed due to the project utilizing lessons learned and implementation arrangements of other successful Indonesian urban infrastructure projects. The current project design and implementation arrangements have already been developed. There have also been significant additional resources mobilized (\$750,000) for project preparation. As part of these additional resources, the feasibility studies and bidding documents are ready for 4 cities that have high potential for inclusion and support under Component 2 and Component 3.2.

80. **Institutional Capacity for Implementation and Sustainability: High**. There are high risks that weak institutional capacity for implementing and sustaining the operation may adversely impact the PDO. Solid waste management operations are intensive, demanding and require substantial day-to-day financing to sustain service quality levels and prevent break downs after investments have caused increases in operating costs. The project has been designed with these considerations in mind, but will need to continually pay careful attention to current operational capacities and financing allocations of local governments that participate in the project – highlighting the importance of strong monitoring and evaluation systems integrated throughout the components. A further risk mitigation mechanism has been the screening of 100 largest cities and urban districts using all available national-level data to select the most committed and highest capacity cities and districts in the country for Component 3.2.

81. **Fiduciary: Substantial**. The project's complex structure implemented across multiple line ministries requires strong oversight and coordination. The financial management arrangements for the project entail some risks, such as (i) risk related to controls over payment verification of large infrastructure and consulting contracts, (ii) risk related to timely and sufficient availability of budget (iii) delays of asset transfer from central government to local government. Mitigation of these risks are described in detail in the key appraisal summary and implementation arrangement section.

82. The project is expected to involve cross-sectoral and partially centralized/decentralized implementation by multiple agencies with varied procurement capacity and differential understanding of the Bank's Procurement procedures. At this stage, the procurement risks identified under the Project include:

- a) Procedural non-compliance due to implementing agencies' insistence to follow the Government's Procurement procedures instead of the Bank's Procurement Regulations for IPF Borrowers, which govern procurement under the Project;
- b) Rejection of lower priced bids due to narrow interpretation of qualification criteria;
- c) Cumbersome internal processes and coordination among the implementing agencies with multiple agencies involved;
- d) Delays due to weak procurement capacity, due to *ad hoc* assignment of Selection Committee (*Pokja Pemilihan*) accredited based on rudimentary training in the government's procurement regulations and with limited understanding of the Bank's procurement procedures;
- e) Inadequate procurement planning by the contract commitment officer (PPK), particularly the weakness in cost estimation prepared without using justifiable quantities and realistic market prices;
- f) Inadequate monitoring and weak contract management by the contract commitment officer (PPK).

83. These risks will be mitigated by: (i) including an explicit provision in the Financing Agreement and Project Operational Manual to highlight that the Bank's Procurement Regulations shall govern all procurement under the Project and take precedence over Government procurement regulations; (ii) CPMU, with support of its consultants, providing procurement training to the CPIUs and to PIUs in the local governments, as well as systematically verifying procedural compliance and monitoring progress against planned schedules; (iii) specifying qualification criteria in bidding documents in an explicit manner such that there is no rejection of lower pricedbids without seeking written clarifications from bidders on information provided in the bid. In addition to the Bank's prior review of strategically-important and large value or complex contracts, it is proposed that procurement supervision in the field be conducted at least twice per year, including conducting trainings and carrying out ex-post reviews of no less than 20 percent of the contracts subject to the Bank's post review.

84. Based on the above, the procurement risk under the Project is 'Substantial', which will be updated upon completion of the Project Procurement Strategy for Development (PPSD) and managed through appropriate mitigation measures to be agreed with the Borrower.

85. **Environmental and Social: Substantial**. The project has a Category A safeguard rating as it will finance total sector systems including the integrated solid waste treatment facilities (TPST), re-engineering and rehabilitation works on existing landfills in selected cities (if any) that are already severely polluted and contaminated by leachate, construction of material recovery or sorting facilities (MRF), installation of landfill gas collection systems (where feasible) and possibly green waste composting plants. Construction of TSPSs may include waste to energy (e.g. anaerobic digestion facilities, refuse-derived fuel (RDF)). The construction works

could potentially cause negative impacts (e.g. air pollution, surface water, groundwater and soil contamination). To mitigate these impacts, there will be technical assistance to ensure appropriate mitigation measures and standards are met (e.g. air emission and leachate quality). In terms of social impacts, the project could generate negative impacts on waste pickers and recyclers that rely on the waste streams for their livelihoods. Challenges related to project activities include land acquisition (and, less likely, resettlement), and the potential loss of livelihoods of 'waste pickers', livestock owners and informal recycling industries. Women (including female headed households), elderly persons, youth and children are amongst the more vulnerable of the waste-picker communities working at landfill sites in many parts of Indonesia. For children with parents engaged in waste-picking, the project will ensure these children attend school during the day and not work at the disposal site<sup>27</sup>.

86. Although the Directorate General of Human Settlement (DGHS) has acquired sufficient knowledge and experience in World Bank financed project preparation and implementation, the environmental and social impact management will be the responsibility of the DLH (municipal environmental agency) of the city/district governments. Their capacities for safeguards are weak and need to be strengthened so that each city can have the necessary safeguards instruments prepared – a requirement that must be fulfilled prior to consideration for funding under the project.

87. **Stakeholders: Substantial**. Opposition from stakeholders could have a negative impact on the achievement of the PDO. The project's objectives are widely supported by government agencies, civil society, private sector, other donors, and the public. Participation of local governments in the project is voluntary. However, the main stakeholders that could oppose this operation are representatives of the informal sectors involved in waste collection and disposal. Their businesses and livelihoods are likely to be altered, but this risk is mitigated by participatory consultations and strong safeguard implementation. Most importantly, the project puts a strong emphasis on incorporating informal workers into formal systems with the objective of improving working conditions and wages. Furthermore, there will also inevitably be local landowner opposition in the siting of some landfill or waste sorting facilities, but these risks will be reduced if there is public confidence that local governments have the enhanced capacity to manage these sites in a sanitary fashion.

### VI. APPRAISAL SUMMARY

### A. Economic and Financial (if applicable) Analysis

**88. Economic Analysis.** The economic analysis for this program models the flow of benefits and costs for the useful life of the program. Program benefits are estimated using detailed data collected from participating cities and districts in Metro Bandung (i.e. City of Bandung, City of Cimahi, District of Bandung and District of West Bandung). The Government of West Java Province as owner of the newly constructed regional TPA Legok Nangka landfill does not currently allow mixed waste to be disposed on the TPA. The Province of West Java is preparing for construction of waste to energy (WtE) facility at TPA Legok Nangka. In the optimistic scenario, the facility is to be completed in 2022, however learning from the World Bank's experience, this WtE will likely take at least five

<sup>&</sup>lt;sup>27</sup> The Government of Indonesia ratified the ILO Convention No. 182 (Prohibition and Immediate Action for The Elimination of The Worst Forms of Child Labour) through Law No 1/2000. To implement the Law, Presidential Decree No 59/2002 on the National Action Plans for Elimination of The Worst Forms of Child Labour was enacted. The Decree explicitly lists the waste-picking being one of the worst forms of work, prohibiting this practice. At local government levels, provinces, cities and districts are obliged to prepare action plans as well. For this project, preparation of the city or district SWM masterplan will include provisions that will refer to local regulations (Perda) on prohibition of children engaging in waste-picking and informal recycling.
years to build, thus there will be a two-year gap where the cities and districts need to dispose of its solid waste. The most feasible option is to upgrade and extend of the current existing regional TPA Sarimukti landfill. The Government of West Java Province as the owner will have to provide the investment for the upgrading the site. Meanwhile, for the management of waste generated by City of Bandung, City of Cimahi, District of Bandung and District of West Bandung, TPSTs with various capacity (i.e. 1 - 200 ton per day) will be constructed in city/district. Benchmark figures from these two cities, two districts and one province are then used to estimate benefits for the remaining 44 participating cities.

89. Total costs and total benefits are projected over an 18-year period from 2021 to 2038, the present value of which are then summed to yield an Economic Net Present Value (ENPV) and Economic Internal Rate of Return (EIRR) for the project. The ENPV of SWM Program over 19 years, at the 6 percent discount rate, is estimated at US\$592.7 Million; and the EIRR at 21.6 percent. The positive ENPV and positive gap between the EIRR and the discount rate imply that this program is economically feasible.

90. The sensitivity analysis of the project was done with respect to two variables: (i) a change in the year of 100% waste handled achieved; and (ii) a change in the operation and maintenance costs (O&M). All else equal, the project could sustain if the 100% waste handled achieved lately in 2036 and still be economically feasible. Similarly, it would take an increase of almost 201.5 percent in annual O&M costs to reach a negative ENPV.

91. **Financial Analysis.** The financial analysis focuses on measuring the net present value and financial internal rate of return for the proposed SWM facilities, from the perspective of the subnational governments. For the City of Bandung, the investment as planned yields a net present cost of US\$89.9 and IRR cannot be calculated as the project never becomes cash positive. For the City of Cimahi, the IRR is -3.3 percent with net present cost US\$ 10.8, District of Bandung IRR is -3.5 percent with net present cost is US\$27.7, and District of West Bandung's net present value is US\$1.27 and IRR 11.2%.

92. The sensitivity analysis for financial feasibility of the SWM projects in two cities and two districts were also conducted with respect to two key variables: (i) a change in the annual O&M costs; and (ii) a change in the tipping fee per ton. All of participating cities/districts level governments, except the District of West Bandung, are not significantly sensitive to changes in O&M costs and the tipping fee rate.

93. Finally, high O&M costs for primary and secondary waste collection will result in substantially negative projections for all participating cities and districts in the *Citarum Harum* program. The City of Bandung, City of Cimahi, and District of Bandung would need an annual subsidy equal to 79.9, 66.3, and 62.7 percent of projected O&M costs to reach a positive NPV respectively. A more detailed discussion of the economic and financial analysis of the proposed project is presented in Annex 4.

*94.* **Climate Impact**. The estimated greenhouse gas emissions impact over the economic lifetime of the project is approximately a net reduction of 60 million tons of CO<sub>2</sub>-equivalent, mainly due to the conversion from open dumping to sanitary landfilling with gas capture. The average annual emissions reductions from the Project are estimated to be 1.46 million tons of CO<sub>2</sub>-equivalent. The economic lifespan is estimated to be 40 years. Emissions analysis, climate risks, and climate co-benefits are presented in more detail in Annex 4.

## B. Technical

95. All project components are designed to actively support the full realization of the Regional Government Law (2013) and Solid Waste Management Law (2008). The technical design will also import and adapt international best practices to the Indonesian context. The project design focuses on incorporating least-cost and practical solutions with proven effectiveness, while also incorporating the principles of reducing, reusing, and recycling waste. With this approach applied, there are several technical model shifts that are recommended for implementation at the city and district level.

96. For collection, the current models are expected to continue whereby the community level (RTs/RWs) organizes collection with handcarts and small truckers in smaller cities and compactor trucks in larger cities. Where the project will suggest technical reform in collection is: (i) designing and implementing a comprehensive waste and financial accounting system with robust monitoring; (ii) reforming and implementing collection service standards; (iii) explicitly subsidizing collection services of poor and near-poor households to make tariffs reasonable and achieve 100% collection; (iv) improving anti-littering awareness campaigns and increasing peer pressure for positive behaviors; but also and in combination with incentive and outreach activities, and (v) acceptance standards imposed by city authorities for collecting waste from communities, including in time for waste segregation.

97. Waste transfer and transport has been identified as an obvious area in need of major reform. The current types of intermediate collection points (TPS) found in Indonesia are an antiquated model that has justifiably been eliminated from urban areas in practically all other middle to high income countries. TPSs allow anyone to dump waste at any time without any form of monitoring. Having a completely unregulated collection point would undermine essential waste accounting systems introduced further upstream in collection systems. Secondly, although TPSs are inexpensive to build, they are extremely cost inefficient with high labor inputs required to manually shovel waste during every pick-up. Due to Indonesia local governments delegating responsibility to communities, the majority of local government operational costs are concentrated on the transfer and transport of waste. Considering that the majority of Indonesia's urban solid waste is transferred through a TPS, even minor efficiencies will have very significant cost savings when considering the scale of operational costs (\$ 486 million in 2016).

98. Therefore, the project will seek to eliminate the TPS model in project areas and replace with a managed container system. Indonesia needs intermediate collection points that can be monitored, deliver reduced labor costs, and are sanitary. This can only be achieved by replacing all TPSs over a reasonable time frame (likely 2-5 years). It will also require a revision of national TPS service standards (for HCS or SSS container system) and translation into local level regulations. This will require a major capital investment by local government to purchase container systems, but will have immediate, noticeable benefits in city cleanliness, waste data gathering, and lowering of operational costs for this aspect of waste management.

99. In addition to collecting waste from TPSs, the transfer of waste to final disposal sites is the other major current cost of waste management for local governments. Cities and districts often rely on a fleet of short-term private contractors of small, non-compaction trucks to transport wastes over long distances. Large waste transfer trucks are rare in Indonesia. The lack of investment in efficient compactor trucks causes massive increases in operating costs, further adds avoidable congestion on city streets and contributes to long queues to enter final disposal sites. It's estimated that roughly 6-7 small, non-compactor trucks to be replaced by 1 large, compacting truck.

100. Even without increases in collected waste, the current transport system is needlessly costly and inefficient. Hence, the project will prioritize: (i) building transfer stations for all areas more than 25 kilometers away from the final disposal site, and (ii) purchase modern compaction trucks for longer trips greater than 25 kilometers. Transfer stations can also be combined with material recovery facilities (MRF) to separate recyclables and allow for some composting on-site. Having transfer stations would increase short-term investment costs but would immediately decrease operational costs and improve local traffic congestion. If transfer station investments were made, then this would subsequently require large, compaction trucks to be purchased. Most cities currently rely on outsourced workers to transport waste to final disposal sites using city or district owned trucks. The government and small-scale operators have generally been unable or unwilling to purchase more expensive, modern compactor trucks. However, by changing government contracting practices and offering service contracts for a minimum of five years, private sector can be provided the security needed for purchasing more modern compactor trucks.

101. Landfills will be needed for the coming decades for solid waste management systems to function regardless of the success of waste segregation, waste reduction, recycling, composting and advanced treatment in the coming decades. There will always be a need for landfills to make waste management systems function. Hence, all cities and districts involved in the project will need final disposal site land security for 10 years and ready capacity for 5 years into the future. The project will: (i) rapidly upscale final disposal site investments and monitoring, and (ii) environmental rehabilitation of existing formal sites and illegal informal sites.

102. Recycling and waste reduction will thrive when economic conditions support it, not when it is merely mandated. For this to occur, the cost of collection and landfills need to be equivalent to the true costs of adequate service standards. With that being said, the project will actively support waste recycling, reduction and advanced treatment: (i) developing realistic waste reduction and recycling targets with local governments; (ii) larger scale recycling centers and "Waste Banks"; (iii) investments in MRFs, mechanical-based treatment (MBT), anaerobic digesters, and refuse-derived fuels production centers; and (iv) providing strong transaction support for public-private partnerships to local governments for waste-to-energy mass burn incinerators (planning and financing schemes; design for integration into city-waste management systems; legal, equity and contracting arrangements; and tendering considerations). The main concept of the project is that smaller cities (of around 100,000 people) will focus on waste sorting centers for waste reduction; larger cities in addition will consider the introduction of MBT/RDF, and that waste-to-energy schemes based on incineration are of interest for the metropolitan cities with more than 1,000,000 inhabitants.

103. Local governments do not manage their solid waste management services on a commercial basis. There is no linkage between costs and revenues. Although forecast revenues from service charges are entered on the revenue side of the local government's budget (APBD), they are not considered in determining costs and budgets. This is a major area of reform that will take many years to change current administration paradigms. Hence, the project will have the following priorities: (i) establishing semi-commercial public service units (*Badan Layanan Umum Daerah* – BLUD) with revenue collection powers and separate financial accounts; (ii) transitioning waste management services closer to full cost recovery; (iii) replacement of the waste management tariff schedule. Cities/districts are expected for participation under the project (and particularly prior to investments under Component 3) that the financing plan of their waste management master plan will include an adopted path to move towards cost recovery in a period of up to five years.



## C. Financial Management

104. The World Bank carried out a Financial Management (FM) assessment in accordance with The World Bank Policy-IPF and The World Bank Directive-IPF. The Assessment covered the financial management system of the recipient considering lessons learned from other projects implemented by the executing agency. The overall conclusion of the assessment is that with the implementation of the agreed action plan, the proposed financial arrangements will satisfy the World Bank's minimum requirements and are adequate to provide, with reasonable assurance, accurate and timely information of the project as required by the Bank.

105. The project's financial management will generally follow government systems, including budgeting, internal controls, accounting and reporting, flow of funds, the auditing mechanism. The executing agency has experience on implementing World Bank financed operations and is generally familiar with the World Bank financial management requirements. The loan funds are going to be executed under the central government's budget to be implemented by MPWH and MOHA. Activities at the local level will be executed by MPWH's work units in the province (DGHS Provincial *Satker*). Some financial management risk related to the delay of budget effectiveness that may subsequently delay the project implementation is noted. Risk is also noted in the area of internal controls whereby past audit reports from other large infrastructure projects implemented by the MPWH suggest that the internal control systems need to be improved in the areas of payment verification, including in the PIUs at local levels. This is particularly the case in civil works and consultant expenditures, which will form the bulk of total expenditures. Risk is also noted related to delays of asset transfer from central government to local government.

106. Some measures to mitigate the risk are summarized as follows: (i) the risk related to budget delays will be mitigated through separation of contracts financed by loan and the Borrower's own resources and having a financial management consultant that fully understand the budgeting processes. The consultant will be tasked with assisting CPMU and all CPIUs in ensuring timely availability of budget including during the budget revision process, when needed.; (ii) the CPMU and CPIUs will improve payment verification processes by developing guidelines for the verification team, including random third-party confirmation, and by improving accountability of the verification team through official appointments of the team and ensuring a verification report is produced for every invoice. In addition to the existing government verification procedure, the CPMU and CPIUs will assign additional staff to conduct detailed verification prior to the issuance of a payment order. Control will also be strengthened by involvement of MPWH Inspectorate General (IG) in conducting technical audit on selected works (iii) asset transfer plans will be developed prior to constructions including local government's written commitment to receive the asset hand over and allocate maintenance budget after the construction. A clear mechanism of asset transfer will be outlined in the Project Operation Manual agreed with the World Bank; A more detailed financial management arrangement for the project is described in the Annex 2.

#### **D. Procurement**

107. All Procurement under the IBRD-financed portion of the project shall be carried out under the World Bank's Procurement Framework in accordance with the Procurement Regulations for IPF Borrowers dated July 2016 (revised November 2017 and August 2018) and the provisions of the Financing Agreement. This includes procurement of goods, works and non-consultant services through the Request for Bids method using the National Competition market approach, which shall also be governed by the World Bank's Procurement Regulations, except that the Government's procurement regulations may be used to the extent they do not conflict with the World



Bank's Procurement Regulations and subject to the eight requirements listed in para. 5.4 of the Bank's Procurement Regulations and which are incorporated in the harmonized model bidding documents agreed between the Bank and LKPP (National Public Procurement Agency) for national competitive procurement. Procurement of contracts that are not financed by the loan but exclusively from the Government's own budget may follow the Government's Procurement Regulations, as provided for in para. 2.3 of the World Bank's Procurement Regulations.

108. The procurement requirements of the project (e.g. contract packaging; procurement and contract management responsibilities of the various project implementing agencies) have been discussed with the CPMU and CPIUs and this will be strictly defined by Negotiations upon completion of the Project Procurement Strategy for Development (PPSD), which is currently being prepared by CPMU. Concurrently, the Procurement Plan will be prepared to set out the procurement packages, cost estimates, the applicable procurement methods, market approaches, process timeline and the World Bank's review requirements based on the procurement risk. These will be updated in agreement with the World Bank at least annually, or as required to reflect the actual project implementation needs and improvements in institutional capacity within the project. The Procurement Plan will be published on the MPWH's website or available on that national online procurement planning portal as well as in UNDB online.

109. Further details of the procurement arrangements, procurement risks and mitigation measures are provided in Annex 2 and under the Fiduciary Risk section.

## E. Social (including Safeguards)

110. The project will generate diverse social and economic impacts, mostly localized in existing landfill areas, and potentially in areas to be developed as new landfills. The most significant impacts relate to waste-pickers, communities around the landfills including livestock owners, and recyclers that rely on the waste stream for their livelihood. Through the design process, efforts to integrate waste pickers into the new landfill regimes and to better regulate aspects of recycling may also lead to positive impacts on these groups. Other positive impacts include improved awareness, behavior change and health and sanitation benefits for communities with improved waste management services as well as those adjacent to the landfills. Women (including female headed households), elderly persons, youth and children are amongst the more vulnerable of the waste picker communities working at landfill sites in many parts of Indonesia. For the sites already assessed, the numbers of vulnerable waste pickers (i.e. Padang and Makassar Cities) are low and government willingness to prioritize them in social management plans has been established. There is potential for land acquisition, and less likely resettlement, for expansion of facilities or development of new landfills. Indigenous peoples are unlikely present or impacted in the cities where existing landfills will be rehabilitated, however for new sites it is possible that indigenous peoples and their lands may be impacted.

111. The Environmental and Social Management Framework (ESMF) has been completed and provides guidance related to the screening of social safeguards to assess any potential social impacts, as well as guidance for preparing relevant safeguard instruments (e.g. LARAP, UKL/UPL, SPPL, AMDAL, IPP) during the project implementation stage. Specific guidance is provided through the inclusion of a Land Acquisition and Resettlement Policy Framework (LARPF) and an Indigenous Peoples Planning Framework (IPPF). The draft ESMF has been reviewed by the World Bank and has been disclosed through the PU (December 2, 2017) and World Bank websites on November 13, 2017. Public consultations involving relevant stakeholders from both national, local levels and

NGO were held on the draft ESMF, including among others, staff from the environmental agency, land agency, communities (waste picker and livestock owners), universities, and NGOs active in solid waste management. Comments and inputs have been incorporated and the final ESMF will be re-disclosed prior to appraisal.

Safeguard preparation for two sites (i.e. Padang and Makassar Cities) potentially identified for Component 112. 2 technical assistance and Component 3.2 investments has also been completed, with a supplementary Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), and two rounds of public consultation completed for both Padang (Aie Dinging landfill) and for Makassar (Tamangapa landfill). The supplementary ESIA shows that there will be socio-economic impacts on waste-pickers (approximately 150 in Padang and 400 in Makassar) and surrounding populations including waste buyers and livestock owners. These impacts will be addressed in the Social Management Plan as part of the site ESMP. In terms of assessing socio-economic impact, earnings from recycling are boosted by found reusable waste which can substitute for materials or resources that would otherwise need to be purchased. These are usually collected by women and can add up to a significant savings. This contributes to livelihoods, especially for women who are a significant proportion of waste collectors and sorters as well as a larger share of the extremely poor. A 25% sample of waste pickers and waste buyers was carried out to establish the baseline data and consultations included identification of skills and interest in alternative livelihood options. The landfill operators and local government are engaged with these stakeholders but need encouragement and support to ensure the vulnerable people are prioritized and economic impacts are appropriately mitigated during project implementation.

113. The project is designed to maximize participation of stakeholders and beneficiaries at all levels in order to ensure better governance and accountability, and to improve the quality of implementation. The current community engagement approach is decentralized (e.g. the landfill operators have the primary relationships, but approaches are largely ad hoc and there is a wide variation from site to site in the degree of organization and attitudes to community participation). As such, strengthening local government capacity, as part of Component 2, includes attention to enhancing processes for public consultations and discussions, information disclosure, civilsociety participation in re-training and monitoring of waste picker and gender impacts, as well as use of a complaints handling mechanism. To address possible constraints to inclusive and meaningful participation, gender-responsive strategies and monitoring mechanisms will be needed to bring women and vulnerable groups, including IPs, into conversations and consultations. Separate focus groups for males and females and/or based on wealth-ranking or function within the waste value chain will be necessary to improve the quality and diversity of comments or feedback. The project will work with city governments and help the key agencies in developing and implementing citizen engagement strategies as part of their services. The participating landfill operators will establish community grievance mechanisms and be supported to monitor key indicators. The CPMU will also be encouraged to link with related projects under MPWH where infrastructure planning and citizen participation, including grievances, can be better coordinated.

114. **Gender**. The project team recognizes the vulnerability of women waste pickers who may have less social networks and alternative livelihood options than male waste pickers who generally have higher incomes from picking. While in many cases waste pickers work as couples or in family units, based on previous social assessments it is likely that there are female-headed households with heightened vulnerabilities at each site. There is a risk that these female-headed households may not access information about project activities, participate in retraining or waste sector employment opportunities if specific strategies are not in place. The level of gender awareness amongst local actors is considered low, hence project safeguard focal points in the CPMU will require focused support and will need to provide specific guidance to the sub-project teams to ensure awareness of

gender considerations in the implementation of most activities that impact the waste-pickers and communities nearby the landfills. Funding will be allocated to provide focused support to ensure gender and social inclusion analysis, gender-responsive approaches and gender competency among staff and wider stakeholders.

115. The investment project with both World Bank and government funded elements is expected to build new waste management infrastructure such as controlled waste disposal sites (landfills) and waste treatment plants but will also improve waste collection and transport systems in selected cities. Relevant impacts with gender aspects concern people that generate waste (households) and people that make a living out of waste management through waste collection or extraction of recyclables from waste streams. It is important to note that special provisions may be necessary to secure places for women when livelihoods are formalized as men tend to have advantages in acquiring these jobs or reskilling opportunities.

116. In terms of waste management at the household level, surveys show that it is particularly the women in households that are most involved and make decision about offering waste to collectors, finding other outlets for the household waste and sorting types of waste. These are not activities with equal opportunity issues, but it is important that waste reduction campaigns (e.g. on household-level waste separation) should make special efforts to reach out to women to be successful.

117. The importance of consulting women is based on evidence that that waste collected at the household and village level is a critical part of the waste management logistical chain, upon which the entire systems depend. Involving women and other vulnerable user groups in the design, planning, delivery and evaluation of the solid waste disposal sites also increases the chance of meeting consumer demand and being maintained at the local-level. Segregated consultations should be designed as an option where needed, to ensure that diverse views and needs are heard and inform the design-build procurement process for infrastructure to be more culturally relevant and socially inclusive. Special care is needed to identify and overcome barriers to participation (i.e. illiteracy, poverty, social norms). For example, consultations with women should be arranged through pre-existing channels and platforms – such as PKK groups and waste NGOS – and at suitable times for women. Facilitators can increase the likeliness of inclusive decision-making concerning the design, management and maintenance of new infrastructure using a strengths-based approach. This involves focusing on areas that are working well and building on local resources, aspirations and strengths. Consultations are important for building trust with user communities and identifying potential gender champions and leaders as well as for generating data to create GESI relevant designs, operations and infrastructure plans.

118. Waste management is a unique sector in that it offers ample employment opportunities for poor, illiterate women and other disadvantaged groups. Surveys show that that waste workers hired by communities for waste collection and (informal) waste pickers that collect recyclables from households are mainly male, up to 80%. However, the situation is different at waste disposal sites (landfills and open dumps) where a more equal distribution of waste pickers is observed, including sites with a small majority of female waste pickers. At the disposal sites, most waste pickers work as families, including children. Women are also engaged in the sorting, packaging, and simple processing of wastes in other locations as part of the waste value chain. More data is needed to better assess economic impacts on women as the type of waste work they do may be less visible and/or under-valued. This will be addressed through the analytical work that will be conducted for the municipal masterplans, which will identify gender gaps in SWM at the local level and design adequate interventions to be financed by the project and other government's initiatives to address those disparities.

119. Waste collection generates employment and contributes to livelihoods and food security. Waste is gathered for household food and fuel-energy needs as well as to supply demands for paper, plastic, metal, rags, rubber, leather, glass, and ceramics that would otherwise need to be purchased. This can add up to a significant savings and contributes to livelihoods, especially for people living on the margins. Although substantial inequalities in access to waste materials and other rights were not observed in the limited surveys, it should be expected that due to lower education levels and general inequalities in income levels in Indonesia and traditions in family level decision-making, women also in this sector are more vulnerable than men and could therefore be more at risk from the impacts of project investments.

120. Women are found to be reliable when engaged as waste collection laborers and motivated to overcome barriers such as distance and discrimination to gain entry. Inclusive and gender-sensitive solid waste management activities under this project go beyond a 'do no harm' orientation by identifying opportunities for improving livelihoods among those who work within organized systems of collection, trade and recycling. There is scope in solid waste disposal site development for supporting and building on successful programs such as waste banks and up-cycled waste craft enterprises like XSProject, for example.

121. The most direct impact from the project on waste pickers with be the rehabilitation of landfills under Component 3 that could reduce access to the sites for waste pickers. The ESMF and LARPF inform the preparation of site specific ESMPs and LARAPs. Collaboration with formal waste management entities will include information about how to secure equitable opportunities for capacity-building and reskilling. In addition to measures to maintain livelihoods or secure alternatives, these documents will specifically address gender aspects to ensure equal treatment and, where observed in the workers, will include actions to reduce inequalities. This will require a focus on equity to achieve gender equality, recognizing that special measures or quotas may be necessary to compensate for gaps or constraints so that women are able to effectively exercise their potential and inequalities are not perpetuated. In terms of formalizing informal work, as noted it will be important to make sure that women waste workers, who tend to be less visible or lower down the waste value chain, are given access to formal opportunities.

122. The project will also support cities to improve waste collection and introduce waste recycling and reduction. Solutions that have been applied in some cities in Indonesia to date (before this project started) range from increasing waste collection using traditional systems, which hardly impacts waste workers and waste pickers at community level, to solutions with the city government took over large parts of primary collection systems affecting waste workers and pickers. Under the proposed project, participating cities will develop master plans under Component 2 prior to engage in infrastructure investments and collection system improvements.

123. In summary, project implementation will include (i) under Component 3 - gender informed measures in site/city specific ESMPs and LARAPs to mitigate impacts on waste pickers at waste disposal sites with project investments and, where identified, address inequalities; (ii) under Component 2 - gender informed actions to inform waste management masterplans to manage potential negative impacts to waste workers and waste pickers that are active in waste and recyclables collection and, where identified, address gender inequalities; and (iii) under Component 1 – analytical work to inform policies at the national level regarding community-based waste collection and recycling that will specifically address social and gender impacts.

124. Going beyond safeguards requirements, the project will contribute to narrow potential gender gaps in the SWM sector: (i) women's limited access to formal jobs in SWM and related sectors; (ii) unequal remuneration in

both formal and informal sectors, which is associated with the lack of mandatory regulations on equal pay, women's higher rates of illiteracy, limited access to technical education, business skills and proper equipment, and time constraints due to household chores; and, (iii) disproportional health and safety risks faced by women, which is associated with limited access to safety gear, lack of information on health risks from hazardous substances and how to proper handle this type of waste, and insecurity while collecting recyclables on the streets. The specific gender gaps of each participating city will be identified in the municipal masterplans. Based on those gaps and proposed interventions in each masterplan – whose approval is a condition for receiving financing under Component 3 –, the project will support specific investments and capacity building activities to narrow the gender gaps found in the city's area, including: (i) creation of formal jobs for women in rehabilitated landfills and in other (non-waste related) activities, considering flexible hours, location, and provision of child care services; (ii) training in vocational, financial, business and leadership skills, with a 50% quota for women; (iii) provision of equipment, such as vehicles and safety gear; (ii) financial assistance to women-led business such as junk shops and waste banks; and (iv) information campaigns on proper waste disposal and value of recyclables specifically tailored to women, among other interventions. Thus, in addition to creating formal job opportunities for women, the project will also improve working conditions of those women who will remain in the informal sector.

125. Targets for women's participation in retraining and monitoring of gender in employment patterns in the project sites have been built in to the program design. Because of the project's nature, it requires more data and flexibility to tailor interventions in accordance to the needs and characteristics of the selected cities that will be supported through subprojects. As the specific interventions will be selected by the participating cities during project implementation, the project's results framework will measure the number of municipal masterplans that include: (i) a gender analysis; (ii) specific interventions to close gaps in the SWM sector – to be financed by project, and (iii) as part of their M&E system, a results indicator on the percentage of female workers moving from informal to formal waste sector. These masterplans must include, at minimum, a target of 10 percentage points increase above the baseline of formal waste work generated by the project that is filled by women (when baseline is 40% or less). In sum, improvements in closing gender gaps will be measured against indicators included in the project's overall results framework, as well as those outlined in the following table, which will be included in the masterplans.

Identified gender gaps	Gender Actions	Results/Indicators for Masterplans
Men and women have	Gender-differentiated analysis of	• % of women participants in
unequal access to	the work being done by women in	consultations related to solid
information and	waste management, which may be	waste management at the
access to skills	less visible and is likely under-	local level including: district
training [ % men	valued relative to the work done by	(Kelurahan) committees (for
attending skills	men.	example for establishment of
training and % of		or changes to waste bank
women]	• Targeted consultation of women,	operations) and landfill-level
In a qualities in	based on evidence that that waste	waste-pickers.
liveliheede	collected at the household and	Baseline: 0%
apportunitios for	village level is a critical part of the	Target: 50% of consultation
women in formal	waste management logistical chain.	participants are women
women in formal	upon which the entire systems	
compared to mon	depend. Involving women and	
compared to men.		



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City master planning processes and documents do not reflect gender perspectives or include gendered data.	other vuln design, pla evaluation disposal si chance of demand au the local-le	erable user groups in the anning, delivery and of the solid waste tes also increases the meeting consumer nd being maintained at evel.	•	Number of participating cities with master plans prepared under the project with a social plan that have documented baseline and ongoing data on the position of women and children among waste workers and waste pickers with
	<ul> <li>Inclusion c analyses ir</li> </ul>	of gender data and n city master plans.		specific measures to reduce inequalities where they exist. Baseline: 0%
	<ul> <li>Training/reformalized landfills ar related) ro designed t women's a location, a</li> </ul>	eskilling for work in more I roles in the rehabilitated nd in other (non-waste oles opportunities are o be responsive to availability (e.g., timing, nd provision of child care		Target 100% of city master plans include waste-related gender data and analyses, with specific measures to reduce inequalities where these exist
	services). training ha however e to small er skills, anim skills.	The exact types of ave not been specified, examples identified relate nterprise management nal husbandry, trades	•	% of persons moving from informal to formal waste sector employment that are women Baseline: to be established at city level (%) Target: 10 percentage points above baseline of formal waste work generated by the project is filled by women when baseline is 40% or less.

## F. Environment (including Safeguards)

The proposed project is expected to have important positive environmental impacts in the participating 126. cities as waste collection, transportation and disposal practices are enhanced as planned. These improvements in solid waste management and the associated positive impacts will ultimately lower public health risks of the participating cities. The environmental benefits will be especially significant at a localized level around final disposal sites currently operating in an unsanitary fashion; polluting the groundwater and surface waters, generating odors, proliferating disease vectors and sometimes even producing carcinogenic air pollution through accidental fires. Furthermore, the project will also directly improve other environmental issues commonly reported throughout the sector in Indonesia: (i) poor maintenance of dump trucks that are not covered and watertight causing liquids to leak onto roads leaving unwanted odors; (ii) illegally dumping solid waste outside dedicated final disposal sites; (iii) uncollected waste in TPSs in residential neighborhoods that spills onto roadways, creating sanitation and aesthetical problems; (iv) significant quantities of uncollected wastes entering waterways and oceans negatively impacting aesthetics and fishing.

127. However, the proposed project will have the risk of adverse environmental impacts primarily arising during the construction of Component 3 infrastructure investments, such as, (i) upgrading existing sanitary landfills through rehabilitation of leachate treatment systems and waste treatment plants (e.g., anaerobic digesters, RDF) and (ii) excavations of old waste and construction of new sanitary cells, including the installation of landfill gas collection. If not properly managed, these construction activities risk the generation of air, land, and water (surface and ground) pollution as potentially harmful substances are moved around and released. This is an especially pertinent risk as most of these landfill sites have accumulated years of accumulated pollutants. Environmental risks will also arise during the operations and maintenance stages of project investments, if local capacity building is unsuccessful or local governments do not allocate the required operational funds for satisfactory safeguard management.

128. An Environmental and Social Management Framework (ESMF) has been prepared and disclosed to cover cities not yet selected, or for selected cities/districts that have not yet prepared any safeguard documents. The ESMF includes a Land Acquisition Resettlement Policy Framework (LARPF), Indigenous People Planning Framework (IPPF) and Physical Resource Cultural Chance Find Screening Procedure to be applied to all cities/components. The ESMF includes a negative list of goods that cannot be financed by the project, and environmental and social screening for each proposed activity as well specific instruments that will be prepared. The ESMF is based on the requirements of national regulations and World Bank policies. It includes provisions to assess social and gender impacts of project-financed activities, including impacts on vulnerable groups, waste pickers and recyclers, any temporary project-induced labor influx, mitigation measures related to the possibilities of impacts on indigenous communities, and other social and economic impacts, including resettlement or access restrictions induced as a result of the project.

129. The ESMF will be applied to physical investments in Component 3, but also it will be also integrated into the technical assistance of Components 1, 2, and 4 (following World Bank's Interim Guidelines for Safeguards Policies in TA Activities), for activities such as the preparation of feasibility studies, engineering designs, and technical standards. Included in Component 2, funds will be dedicated to the preparation of safeguard instruments (e.g. ESIA, ESMP, LARAP) as necessary following the ESMF. Component 4 will include funds for project supervision and monitoring, which will include certain safeguard relevant aspects and the identification and monitoring gender-disaggregated indicators.

## G. Other Safeguard Policies (if applicable)

130. The safeguard policies on Projects in International Waterways and Projects in Disputed Areas are not triggered.

## H. World Bank Grievance Redress

131. Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the World Bank'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 World Bank's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of World Bank 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.

132. The Project has a Grievance Redress Mechanism (GRM) at both the level of participating cities and with the CPIU in MPWH at the national project level. Each city that participates in the project will appoint a designated GRM focal point that will be responsible for receiving and addressing grievances at the city level. MPWH will have the responsibility for grievances submitted at the national level or grievances that cannot be successfully resolved at the city level. MPWH will also monitor overall GRM implementation by means of the city level semi-annual reports and through grievances and complaints which should be reported to MPWH within a week of receipt.

133. At the city level, complaints are recorded in the grievance log, and complainant is given a receipt and information on how the complaint process works. The recorded complaint is verified on the ground, and if it is valid and relevant to the project, then the focal point will discuss it with relevant parties for follow-up. There will be service standards for responding to complaints and for dispute resolution. Solved complaints will be recorded and unsolved complaints that need to be followed up at the higher level are also recorded. During the process of receiving and following up complaints, the focal point will closely coordinate with and report to the agency/entity implementing activities under Component 3. If the complaint remains unsolved, it will be directed to the relevant agencies at the provincial level; and finally, if it remains unsolved at this level, it will be directed to MPWH.

134. MPWH has significant experience in GRM, specifically in three very large projects for which large numbers of complaints need to be managed and resolved in transparent manner (i.e. National Program for Community Empowerment in Urban Areas (*Program Nasional Pemberdayaan Masyarakat Mandiri Perkotaan*, PNPM-Urban), the National Slum Upgrading Project, and PAMSIMAS). Development of the GRM under this project will benefit from these existing arrangements and experience.

## I. Implementation Readiness

135. Inventories for system improvement (waste collection system, upgrading of waste transfer and smallscale waste processing facilities (at city sub-district level) have been concluded for the eight cities/districts in the *Citarum* River Watershed area. Larger scale investments in landfill capacity and central waste treatment facilities are under preparation and expected from the second year of implementation. In addition, feasibility studies, safeguard documents and design-build bidding documents have been prepared for two cities potentially included in Component 2: Padang and Palembang Regional Disposal Facility. Feasibility studies and safeguard documents have also been prepared for Makassar and Magelang Regional Facility. Furthermore, TORs have been completed during project preparation for the Project Management Services (PMS) contract that is critical in starting project implementation, operationalizing the CPIUs and other implementing units, start arrangements with the first group of cities to enter the project and get the project's data and monitoring systems in place.



## VII. RESULTS FRAMEWORK AND MONITORING

## **Results Framework**

**COUNTRY: Indonesia** 

Improvement of Solid Waste Management to Support Regional and Metropolitan Cities

## **Project Development Objectives(s)**

The Project Development Objective (PDO) is to improve solid waste management services for urban populations in selected cities across Indonesia.

## **Project Development Objective Indicators**

Indicator Name	DLI	Baseline	End Target
Improve solid waste management services for urban population	ns in sel	ected cities across Indonesia	
1. Proportion of population in selected urban areas with regular household waste collection (Percentage)		65.00	85.00
2.Landfill disposal capacity operational per defined criteria (Cubic Meter(m3))		0.00	20,000,000.00
3. Solid waste recycled, composted and/or treated with other techniques to reduce waste disposal volumes (Percentage)		4.00	16.00
Proportion of targeted beneficiaries with rating 'Satisfactory' or above on program interventions (Percentage)		0.00	70.00
of which women (Percentage)		0.00	70.00



## Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline	End Target		
lanning Support and Capacity Building for Local Government and Communities					
Financial sustainability/operational management in selected cities/districts (Percentage)		45.00	65.00		
Number of cities with high-quality solid waste management implementation plans (Number)		0.00	12.00		
Number of cities addressing potential gender inequalities, including improving access of women to formal employment and better working conditions in the informal sector. (Number)		0.00	12.00		
Solid Waste Infrastructure in Selected Cities					
Marine plastic waste reduction from land-based sources from selected urban populations (Percentage)		0.00	50.00		
Cities with improved livability, sustainability, and/or management (CRI, Number)		0.00	10.00		

Monitoring & Evaluation Plan: PDO Indicators						
Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection	
1. Proportion of population in selected urban areas with regular household waste collection		Semi- annually	Semi-annual reports per participating city will present data on roll-out of		Participating Cities, MPWH	



	collection	
	equipment	
	and	
	expansion of	
	waste	
	collection	
	services,	
	validated by	
	, MPWH. Data	
	will be	
	verified with	
	annual	
	survevs on	
	public	
	satisfaction	
	with waste	
	management	
	services and	
	against	
	estimated	
	volumes of	
	waste	
	produced by	
	households	
	in	
	comparison	
	with volumes	
	of waste	
	collected and	
	treated or	
	formally	
	disposed	
	uisposeu.	



2.Landfill disposal capacity operational per defined criteria	Semi- annually Semi-annual reports of participating cities will present information on progress for construction of sanitary landfills or rehabilitation of existing waste disposal sites including data on construction completed in terms of cubic meters disposal capacity created and environment al control measures constructed and tested.	Participating Cities, MPWH
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3. Solid waste recycled, composted and/or treated with other techniques to reduce waste disposal volumes	Semi- annually	Data is generated from waste accounting systems established in participating cities.	Participating cities, MPWH
Proportion of targeted beneficiaries with rating 'Satisfactory' or above on program interventions	Annually	Annual surveys in participating cities among a representativ e part of the population.	Participating cities, MPWH, KLHK, Bappenas
of which women			

Monitoring & Evaluation Plan: Intermediate Results Indicators						
Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection	
Financial sustainability/operational management in selected cities/districts		Annually	Masterplans, annual local budgets of participating cities.		Participating cities, MPWH, MoHA	



Number of cities with high-quality solid waste management implementation plans		Annually	City master plans.	Central (CPMU) review of participating cities' master plans.	Participating cities, MPWH, KLKH, MoHA, Bappenas
Number of cities addressing potential gender inequalities, including improving access of women to formal employment and better working conditions in the informal sector.	Target based on women participating in public solid waste management consultations (target 50%); social plan for monitoring and employment of female waste workers in city masterplan; % of persons moving from informal to formal waste sector employment that are women with baseline to be established at city level (%) and target at 10 percentage points above baseline of formal waste jobs generated by the project is filled by women when baseline is 40% or less.	Annually	Master plans of participating cities and their semi- annual progress reports will monitor num ber of female/male waste workers and waste pickers, their participation in outreach/trai ning program and an assessment of their employment position in comparison	Central (CPMU) review of city master plans, Central (CPMU) review of social sections of semi-annual city progress reports.	Participating cities, MPWH



		to requirements and targets set in the master plan.		
Marine plastic waste reduction from land- based sources from selected urban populations	Annually	Participating cities will make an assessment of overall and plastic waste leakage to surface waters at the start of engagement in the program as part of master plan preparation and subsequently estimate reductions in leakage from improved waste collection and, if	Waste leakage calculations in semi- annual city level progress reports.	Participating cities, KLHK



	applicable,	
	special	
	measures to	
	prevent	
	waste	
	leakage to	
	surface	
	waters. The	
	proposed	
	calculation	
	method per	
	city for	
	improved	
	waste	
	collection	
	and special	
	measures to	
	further	
	reduce	
	leakages to	
	waterways	
	, will be	
	monitoring	
	based on	
	data from	
	waste	
	accounting	
	systems	
	established	
	under the	
	project.	



Cities with improved livability, sustainability, and/or management	Annnually	Other indicators.	Number of cities that have reached all DPO indicators and other intermediate result indicators	Participating cities, MPWH, KLHK, MoHA, Bappenas
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## ANNEX 1: DETAILED PROJECT DESCRIPTION

**COUNTRY : Indonesia** 

Improvement of Solid Waste Management to Support Regional and Metropolitan Cities

1. The project will support the creation of a nation-wide, scalable platform for improving solid waste management performance that is adaptable for a variety of different urban contexts in Indonesia. The project will provide some nascent support for solid waste management policy and legislation, financial sustainability, and inclusive stakeholder collaboration across all aspects of the sector (collection, treatment, disposal, recycling and waste generation). The project is designed to support the implementation of existing sectoral programs, including MPWH's Acceleration of Urban Sanitation Development Program (*Percepatan Pembangunan Sanitasi Permukiman*) (PPSP) and the National Waste Management Policy and Strategy (*Jakstranas*).

2. Although the proposed project represents a small portion of the US\$ 5 billion overall estimated nationwide sector investment needs over the six-year period of program implementation, it is designed to provide a strong foundation for future expansion when additional financing sources become available. The World Bank's value-added proposition in this program is to strengthen the outcomes of existing government funding in solid waste management through technical expertise, global knowledge, and strong governance controls for the Indonesian context. The program is based on implementation mechanisms proven in other Indonesian urban infrastructure projects to facilitate high quality management and oversight of the project, including results monitoring and evaluation. If additional financing is available, then this programmatic framework would provide a ready vehicle to expand to other cities and districts to achieve results at the national scale.

3. During project preparation, five key sector challenges were identified that obstruct provision of adequate waste management services at local government level and development of waste management systems to the required level. These five challenges are: (i) lack of operational and investment financing; (ii) lack of operational capacity; (iii) poor performance of community-based primary waste collection (at household level); (iv) lack of regulatory oversight; and (v) availability of land for construction and extension of waste facilities. The program has been designed to address these challenges at national (policy) and local level as needed and to make sure that investments, particularly investment supported from the national budget, are only made available when local conditions have sufficiently developed to sustain long-term and environmentally and socially acceptable operations.

4. The PDO will be achieved through the implementation of the following program components:

5. **Component 1: Institutional and Policy Development (US\$ 2.7 million Total Budget; US\$ 0.7 million IBRD).** This component will support institutional strengthening and capacity building of central government agencies responsible for various technical and administrative aspects of solid waste management services (e.g. MoEF, MPWH, Bappenas, MOHA). MoHA (IBRD funded) and MoEF (*APBN Murni* funded) will be the line ministry responsible for implementation of Component 1. This component will focus work around three strategic priorities: (a) strengthening the regulatory framework, sector monitoring, and regulatory oversight; (b) policy development related to waste reduction and marine litter management; and (c) institutional capacity building.

6. A key activity under this component is the development of functional regulatory monitoring and oversight mechanisms and the introduction of waste registration and financial accounting practices to support this. At present, structural monitoring and accounting of waste services performance is very basic at best or lacking at any level of the waste chain. For example, there are no mechanisms to monitor households' participation in waste collection and recycling by communities (RT/RW), very limited oversight by local government of RT/RW performance and also regulatory oversight of cities and districts by the national government is limited to self-reporting of waste data through *Adipura* and infrequent inspections of waste disposal sites that are not resulting in enforcement. As a result, across the waste chain, poor performance is not well documented and doesn't lead to repercussions. Under Component 1, MoEF and MoHA will develop national service performance standards and oversight regulation and procedures to address these shortcoming and support introduction at city/district level under Component 2.

7. Also, under this component and in addition to city/district specific implementation under Component 2, concepts will be further developed for community-based waste collection and reduction where the largest share of waste 'leakage' currently takes place and where the most challenges are to integrate governance of the waste chain at the local level. These concepts or models will include waste accounting and regulatory oversight mechanisms and will be informed by successful examples in Indonesia, such as current practices in Makassar, Surabaya and Jakarta.

8. Strategic studies will focus on key impediments to enhancing the solid waste sector's overall performance. Identified studies for program implementation: (a) household waste reduction support (including 3Rs (reduce, reuse, recycle) and "Waste Bank"<sup>28</sup>; (b) mechanisms for incorporating the informal waste workers and wider communities in formal waste collection and recycling systems; (c) a roadmap for transitioning *Dinas Kebersihan* to BLUD<sup>29</sup> institutions; (d) policy and legal frameworks for promoting waste-to-energy investments; (e) strategies for leveraging additional private and public financing for solid waste management; and (f) development of policy measures to reduce land-based marine pollution and prevent plastic waste from entering waterways and the ocean.

# Identifying City/District Tiers to Determine Program Support under Component 2 (Technical Assistance) and Component 3.2 (Investments)

9. The immense challenges necessitated a process to prioritize resources to the most impactful interventions. From the very beginning there was strong consensus amongst government leaders that the program should be structured to dedicate resources to cities/districts that possess the most promise to implement waste management systems that can be role models for other Indonesian cities. Accordingly, the program preparation has completed a comprehensive evaluation of 100 cities and urban districts with populations over 100,000 people to identify the top performers where national resources would be focused. These cities were then divided into three tiers depending on their current performance and

<sup>&</sup>lt;sup>29</sup> BLUD is defined as a regional government public service agency that is statutorily defined (UU No.28/2009) to fulfill certain administrative, financial, and substantive criteria. This type of institution provides a more suitable basis for semi-commercial service operations; capable of delivering better service with greater accountability.



<sup>&</sup>lt;sup>28</sup> A results-based financing scheme used to improve source separation and collection of waste through changes in behavior at the household level.

commitment to solid waste management improvements.

10. To identify these cities and districts, both a top-down and bottom-up selection process was undertaken. The bottom-up selection process entailed collection of all available data from the Indonesian Government, World Bank and private sector sources. The database contained population, waste stream, collection estimates, existing waste management infrastructure, financing aspects, planned investments, and document availability (e.g. existence of waste management strategies, feasibility studies, and detailed engineering design). From this database, each city and district were given a score of past performance and commitment (See Table 2 and 3). The top-down selection process entailed MPWH and MoEF independently giving each city and district a score of priority based on both past performance and current readiness – with the score calculated by averaging the two rankings. Although included in the database, cities and districts in the *Citarum* River Watershed were given an exception from being categorized in this tiered system based on tremendous government commitment to address pollution issues and were automatically included in Component 2 and Component 3.1 below.

11. The final score that each city and district received was based on both the top-down and bottomup selection processes. The final breakdown of the scoring system was as follows, with weights in brackets:

- a) Landfill Capacity and/or Land Available to 2025 (5%)
- b) Solid Waste Collection Performance (10%)
- c) Alternative Funding Sources for Investments (Donor or Private Sector Projects), including recent investment completed (10%)
- d) MoEF Adipura Assessment (15%)
- e) MoEF and MPWH expert priority ranking (30%)
- f) Percentage of Local Budget (APBD) Allocated for Waste Management per Tonne of Waste (30%)

12. Based on this comprehensive assessment, cities and district were organized into three tiers intended to accurately categorize their potential for implementing full solid waste management systems. **Tier 1 cities and districts** were those that demonstrated the highest levels of past performance and commitment (listed in Table 2). These cities are deemed to have demonstrated sufficient capacity in solid waste management to justify large investments in complex systems and advanced treatment technologies. One of the Tier 1 cities, Malang, is already included in the KfW financed Emission Reduction in Cities (ERIC) Project. Others such as Tangerang, Surabaya, and Balikpapan already have major investments currently under construction using APBN, APBD or private sector financing, and would require minimal investment capital in the future, but technical assistance support is likely to be very useful.

13. **Tier 2 cities and districts** were those that were found to have average past performance and possessing medium potential for future improvement. They were considered to have strong potential for smaller or incremental type investments, but not full systems initially. Internationally, the World Bank has had good results with utilizing incremental investments that gradually build capacity, as opposed to investing in large, complex investment at the outset.

14. The remaining cities and districts were classified as **Tier 3**, which indicated that past performance

and current perceived commitment made these areas a low priority and would not be included in the program except under exceptional circumstances (e.g. *Citarum* River Watershed). Policy work under Component 1, particularly the development of stronger monitoring and regulatory oversight mechanisms, and program experiences gained from working with Tier 1 and Tier 2 cities/districts should provide some indirect support to the lack of sector development in the large number of cities and districts that at present have been categorized under Tier 3.

15. Even though 47 cities and districts have been included in Tiers 1 and 2, it is not intended that these lists will be unalterable as the program evolves. Although the data utilized to inform these tiers was the most comprehensive available, the data used is imperfect and political situations can change rapidly. Furthermore, with appropriate technical assistance and small investments provided by the proposed program, it is expected that some cities and districts originally classified as Tier 2 will become Tier 1 cities as the program is implemented. Hence, the tiers given to cities and districts should only be considered a guideline for allocating program resources at the first tranche of program planning and will need to be revised periodically to remain relevant. As mentioned, this organization of cities did not consider small cities that may also be included in the program, especially cities with high tourism potential and marine plastic concerns.

16. Component 2: Integrated Planning Support and Capacity Building for Local Government and Communities (US\$ 18.2 million Total Budget; US\$18.2 million IBRD). Local governments in the Citarum River Watershed and 4-6 additional local governments that meet certain readiness criteria and demonstrate commitment to improve waste management operations (Tiers 1 & 2) are eligible for technical support under Component 2. This component will be carried out by MoHA (US\$1.95 million) and MPWH (US\$16.25 million) and it will finance the costs of experts and community facilitators throughout the program cycle to support capacity building (including longer-term management support, training, workshops, and knowledge exchange events between cities as well as urban sub-districts) of local governments and communities to design and manage solid waste service improvements. This component addresses one of the primary constraints to improving sector performance: the technical and organizational capacity of local governments to efficiently operate complex and costly solid waste operations. Advisory services for designing local government regulations and tariffs will also be provided to local governments. In addition, funds in this component can also be used for public awareness campaigns for waste minimization and proper disposal of their waste, which is also a high government priority. It will be especially important to target women in this, as they tend to have initial control over the generation and reuse of wastes at the household level.

17. Currently, almost all cities have prepared City Sanitation Strategies (SSKs) that outline a five-year strategy for citywide solid waste management service improvements, required investments, and potential financing sources. For the participating cities under the project, this component will provide support for improving the design of these strategies and prepare masterplans that include practical and achievable roadmaps with financing schemes and institutional strengthening to support their implementation. Special attention will be paid to community-based improvements in waste collection and gender issues within the waste value chain. A mandatory requirement for the preparation of the masterplans supported under the project is to survey formal and informal waste workers, to prepare a baseline and monitor changes. This social part of the solid waste management masterplans of participating cities will be required to specifically analyze gender aspects (including employment rates; pay rates, etc.), risks to

females in the sector and vulnerable groups, and include measures to reduce gender gaps identified in the baseline surveys. This ensures that all subnational governments receiving funds under the project will be actively support the closing of gender gaps during project implementation.

18. Support under Component 2 requires an MoU to be signed between the city/district and MPWH in which the city/district confirms in principle (i) its commitment to develop its solid waste management system to the national standards and allocate local budget as already estimated for investments needed and sustainable operations of these investments; and (ii) that land is available or will be earmarked in its spatial planning for waste facilities to be developed. Component 2 is expected to start for all Metropolitan cities fires in Year 1 (2019) prior to investments being committed under Component 3.2 (See Table 5). Except for the 2 cities were feasibility studies have been prepared and advance procurement is an option (Padang, Palembang), Component 2 and Component 4 would be implemented prior to investment funds being committed through Component 3.2.

19. In Indonesia, the most common approach is that city communities (neighborhoods) organize primary waste collection. The city government organizes waste transport from a limited number of collection points (TPSs) to disposal sites or (in some cases) intermediate recycling stations. On the one hand, a lot of waste is already 'leaking' at the community level, never entering the formal waste management system. On the other hand, the community level has a lot of untapped potential to improve waste recycling through waste separation. Some locations in Indonesia manage to achieve recycling percentages of 50% and more. Models will be developed, tested and implemented to improve waste collection rates and waste recycling at the community level and integrate community level collection into the waste management chain, both institutionally and functionally. These models will also aim to find a good balance between incentives to support communities and improvements in regulatory oversight moving to universal waste collection coverage.

20. Gender-informed approaches under this project will also improve labor practices and OHS standards for waste-pickers. This labor pool can add value to waste infrastructure by supporting streamlined operations from the source to the end. Waste-pickers can be potentially empowered through hiring as employees as well as by supporting NGOS, alliance and networks that advocate for their rights<sup>30</sup>. Practical and strategic needs can be met by providing fair wages, work breaks, protection from discrimination harassment and violence, and safety equipment such as appropriate gloves, boots, respiratory masks, health and safety training and evacuation preparedness. By offering opportunities for female waste-pickers to move into safer and more regulated roles in the informal sector the program will contribute to reduce their exposure to hazardous and unsanitary environments without adequate protection and safety.

21. This component will also provide technical assistance to cities for developing feasibility studies and detailed engineering designs for priority investments. Technical assistance provided in this component will complement, but not be limited to all cities selected for physical infrastructure investments provided in Component 3.

22. This component will support cities to engage the private sector in waste management operations and investments at two levels. Firstly, the capacity building activities should develop adequate

<sup>&</sup>lt;sup>30</sup> For instance, the Global Alliance of Waste Pickers and Women in Informal Employment: Globalizing and Organizing (WEIGO).

competencies in strategic planning, operational finance, regulatory oversight and contract management. These are all essential prerequisites for private sector engagement. In parallel with developing these competencies, under the master-planning supported by Component 2, specific attention will be paid to private sector engagement in waste management services. Secondly, transactions advisory services for waste incineration (waste-to-energy) investments will also be made available to a select group of cities to assist in the structuring of sub-project documents, including procurement and contract documents, and environmental standards to ensure public benefits from these private sector investments are maximized. This would directly support the implementation of Presidential Regulation No.35/2018 on the "Acceleration of Development of Waste-to-Energy in an Environmentally Sustainable Manner".

23. Climate change planning considerations, both mitigation (institutional strengthening to acquire carbon finance) and adaptation (climate vulnerability analysis) will also be supported through this component.

Table 1: Typical Component 2 Package Per City.

	Tier 1 City/District	Tier 2 City/District
Support in waste management master planning, including implementation model for community level waste collection	0.350	0.300
Financial management and waste accounting system	0.150	0.100
Investment preparation (FSR, DED, etc)	0.600	0.300
Operational management support and public outreach activities	1.200	0.500
Total average package per city/district C2	2.300	1.200

24. Component 3: Solid Waste Infrastructure in Selected Cities (US\$297 million Total Budget; US\$77 million IBRD). The immense challenges and shortages of financing necessitate a process to prioritize resources to the most urgent and impactful interventions. Every city or urban district receiving investment financing through Component 3, will also be supported with the required technical assistance package through Component 2. This is a key aspect of increasingly the quality and sustainability of investments made through the project and has been proven effective in other large Indonesian infrastructure projects assisted by the World Bank. Considering the national priority of the Citarum Harum and the marine plastic pollution targets, all of this project's IBRD investment funds will be channeled to the Citarum River Watershed.

25. In principle, the waste chain's upstream investments such as waste collection and waste transfer and transport equipment should ideally be financed from local budget (ABPD). Downstream investments, such as landfill and waste treatment facilities would be the preferred type of support from the national budget and thus from donor funding and the IBRD financing. Table 1 of Annex 2 presents the projected breakdown of program investments between the various sources of funding.

26. Sub-Component 3.1: Support for Integrated Solid Waste Management Systems for Citarum River Watershed Cities (US\$77 million Total Budget; US\$77 million IBRD). This component will provide investment financing for a group of cities and districts (currently projected as City of Bandung, City of Cimahi, District of Bandung, District of West Bandung, District of Cianjur, District of Purwakarta, District of Karawang, and District of Bekasi) that have urgent solid waste management infrastructure needs. More local governments in this region could be included if funds are available. As can be seen by the table below, these local governments currently have a wide variety of solid waste management performance and experience, but all have significant quantities of uncollected waste, absence of suitable final disposal sites, and low levels of treated waste (e.g. recycling, composting):

City/District	Population	Total Waste Generation (ton/day)	Service Coverage (% of total)	Waste Transport to TPA (%)	Waste Treated (%)	Uncollected Waste (%)
Bandung City	2,574,149	1,600	100	69	11	20
Cimahi City	661,269	308	50	42	1	57
Bandung District	3,799,936	1,500	20	21	0	79
District	1,670,643	723	42	28	10	62
Cianjur District	2,319,882	300	14	11	2.3	87
District	963,912	744	60	90	0.2	10
Karawang District	2,370,373	1475	93	50	7.2	43
Bekasi District	2,861,744	1290	61	43	2.3	54

 Table 2: Basic Profiles of Target Local Governments (2015-2016)

27. Under this sub-component it is expected to finance a selection of collection infrastructure, transfer stations, mechanical-biological treatment facilities mostly based on composting, recycling centers, sanitary landfills (new and/or expanding and remediating existing sites), and potentially a refuse-derived fuel plant. Investments will need to be planned and designed during implementation. Cities and districts in this region have not demonstrated the considerable capacity and performance expected by "Tier 1" cities. However, the urgent and high priority placed on this region by the national government warrants these investments and it is expected that this sub-component will provide the financing required to achieve the solid waste management targets encapsulated under the *Citarum Harum*:

- **Bandung City**: Operational expenditures are very low (<2% of annual APBD budget) and the local government would ideally need to double this expenditure to deliver satisfactory services. The city has been using a "temporary" disposal site (*Sarimukti*) that needs to be upgraded to a sanitary facility while waiting for the regional landfill (*Lengok Nangka*) and WtE facilities are ready in 2022 or later. For this project, it is expected that Bandung will allocate around USD \$10 million from the APBD budget to increase collection of waste to 100% (from 80%). The USD \$ 19.61 million of IBRD financing that is expected to be allocated to local government will be to finance mechanical-biological treatment (or TPST) units and transport fleets.
- **Cimahi City:** Uncollected waste is high for this city, treatment is virtually non-existent, and unsurprisingly, operational expenditures are also very low. This city's waste is transferred to



Sarimukti landfill and will transport its waste to Lengok Nangka regional facilities when ready. Hence, no final disposal sites are required for this local government. IBRD financing will be allocated to build a mechanical-biological treatment facility and transportation fleets (approximately USD \$ 2.85 million). The Cimahi City would be expected to increase significantly local ABPD financing for collection and transportation of solid waste. Increasing collection from 57% to 100% will be a challenging task and Component 2 technical assistance will be utilized to improve the effectiveness and efficiency of collection and transportation systems, as well as through communication campaigns and behavioral change.

- Bandung District: This local government has likely the most difficult task for the coming 5-year period, with the largest population, largest quantities of waste and lowest collection rates. Aiming to increase collection from 21% to 100% will be a monumental task. For this task it is estimated that Bandung District will need to allocate around USD \$33 million from the APBD budget. The IBRD financing (approx. USD \$ 28.47 million) would be used to construct a series of mechanical-biological treatment facilities (TPST) and increase the number of transport vehicles.
- West Bandung District: Similar challenges to other Upper *Citarum* River Watershed local governments, but an added challenge with the most rural residents. This increases the cost of collection for more sparsely populated areas. IBRD financing in this local government is expected to be around USD \$17.57 million and include a transfer station, treatment facilities and transport fleets.
- **District of Cianjur, District of Purwakarta, District of Karawang, and District of Bekasi:** These districts will receive 20% of the US\$ 77 million IBRD investment. The activities will be focused at the villages (or sub-districts) that are located adjacent to *Citarum* River. Investment in these locations will be on improvement of collection infrastructure and transport, as well as promoting community-based 3Rs and zero waste activities.

27. Sub-Component 3.2: Supporting integrated solid waste management systems in Selected Cities, other than Citarum Watershed Cities (US\$220 million Total Budget; US\$0 million IBRD). This component will include all of investment financing through the Borrower's own resources from ABPN, ABPD or other sources included in Component 2 (4-6 cities and districts). These cities have demonstrated sufficient capacity, operational budgets and commitment in solid waste management to justify technical assistance to assist in these local governments in investing in complex systems and advanced treatment technologies. Cities/districts selected under this component will receive support for investing from the national government (e.g. APBN) or will invest their local budgetary funds (e.g. APBD) or other resources<sup>31</sup>. All needed infrastructure aspects of solid waste management not currently in place, including collection, transfer, treatment, disposal, and waste recycling/composting, could be considered under this subcomponent. This sub-component could also include financing for advanced treatment technologies, such as mechanical-biological treatment of mixed waste and refuse-derived fuel production. This subcomponent is envisioned to facilitate the creation of model cities for solid waste management cities that can act as both inspirations and performance benchmarks for all other cities and districts in Indonesia.

<sup>&</sup>lt;sup>31</sup> During the project period, it is expected that US\$ 220 will be invested in improvement of solid waste management.



28. Throughout all investments and solid waste sector planning, targeted gender-segregated consultation will be established to ensure sector planning is adequately consider female perspectives. In addition, formal jobs in the rehabilitated landfills and in other (non-waste related) will be designed to be responsive to women's issues (e.g., flexible hours, location, and provision of child care services) and training/reskilling for formal work will establish a quota of 50% women. When women have been provided an opportunity, they have performed well in solid waste sector jobs, so it is expected that acquiring the adequate skills with improved work conditions will improve formal employment gender gaps (also valid for formal jobs created under Component 2).

29. **Component 4: Implementation Support and Technical Assistance (US\$ 8.1 million; US\$ 4.1 million IBRD)**. This component will finance the program management during the implementation, construction supervision consultants, monitoring and evaluation, and specific technical assistance for cities/district governments receiving the investment of Component 3. For management of the program, the DG Human Settlement (MPWH) will serve as executing agency, in which it will form Central Project Management Unit (CPMU). Besides managing the program, the CPMU will also provide technical assistance support, advisory services and training of four Central Project Implementation Units (CPIUs) at the national level (MPWH, MOEF, Bappenas and MOHA), and for Project Implementation Units (PIUs) at the provincial, city and district levels..

30. Considering the technical complexity of solid waste management systems and the broad geographic scope expected (approximately 12-14 local governments), a series of strong management and monitoring and evaluation personnel will be essential for the program's success. To ensure this can be achieved, Bappenas has been tasked to implement these activities. The estimated budget needed for these activities will be around \$4 million over six years of implementation and will be made available through APBN *murni* parallel financing. In addition to monitoring implementation progress of participating cities in Component 2 and 3 of the project, this component will also create a platform and hold regular events that will reach out to many cities and districts (beyond those 12-14 included in this project), and create opportunities for policy dialogue, discussions on system improvement models, peer-to-peer exchange of experiences, and dissemination of results from the project. These outreach activities will require specialized staff in the CPIUs of the program.

31. As mentioned earlier, specific technical assistance will be provided by SUPD II (MOHA) to help ensure the sustainability of the investment received by the eight cities/district governments receiving the investment of Component 3. Specifically, the activities of SUPD II will aim to strengthen the regulatory framework and institution capacity of local government identified to receive the hardware investments, provide support for strengthening implementation and management capacity by funding monitoring (including improvement of cost recovery, setting tariffs, and retribution), enhancing stakeholder's collaboration at all levels, and training to make substantial use of participatory and inclusive techniques for community engagement.



# Table 3: List of Potential "Tier 1" Cities (for Component 2 + Component 3.2)

Rank	City /District	Size of City	Population (2015)	Population Density (per km²)	TPA Land or Capacity Available to 2025	Waste Handled in City/ District	<i>Adipura</i> Score (2016)	Local Gov't Spending Per Tonne of Waste (\$)	Government Commitment Score
1	Magelang	Medium	130,052	7,181	Yes	98%	76.71	53	91
2	Balikpapan	Big	689,902	1,058	Yes	81%	75.94	49	85
3	Bukittinggi	Medium	123,529	4,894	No	93%	76.84	54	81
4	Tangerang	Metro	2,277,329	13,840	Yes	90%	75.36	40	78
5	Kendari	Medium	347,281	964	Yes	74%	76.58	23	76
6	Bitung	Medium	204,068	620	No	-	75.36	44	75
7	Pematangsiantar	Medium	248,923	3,112	No	78%	75.46	41	74
8	Karimun District	Medium	257,122	230	No	79%	76.23	38	74
9	Banjarbaru	Medium	230,656	538	Yes	89%	75.98	30	73
10	Pare-Pare	Medium	141,054	1,301	No	100%	75.36	51	73
11	Probolinggo	Medium	233,609	3,830	Yes	36%	76.67	34	72
12	Sukabumi	Medium	318,636	6,580	No	74%	73.97	37	71
13	Salatiga	Medium	181,429	3,195	Yes	86%	75.80	23	71
14	Surabaya	Metro	2,886,130	7,889	No	95%	76.48	35	67
15	Makassar	Metro	1,461,248	6,718	No	94%	73.88	17	67
16	Malang	Big	857,721	5,646	No	97%	74.37	44	67
17	Jakarta	Metro	10,510,885	2,256	No	88%	72.05	61	60
18	Palembang	Metro	1,594,392	4,318	No	95%	74.63	11	50

# Table 4: List of Potential "Tier 2" Cities (for Component 2 + Component 3.2)

Rank	City /District	Size of City	Population (2015)	Population Density (per km²)	TPA Land or Capacity Available to 2025	Waste Handled in City/ District	<i>Adipura</i> Score (2016)	Local Gov't Spending Per Tonne of Waste	Government Commitment Score
19	Bau-Bau	Medium	155,174	507	Yes	72%	76.40	16	67
20	Payakumbuh	Medium	127,894	1,590	No	97%	76.69	54	64
21	Banda Aceh	Medium	260,955	4,252	No	99%	76.13	50	63
22	Tebing Tinggi	Medium	156,132	5,036	No	92%	76.15	30	63
23	Mojokerto	Medium	126,491	7,685	No	70%	76.24	13	62
24	Madiun	Medium	179,270	5,285	No	87%	77.47	-	62
25	Banyumas District	Medium	1,605,371	1,202	Yes	52%	76.83	3	61
26	Malang District	Medium	2,549,901	876	Yes	36%	76.04	11	60
27	Pasuruan	Medium	196,631	5,572	Yes	75%	76.94	-	59
28	Blitar	Medium	138,005	4,236	No	69%	76.29	30	58
29	Jepara District	Medium	1,200,868	1,196	No	88%	75.69	2	58
30	Kudus District	Medium	823,873	1,938	No	100%	76.20	12	57
31	Lahat District	Medium	402,324	98	No	25%	76.41	16	55
32	Tangerang District	Medium	3,330,114	3,470	Yes	70%	61.85	16	53
33	Banyuwangi District	Medium	1,605,371	278	No	10%	76.54	7	53
34	Cianjur District	Medium	2,362,521	615	No	13%	76.27	35	52
35	Surakarta	Big	535,648	11,641	No	99%	73.17	7	52
36	Tanjung Pinang District	Medium	223,766	275	Yes	55%	76.08	-	52



# The World Bank

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37	Ambon	Medium	405,482	1,076	No	71%	76.61	15	50
38	Jambi	Big	609,059	2,966	No	75%	73.53	16	49
39	Denpasar	Big	876,733	6,700	Yes	94%	73.95	-	49
40	Padang	Big	920,034	1,324	Yes	60%	73.41	11	46
41	Manado	Big	438,212	2,626	No	94%	72.07	40	45
42	Medan	Metro	2,222,974	8,385	No	86%	65.44	15	44
43	Semarang	Metro	1,675,717	4,483	No	89%	74.78	10	43
44	Pekanbaru	Big	1,100,071	1,739	No	51%	72.92	36	40
45	Banjarmasin	Big	698,619	7,095	No	73%	74.16	17	40
46	Depok	Metro	2,099,310	10,481	No	48%	72.32	21	39



# Table 5: Planned Implementation Schedule Per Component

		Responsibility	Responsibility 2019			2020					202	1		2022				2023				2024			4				
No	Component Activities	Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3 4	۱ I	2	з	4	1	2	3	4	1	2	3	4
1	Component 1: Strengthening institutional capacity and policy develop	nent																								$\square$			
	Public awareness raising	CPIU – DG Bina Bangda SUPD II																											
	Technical assistance for strengthening policy and institution and develop the scheme for cooperation with private sector in solid waste management	CPIU – DG Bina Bangda SUPD II																											
	Coordination meetings/workshops for strengthening local government capacity	CPIU – DG Bina Bangda SUPD II																											
	TA for local government for development of Jakstrada	CPIU – DG PSLB3 (APBN)																											
	; Technical guidance for implementation of Perpres 35/2018 on waste to energy	CPIU – DG PSLB3 (APBN)																											
	Development of guidelines for polluter pay principle	CPIU – DG PSLB3 (APBN)																											
	Development of policy/regulation to support the marine plastic debris	CPIU – DG PSLB3 (APBN)																											
	Development of guidelines for willingness to pay and other strategic studies	CPIU – DG PSLB3 (APBN)																											
2	Component 2: Integrated Planning Support and Capacity Building for L and Communities.	ocal Government																											
	Preparation of masterplan and investment (8 city/district Citarum)	CPIU – DG CK																											
	Strengthening capacity in budget management, waste accounting and support for operation (8 city/district <i>Citarum</i> )	CPIU – DG CK																											
	Preparation of masterplan and investment (Tier 1 or 2 city/district)	CPIU – DG CK																											
	Pre-FS for advanced solid waste treatment technology (WtE) and PPP scheme	CPIU – DG CK																											
	TA for preparation of integrated plans for improvement of sanitation of Citarum River watershed	CPIU – DG Bina Bangda SUPD II																											
	Integration of integrated plans for improvement of Citarum River watershed into the regional development plans	CPIU – DG Bina Bangda SUPD II																											
	Consultation and evaluation of annual work plans	CPIU – DG Bina Bangda SUPD II																											
	Community empowerment	CPIU – DG Bina Bangda SUPD II																											
3	Component 3: SWM Infrastructure Improvement																												
	Construction of SWM facilities in City of Bandung	CPIU – DG CK																											
	Construction of SWM facilities in District of Bandung	CPIU – DG CK																											_
	Construction of SWM facilities in District of Bandung Barat	CPIU – DG CK																											
	Construction of SWM facilities in City of Cimahi	CPIU – DG CK																											
	Construction of SWM facilities in District of Cianjur																												
	Construction of SWM facilities in District of Purwakarta																												



## The World Bank

Improvement of Solid Waste Management to Support Regional and Metropolitan Cities (P157245)

		Responsibility	2019					20	20			20	21			2022			2	023		2024				2025			
NO		Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3 4	1	2	3	4	1	2	3	4	1	2	3 4	
	Construction of SWM facilities in District of Karawang	CPIU – DG CK																											
	Construction of SWM facilities in District of Bekasi																												
	Construction of PDU in selected cities/districts	CPIU – DG CK																											
4	Component 4: Program management, monitoring and evaluation																												
	National Consultant for Project Management (CPMU)	CPIU – DG CK																											
	Consultant for construction supervision	CPIU – DG CK																											
	Coordination, monitoring evaluation and achievement of the program	Bappenas (APBN)																											
	Operational support and management of secretariat of CPIU Bangda	CPIU – DG Bina Bangda SUPD II																											
	TA for strengthening of local government	CPIU – DG Bina Bangda SUPD II																											
	Supervision, evaluation and reporting	CPIU – DG Bina Bangda SUPD II																											

\*This is schedule based on the Readiness Criteria of October 2019. Implementation will be expedited with advance procurement and rapid loan effectiveness.



## **ANNEX 2: IMPLEMENTATION ARRANGEMENTS**

**COUNTRY : Indonesia** 

Improvement of Solid Waste Management to Support Regional and Metropolitan Cities

#### **Project Institutional and Implementation Arrangements**

1. The Development Steering Committee for Housing, Settlements, Water Supply and Sanitation (*Tim Pengarah Pembangunan Perumahan, Permukiman, Air Minum and Sanitasi Nasional*) will act as the project's **Steering Committee (SC)** at the central level. This Steering Committee is chaired by Bappenas with participation of Echelon-1 staff from other ministries, including: the Kemenko Ekonomi, MPWH, MOH, MOEF, MOHA and MOF. The SC will be responsible for the project coordination at central level as well as discuss and resolve issues which requires inter-ministerial decisions, support policy development, and monitor the achievement of national development priorities on relevant supported sectors. The project will also inform the *Citarum Harum* Task Force of implementation progress in the *Citarum* River Watershed.

2. The MPWH (Director General for Human Settlements (DGHS)) will be the executing agency and will lead the **Central Project Management Unit (CPMU)**, also consisting of representatives from other implementing agencies. The CPMU will be led by an Echelon-3 staff and be supported by technical, financial and administrative staff from the DGHS. The CPMU will establish procurement, financial management and safeguards that will conform to the World Bank's policies and regulations. CPMU will perform the following responsibilities: overall management of the project for achieving the project objective and key performance indicators (KPIs); ensure the quality of project planning, implementation and outputs both at central and local levels; carrying out timely supervision, monitoring and evaluation; facilitating cities or provinces to have sustainable solid waste services; and providing inputs to the Steering Committee for policy developments and inter-ministerial or inter-sectorial issues.

3. The **Central Project Implementation Unit** (CPIU) will be composed of four project implementation units lead by Echelon-3 staff: (i) Directorate for Solid Waste Management (DSWM) in MOEF; (ii) the Directorate SUPD II in MOHA; (iii) the Directorate Development for Environmental Sanitation (DES or PPLP) in MPWH, and (iv) Directorate of Urban, Settlement and Housing (DPPP) in Bappenas. Below, the CPIU's division of responsibilities per component (bold text), along with associated ministries expected to play a supporting role (non-bolded text), are outlined:

- a) Component 1: **MOHA**\*, **MOEF**, MPWH;
- b) Component 2: **MPWH**\*, **MOHA**\*, MOEF;
- c) Component 3: MPWH\*
- d) Component 4: MPWH\*, MOHA\*, Bappenas, MOEF, and Kemenko Maritim dan Investasi.

\* indicates the ministries receiving IBRD funds per component, while MOEF and Bappenas will use their own budget allocation

CPIUs will perform the following tasks: timely execution of selected activities; establishing sound procurement, contract management and financial administration; and carrying out supervision and


monitoring. CPIUs will report to CPMU. Other ministry (i.e. Kemenko Maritim dan Investasi) although not included as the CPIUs will nevertheless be expected to contribute to the project's implementation through monitoring of marine plastic debris reduction. A Working Group of Water Supply and Sanitation (*Kelompok Kerja Bidang Air Minum, Penyehatan Lingkungan dan Sanitasi*) or a committee with similar function will support the **coordination at the provincial and local levels of government**.

4. A **Project Implementing Unit (PIU)** will be established at every selected province and city/district and will perform the tasks similar to CPIUs. Provincial PIUs will only be established for provinces with regional subproject investments (e.g. regional landfills involving multiple cities and/or districts). City and District PIUs will be established in each participating city and district. Heads of each PIU will be the Public Work Agencies (*Dinas Pekerjaan Umum/DPU*) or the Housing and Settlements Agencies (or *Dinas Perumahan dan Kawasan Permukiman/PKP*), or Environmental Agencies (*Dinas Lingkungan Hidup/DLH*). Both Provincial and City PIUs will report to CPMU.

5. The budgeting system for the project will follow existing government procedures that are well defined. The IBRD financing will be included in the annual government budget and line ministry budget document (DIPA). All loan funds are going to be executed under the central government budget to be implemented by MPWH, MOEF, and MOHA. Activities at the local level will be executed by MPWH work units in the province (MPWH Provincial *Satker*).







### **Financial Management**

Table 1: Indonesian Solid Waste Sector Development Project Funding (including Bappenas (US\$ 4 mill) and MOEF (US\$ 2 mill))

Activities	Total Investme ABPN	Public nt Needs ABPD	ABPN	Ava ABPD	ailable Fund KFW	ling IBRD	Others	Expected Borrower own Resource
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Component 1: Institutional Capacity Bu	ilding and P	olicy Devel	opment					
Regulatory, Law Enforcement	1							1
Policies, Waste Reduction and Marine Debris	0.2					0.2		
Public awareness raising	0.2					0.2		
Workshop/TA for policy/institution and PPP scheme	0.3					0.3		
Coordination to strengthen local government capacity								
Institutional Strengthening	1							1
C1 Total	2.7					0.7		2
Component 2: Local Government Plann	Component 2: Local Government Planning, Capacity Building, Operational/Financial Management							
Citarum Cities/Districts Metro/non- Metro	3.7					3.7		
Selected cities/districts	12.55					12.55		
TA for preparation of integrated plans for improvement of sanitation of Citarum River watershed	0.225					0.225		
Integration of integrated plans for improvement of Citarum River watershed into the regional development plans	0.75					0.75		
Consultation and evaluation of annual work plans	0.375					0.375		
Community empowerment	0.6					0.6		
C2 Total	18.2					18.2		
Component 3: Investments (TPA + treat	tment = APB	N; collectio	on + transpo	rt = APBD)				
Metro Bandung								
Construction of SWM facilities in City of Bandung	19.61							
Construction of SWM facilities in District of Bandung	28.47							
Construction of SWM facilities in District of Bandung Barat	17.57							
Construction of SWM facilities in City of Cimahi	2.85							
Non-Metro Bandung								



Construction of SWM facilities in District of Cianjur	0.29		
Construction of SWM facilities in District of Purwakarta	5.29		
Construction of SWM facilities in District of Karawang	1.43		
Construction of SWM facilities in District of Bekasi	1.43		
Other cities/districts	220		220
C3 Total	297	77	220
Component 4: Project Management, M	onitoring and Evaluation	on	
Project Management	1.5	1.5	
Project Supervision	0.75	0.75	
Technical Support	0.75	0.75	
Monitoring Evaluation	4		
Operational Support and Management for Secretariat of CPIU Bangda	0.2	0.2	
Supervision, evaluation and reporting	0.15	0.15	
C4 Total	8.1	4.1	4
GRAND TOTAL PROJECT	326	100	226

6. The project's financial management will generally follow the government system, including budgeting, internal control, accounting and reporting, flow of funds, the auditing mechanism. The executing agency has experience on implementing World Bank financed operations and is generally familiar with the World Bank financial management requirements. The loan funds are going to be executed under central government budget to be implemented by MPWH and MOHA. Activities at the local level will be executed by MPWH work unit in the province (DGHS Provincial *Satker*). Some financial management risk related to delays of budget effectiveness that may subsequently delay the project implementation is noted. Risk also noted regarding internal controls whereby past audit reports from other large infrastructure projects implemented by the MPWH suggest that the internal control systems need to be improved in the areas of payment verification, including at the PIU in local levels where FM capacity is limited. This is particularly the case in civil works and consultant expenditures, which will form a large part of total expenditures. Risk is also noted related to the delay of asset transfers from central to local governments that may hinder sufficient maintenance of the constructed infrastructure.

7. Some measures to mitigate the risk are summarized as follows: i) The risk related to budget delays will be mitigated through separation of contracts financed by the loan and the Borrower own resources and having a financial management consultant that fully understand the budgeting processes. The consultant will be tasked with assisting CPMU and all PIUs in ensuring timely availability of budget including during the budget revision process, when needed; ii) the CPMU and CPIUs will improve payment verification processes by developing guidelines for the verification team, including random third-party

confirmation, and by improving accountability of the verification team through official appointment of the team and ensuring a verification report is produced for every invoice. In addition to the existing government verification procedure, the PMU assigns additional staff to conduct detailed verification prior to the issuance of a payment order. Control will also be strengthened by involvement of MPWH Inspectorate General (IG) in conducting technical audits on selected works; iii) an asset transfer plan will be developed prior to the construction of works including the local government's written commitment to receive the asset hand over and allocate maintenance budget after the construction. A clear mechanism of asset transfer will be outlined in the Project Operation Manual agreed with the World Bank; Financial management arrangement for the project is described below:

- a) Budgeting. The budgeting system follows the existing government procedures. The IBRD financing will be included in the annual government budget and line ministry budget document (DIPA). Budget preparation is well defined, but there are frequent delays in execution. Parallel budgeting will be made for contracts financed by loan and by the Borrower's own resources (APBN and APBD). Technical assistance will be provided to assist smooth budget processing. The TA will help CPMU and PIUs on timely preparation, consolidation, and finalization of annual work plan to minimize revisions that need to be made to the DIPA. The TA will also help CPMU and PIUs on processing the revision proposal to DG Budget to accelerate its approval. These tasks will be included in the TOR of the TA subject to World Bank approval. The Borrower's own resources is expected to finance Component 3 solid waste infrastructure investments in cities not financed by the loan. The Borrower's own resources will also be made available for expenditures in other components including project management that not covered by the loan fund. The budgeting system is able to ensure no double charge will occur to both loan and the Borrower's own resources.
- b) Accounting and Reporting. The CPMU, CPIUs and PIUs offices maintain separate accounting records for all payment orders (SPM) and remittance orders (SP2D) on a cash basis in accordance with government accounting standards (Ministry of Finance Regulation n0 224/PMK.05/2016). All financial transactions are recorded in the government accounting system and included in government accountability reports. The original records are maintained in the file for auditing purposes. The CPMU will prepare a set of consolidated financial reports (Interim Financial Reports) for project monitoring purpose and for requesting advance from the Bank. The CPMU is responsible to submit the report to the Bank no later than 45 days after the end of each quarter.
- c) Internal Control. The payment verification process will rely on government systems. Direct and independent documentary evidence will need to be furnished to the implementing agencies for them to verify completion before payments are released to third parties. For civil works and workshop/training activities, payment validation procedures will require attachment of direct original supporting evidence of completion of all these activities. in addition to the existing verification procedures, the CPMU/PIU will assign staff within

CPMU/PIU to conduct detailed verification of the contractors and consultants' invoices prior to issuance of payment requests. This control measurement can be further improved through the provision of verification guidelines, and through improving the accountability of the verification team, such as official appointment of the team. Control will also be strengthened by involvement of MPWH Inspectorate General (IG) in conducting technical audit on selected works.

- d) *Fund Flow*. Designated Account (DA) denominated in US dollars will be opened by DG Treasury (MOF) in the Bank Indonesia (Central Bank) specifically for the project. Access to funds in the DA for payment to third parties or for on-granting transfers to the local government's treasury account (if any) will follow government's treasury system. Requests for advances to designated accounts will be requested by MoF to the World Bank as described in the disbursement arrangement section of the PAD.
- e) Disbursement Arrangements. The applicable disbursement methods are Advance and Reimbursement. A Designated Account (DA) denominated in US dollars will be opened in Bank Indonesia (central bank) under the name of Ministry of Finance. The DA will be a segregated account solely used to finance eligible project expenditures. Payments from the DA will follow the government mechanism and authorized by MOF's treasury office. The ceiling of the advance to DA will be variable based on six months projected expenditures. Report of the use of the DA fund and request for additional advance will be based on the quarterly IFR which should be submitted to the Bank no later than 45 days after the end of each quarter and consist of: (i) list of payments for contracts under Bank's prior review and records evidencing such expenditures, or (ii) statement of expenditures (SOEs) for all other expenses; (iii) DA reconciliation statement; (iv) IFR; and (v) projected expenditures for the next six months. PMU will be responsible for reconciling the DA and preparing applications for withdrawal of advances and preparing reports on the use of the DA, duly approved by DG Treasury before submission to the Bank. All documentation for the expenditures as reported for disbursements would be retained at the implementing units and shall be made available to the auditors for the annual audit and to the Bank and its representative if requested. The proceeds of the loan will be disbursed against eligible expenditures as in the disbursement category table below:

Category	Amount of the Loan Allocated <i>(expressed in</i> US\$)	Percentage of Expenditures to be Financed (inclusive of taxes)
(1) Goods, works, Incremental Operating Costs, Training and Workshops, non- consulting services, and consulting services for the Project	100,000,000	100
TOTAL AMOUNT	100,000,000	

f) Audit Arrangements. The project will be subject to external audit by the BPK as Supreme Audit Institution of Indonesia in line with World Bank's Country Director letter to MoF dated May 09, 2017 and followed up by the letter from the MoF dated June 22, 2017 to all executing agencies of World Bank financed projects mandating that BPK will be the external audit for all future projects. Each audit will cover a period of one fiscal year of the recipient. The audits will be conducted based on TOR agreed with the Bank. Audit reports and audited financial statements will be furnished to the Bank by not later than six months after the end of the fiscal year concerned and shall be made available to the public. The audit will go beyond merely providing an opinion on the financial statements, but would also include opinions on internal control frameworks and compliance with the loan covenants and related regulations.

### Procurement

8. All procurement of goods, works, non-consultant services, and consultant services financed from the loan shall be carried out in accordance with the World Bank's Procurement Regulations for IPF Borrowers dated July 2016 (revised November 2017 and August 2018), and the provisions of the Financing Agreement. This also applies to procurement of goods, works and non-consultant services through the Request for Bids method using the national competition market approach, which shall also be governed by the World Bank's Procurement Regulations. The Government's procurement regulations may be used to the extent that they do not conflict with the Bank's Procurement Regulations, and subject to the required improvements listed in the Financing Agreement and that are incorporated in the harmonized model bidding documents agreed between the Bank and LKPP (National Public Procurement Agency) for national competitive procurement. In cases of a conflict or a difference in opinion arising during the procurement process, the World Bank will provide clarification in writing which shall be followed.

9. The Government's SPSE e-procurement (with exceptions to the use of e-catalogue) may only be used for procurement of Goods, Works and non-consultant services under the Request for Bids method through the National Competition market approach and using the harmonized model bidding documents agreed between the Bank and LKPP. Furthermore, the SPSE e-procurement system (modified by MPWH) may be used only for selection of consultant firms under the QCBS method and using the Bank's standard Request for Proposal document adjusted satisfactorily to the World Bank for electronic use. Procurement under all other methods shall be carried out through non-electronic process with manual issuance of invitation for bids and receipt of bids, until such time that the modifications of the SPSE e-procurement system (with exceptions to use of e-catalogue) has been completed by LKPP/MPWH acceptable to the World Bank, which will be confirmed through the World Bank's written no objection. During project implementation, the World Bank's Systematic Tracking of Exchanges in Procurement (STEP) tool shall be used to record all procurement and contract implementation processing under the Project.

10. Procurement of contracts that are not financed by the loan but exclusively from the Government's own budget may follow the Government's Procurement Regulations, as provided for in para. 2.3 of the World Bank's Procurement Regulations.

11. The procurement requirements of the project (e.g. contract packaging; procurement and contract management responsibilities of the various project implementing agencies) have been discussed with the CPMU and CPIUs and this will be strictly defined by Negotiations based on the Project Procurement Strategy for Development (PPSD). Concurrently, the Procurement Plan has been prepared to set out the procurement packages, cost estimates, the applicable procurement methods, market approaches, process timeline and the World Bank's review requirements based on the procurement risk. These will be updated in agreement with the World Bank at least annually, or as required to reflect the actual project implementation needs and improvements in institutional capacity within the project.

12. From the information available so far, following the initial discussion with the CPMU and CPIUs, most of the procurement, by value, under the project is expected to be civil works, comprising landfills ranging between \$10-20 million per contract and transfer stations estimated to cost \$1-2 million per contract, as well as goods including vehicles and equipment. These will mostly fall below the thresholds requiring international competition and will be procured through the Request for Bids method using national competitive market approach by CPIUs either through each central/national procurement working unit (UKPBJ) and/or decentralized/regional procurement technical implementation unit (UPTPBJ) of MPWH who have varying procurement capacity. Consultant services to support technical assistance for implementation of the project components are expected to include project management and monitoring consultants, engineering and supervision consultants, consultants for legal and regulatory framework, and other technical assistance to support institutional capacity building and policy development together with the project implementation support personnel. Most of the consulting assignments will require hiring of firms, for which the Quality and Cost Based Selection (QCBS) method will be applied following the international market approach. For smaller value contracts, the method Selection Based on Consultants Qualifications (CQS) may be applied. Community facilitators (as project implementation support personnel) may be selected by the CPIUs and/or PIUs according to their personnel hiring procedures, which has to be reviewed for acceptability by the World Bank. As in the case of civil works contracts, these will be procured by the CPIUs either through each central/national procurement working unit (UKPBJ) and/or decentralized/regional procurement technical implementation (UPTPBJ) of MPWH.

13. While the PPSD is still being prepared by CPMU, with the support from the World Bank, and the project procurement requirements and implementation arrangements will be defined by Negotiation, the experience from other projects being implemented by the same project implementing agencies indicates the procurement risks listed below. The risks and mitigation measures under the Project will be updated based on the PPSD and a follow up procurement capacity assessment which will be completed by Negotiation.

- (a) Procedural non-compliance due to implementing agencies' insistence to follow the Government's Procurement procedures instead of the Bank's Procurement Regulations, which govern procurement under the Project;
- (b) Rejection of lower priced bids due to narrow interpretation of qualification criteria;
- (c) Cumbersome internal processes and coordination among the implementing agencies with multiple agencies involved;



- (d) Delays due to weak procurement capacity particularly in LGs, due to *ad hoc* assignment of Selection Committee (*Pokja Pemilihan*) accredited on the basis of rudimentary training in the government's procurement regulations and with limited understanding of the Bank's procurement procedures;
- (e) Inadequate procurement planning by the contract commitment officer (PPK), particularly the weakness in cost estimation prepared without using justifiable quantities and realistic market prices;
- (f) Inadequate monitoring, and weak contract management by the contract commitment officer (PPK).

The risks will be mitigated by:

- (i) including an explicit provision in the Financing Agreement and Project Operational Manual to highlight that the Bank's Procurement Regulations shall govern all procurement under the Project and take precedence over Government procurement regulations;
- (ii) CPMU, with support of its consultants, providing procurement training to the CPIUs and to PIUs in the local governments, as well as systematically verifying procedural compliance and monitoring progress against planned schedules;
- (iii) specifying qualification criteria in bidding documents in an explicit manner such that there is no rejection of lower priced-bids without seeking written clarifications from bidders on information provided in the bid.
- (iv) In addition to the Bank's prior review of strategically-important and large value or complex contracts based on the Bank's standard prior review thresholds linked to risk, it is proposed that procurement supervision in the field be conducted at least twice per year, including delivering training and carrying ex-post reviews of no less than 20 percent of the contracts subject to the Bank's post review.

### **Environmental and Social (including safeguards)**

14. The project is nation-wide, it covers the entire solid waste management chain from generation to final disposal/treatment. There are generally significant safeguard issues throughout solid waste management operations (collection, transfer, treatment, and disposal) in Indonesia. Cities and districts have a wide variation in the effectiveness of collection services, but substandard disposal sites and treatment practices are prevalent in virtually every scenario across the country. The poor design of the SWM systems and the lack of consistent environmental monitoring at disposal sites have resulted in groundwater, surface water and air pollution, odor generation and disease vector proliferation concerns. In addition, learning from various cities experiences and site visits, the following issues are commonly reported throughout the sector: (i) poor maintenance of dump trucks that are not covered and watertight, causing leachate leak with foul smell along the transportation corridor to landfill; (ii) Illegally dumping the waste outside dedicated dumping areas; (iii) Uncollected waste in temporary disposal site in residential neighborhoods that spills into roadways and creates sanitation and aesthetical problems; (iv) significant loss of uncollected wastes ends up in waterway that eventually flows into ocean, causing the country

infamous being named the second biggest contributor of marine debris in the world. Considering the types of investments, scale, and environmental and social sensitivities, the project is classified as a Category A.

15. Implementation of the project is expected to have important positive environmental impacts in the country that will: (i) reduce public health risks and environmental damage caused by inappropriate handling of solid waste; (ii) provide reliable solid waste collection, transport, processing, and better management of final disposal in cities/districts (iii) improve the solid waste management system for the cities/district in line with the national solid waste management laws and international environmental legal requirements and standards; and (iv) enhance public awareness about the importance of proper waste disposal and management, and strengthen coordination among the stakeholders.

16. Under World Bank loan, it is expected that approximately 12-14 cities/districts will receive technical capacity support (Component 2). Of those cities/district, a maximum of four cities/districts will construct large and complex physical investments with possibly advanced treatment technologies, while the rest cities/districts will receive funds for smaller and simpler investments (i.e. fencing, recycling center, compositing facility) to improve performance (Component 3). Two cities have been identified to receive specific investments, i.e. Makassar and Padang for the first year of project implementation under Component 3.

17. Among the physical investment that Component 3 will finance are construction of new landfills (i.e. regional landfills) or new cells, rehabilitation/re-engineering of landfill, rehabilitation of leachate treatment plant, cap and closure of open-dump cells, mechanical and biological treatment (MBT) facilities, and recycling center.

18. Specific investments under Component 3 will be conducted in up to 8 cities/districts, however the first cities ready for investment have been identified as Makassar and Padang (*Tamangapa* landfill and *Aie Dingin* Landfill, respectively). For these sites, an ESIA was (AMDAL) prepared as well as a supplementary ESIA, and public consultations were conducted. Besides the environmental impacts, negative socio-economic impacts on surrounding communities, waste pickers, small collectors or other sections of the population were identified in the ESIA. The selection criteria for these initial city investments included land availability and no resettlement required. The supplementary ESIA shows that there will be socio-economic impacts on waste-pickers (approximately 150 in Padang and 400 in Makassar) and surrounding populations including waste buyers and livestock owners. These will be addressed in the Social Management Plan as part of the site Environmental and Social Management Plan (ESMP), for which there have been additional public consultation processes undertaken between August and October, 2017. All identified impacts and mitigation actions were documented in a ESMP for each city/district

19. An Environmental and Social Management Framework (ESMF) was prepared to cover cities not yet selected, or for selected cities/districts that have not yet prepared any safeguard documents. The ESMF includes a Land Acquisition Resettlement Policy Framework (LARPF), Indigenous People Planning Framework (IPPF) and Physical Resource Cultural Chance Find Screening Procedure to be applied to all cities/components. The ESMF includes a negative list of goods that cannot be financed by the project and environmental and social screening for each proposed activity as well specific instruments that will be prepared. The ESMF is based on the requirements of national regulation and the Bank OPs. It includes

provisions to assess social impacts of project-financed activities, including impacts on vulnerable groups, waste pickers and recyclers, any temporary project-induced labor influx, mitigation measures related to the possibilities of impacts on indigenous communities, and other social and economic impacts such including resettlement or access restrictions induced as a result of the project. Citizen engagement and grievance redress mechanisms are also included in the project ESMF.

20. The ESMF will be applied to physical investments in Component 3, but also it will be also integrated into the technical assistance of Components 1, 2, and 4 (following Interim Guidelines for Safeguards Policies in TA activities), for such activities as the preparation of feasibility studies, engineering designs, and technical standards. Included in Component 2, funds will be dedicated to the preparation of safeguard instruments (e.g. ESIA, LARAP) as necessary following the ESMF. Furthermore, Component 4 will include funds for project supervision and monitoring, which will include certain safeguard relevant aspects.

21. Two rounds of public consultation were carried out during the preparation of the ESMF and supplementary ESIA preparation. As per the OP 4.01 both ESMF and supplementary ESIA involved formal public consultation processes where grievance mechanisms were also discussed. Consultation on the ESMF was carried out in Jakarta in May and October 2017, whereas consultations on the city AMDALs, supplementary ESIA and ESMPs were conducted in the cities of Padang (August 29, 2017 and October 11, 2017 and in country disclosure on October 27, 2017, World Bank InfoShop October 23, 2017) and Makassar (October 10, 2017, and in country disclosure on October 27, 2017, World Bank InfoShop October 23, 2017)). The final draft of ESMF has been reviewed by the World Bank and has been disclosed through the PU (December 2, 2017) and World Bank websites on November 13, 2017. Consultations indicate a strong level of community support for the landfill upgrading, with expectations for ongoing economic benefit from the landfill. Other stakeholders included in the ESMF consultation similarly endorsed the proposed activities and impact mitigation approaches, with further details to be developed after project approval.

### **Monitoring and Evaluation**

22. Results monitoring and evaluation (M&E) will be coordinated by designated technical staff across the CPIUs at Bappenas, MPWH, MoEF and MoHA. The required data will cover (i) performance in waste management in the participating cities; (ii) financial data of participating cities related to waste management; and (iii) more general statistical data from participating cities, e.g. demographics. Cities will regularly report data through their waste accounting systems set up under Component 2 of the Project and in semi-annual city level project progress reports. The city level progress reports will review activities under Component 2 and 3 of the project, progress towards project targets, compliance with environmental and social safeguards, and special sections on community participation in project implementation and addressing gender inequalities. One a year, the progress reports also include a section on financing waste management services.

23. Statistical data on waste management of all non-participating cities with population higher than 100,000 will also be collected annually for benchmarking purposes and to monitor broader developments at national sector level.

24. The Project Management Services (PMS) consultant mobilized under Component 4 of the project will support the CPIUs to establish a transparent Project Management Information System for M&E and reporting. In addition, the PMS consultant will support annual surveys in the participating cities to monitor appreciation of the project at community level and with formal and informal waste workers. The annual surveys will also be used for spot checks to validate data in the city level progress reports, monitor compliance with safeguards requirements and verify proper functioning of complaints handling and GRM. The PMS consultant will also support the CPIUs in preparation of the semi-annual national project progress reports for the Project Steering Committee and the Bank.

25. As mentioned, the masterplans of the participating cities funded by Component 2 will include the introduction of a city-wide waste monitoring and accounting system that will also be funded from Component 2 resources. The city waste accounting systems will form the basis for a monitoring database and/or results reporting made publicly accessible online. The key performance indicators of this project have been synchronized with the overall Indonesian sector monitoring of national ministries, such as Kemenko Maritim & Investasi, Bappenas, MoEF, and MPWH. It is estimated that approximately \$4.0 million (*APBN Murni*) will be allocated in Component 4 alone for supporting monitoring and evaluation arrangements.

26. In additional to the selected PDO and Intermediate Indicators in the Result Framework of the project, various additional impacts of the project can and will be monitoring analyzed with the reported data. These include: total population with improved access to adequate waste management services in cities under the project; reduction in waste 'spillage' (waste that never ends up in waste treatment or disposal sites); number of cities with sufficient operational funds allocated for integrated waste services; total emissions and reductions in GHG emissions; sanitary landfill capacity (ton/a) created under the project; and volumes of waste diverted from landfilling through recycling or treatment.



### ANNEX 3: IMPLEMENTATION SUPPORT PLAN

**COUNTRY : Indonesia** 

Improvement of Solid Waste Management to Support Regional and Metropolitan Cities

#### Strategy and Approach for Implementation Support

- 1. The strategy for implementation support has been developed based on the more than 15 years of experience in programmatic urban sector project implementation. The key aim of the implementation support is to assist the Government in their overall monitoring and supervision of the project implementation. The project includes measures aimed at ensuring implementation proceeds as follows.
- 2. The Bank will maintain a sizable core team in Jakarta. The team includes specialists in policy, legal, solid waste planning, engineering, safeguards, economics, and monitoring and evaluation. Having the core team based in Jakarta will facilitate frequent dialogue with the government counterpart teams, and permits ongoing implementation support. The core team will be supplemented with specialists in, advanced treatment technology, private-public partnerships, social accountability, gender and social inclusion, and urban institutions and policy, DRM, and others as needed.
- 3. Considering the demands of the national program platform and requirements for a sizable core team based in Jakarta, it is expected that the standard World Bank Implementation Support Budget will not be sufficient. It is expected that the Task Team will not only be supported by the Implementation Support Budget, but also trust fund(s) to ensure the program is implemented according to the results indicators expected to deliver nation-wide outcomes.
- 4. The project team will conduct at least two formal missions per year covering cities under its responsibility. The missions will be carried out jointly with development partners, and will include the Bank's financial management and procurement staff, and other specialists as required.
- 5. Considerable safeguards have been put into place to guard against procurement fraud risk. These are presented in the procurement section of Annex 2.
- 6. The Bank will periodically request various types of audits, each of which will be designed to answer different questions about project implementation. Such audits include technical audits, value-formoney audits, forensic audits, and rolling audits. Decisions about which approach to pursue in a given year will be made in consultation with the MPWH and development partners.
- 7. Findings and agreed recommendations in *Aide Memoires* will be used jointly by the Government and the task team for follow up meetings. Detailed inputs from the team are given below:
  - a. **Monitoring and Evaluation**. MIS specialists will provide continued support to the MIS development and maintenance and provide feedback on a regular basis about the performance

of the MIS operated by PMU and local governments. A specialist will support the PMU in improving the capacity of overall evaluation.

- b. **Technical**. Appropriate technical specialists will review and guide the Technical Assistance component of the project, and participate in missions, and review the quality of infrastructure works and social activities financed in a sample of locations.
- c. Fiduciary. Financial Management specialists will conduct regular financial assessments in a risk based sample of project locations to gauge compliance with key elements of formal and informal fiduciary controls, including: budgeting and the Borrower's own resources; disbursement status; internal controls (including internal audits); accounting and financial reporting; and FM facilitation. Formal supervision of financial management will be undertaken as part of each formal supervision mission (twice a year). As part of the World Bank's supervision and implementation support, in addition to the procurement prior review to be carried out by the Task Team, the World Bank will also conduct field visits to carry out post reviews at least twice a year. The procurement team will provide enhanced hands-on training at the central and sub-national levels, and suggest improvements to the project operation manual, if needed. Special efforts may be made on request for improvement of the procurement processes executed by the local PIUs that are not financed by the loan, but exclusively from the Government's own budget.
- d. **Gender**. A gender specialist will participate in formal and routine supervision missions to assess whether women are active participants in planning and decision-making, and whether subprojects funded respond to women's needs and increase the potential for women's participation. They will propose strategies and modifications to project design and implementation for effective gender mainstreaming, including the specialized activities and mechanisms targeting genderbalance in women's participation, guidelines for inclusive and participatory consultations, and equitable opportunities for capacity-building and reskilling training.

Time	Focus	Skills Needed	Resource Estimate (# Staff Weeks)
	Team Leadership	TTL/Co-TTL	15/30
	Capacity Building	Institutional Capacity Building	20
First twelve months		Governance	10
		Waste Accounting	5
		Training	3
	Environmental Monitoring	Environmental Specialist	3

### **Implementation Support Plan and Resource Requirements**



	Social Monitoring	Social Specialist	3
	Gender Monitoring	Gender Specialist	4
	Waste Management	Operational Management + Infrastructure Development	10
	Financial Management	Financial Specialist	10
	Procurement Training and Support at Central Level	Procurement Specialist	4
	Procurement Ex Post Review and Spot Check	Procurement Specialist	4
	Monitoring and Evaluation	M&E Specialist	10
	Implementation Support	ACS	10
	Team Leadership	TTL/Co-TTL	10/20
		Institutional Capacity Building	14
	Capacity Building	Governance	6
		Waste Accounting	3
		Training	2
	Environmental Monitoring	Env. Specialist	2
	Social Monitoring	Social Specialist	2
12-48 months	Gender Monitoring	Gender Specialist	3
	Waste Management	Operational Management + Infrastructure Development	6
	Financial Management	Financial Specialist	6
	Procurement Training and Support at Central Level	Procurement Specialist	3
	Procurement Ex Post Review and Spot Check	Procurement Specialist	3
	Monitoring and Evaluation	M&E Specialist	6
	Implementation Support	ACS	6



#### ANNEX 4: ECONOMIC AND FINANCIAL ANALYSIS

## Background

1. The objective of this Solid Waste Management Program is to improve solid waste management services for the urban population in selected cities across Indonesia. The program will create a nationwide, scalable platform for improving solid waste management performance that is adaptable for a variety of urban contexts in Indonesia. The World Bank will contribute US\$100 million in financial support for this proposed program, or roughly 5 percent of the planned investment amount for the sector (US\$ 326 million) over the six-year period of program implementation. The program covers four sub-components as shown on Table A4.1.

#### Table A4.1. Budget for SWM Program

Components	Total Program Investment (USD millions)	IBRD Contribution (USD millions)
Component 1: Institutional and Policy Development	2.7	0.7
Component 2: Planning Support and Capacity Building for Local Governments	18.2	18.2
Component 3: Solid Waste Infrastructure in Selected Cities	297	77
Component 4: Implementation Support and Technical Assistance	8.1	4.1
Total	326	100

The economic analysis was carried out using a cost-benefit method to estimate the net benefit to society arising from the program. This net benefit was calculated as the difference between incremental benefits and incremental costs. The financial analysis was conducted from the perspective of participating local governments, to assess the financial impact of expected investments in participating urban areas.

## Economic Analysis

2. The economic analysis for this program was prepared based on data collected from various sources including *Susenas* (2016); several academic papers<sup>32</sup> such as Berglund (2006), Damanhuri (2010), and Aprilia (2015); the E-Catalog of the Indonesian Government Procurement Agency (LKPP – *Lembaga* 

<sup>&</sup>lt;sup>32</sup> Berglund, C. The assessment of households' recycling costs: The role of personal motives, Ecological Economics 2006; 56:560– 569; Aprilia, Aretha. Household Solid Waste Management in Jakarta, Indonesia: Evaluation on Human Behaviour, Economy, and GHG Emissions. Dissertation, Kyoto University 2016. *https://dx.doi.org/10.14989/doctor.k19904*; Rahim, Irwan Ridwan, Hirofumi Nakayama, and Takayuki Shimaoka. "Cost analysis of municipal solid waste management in major Indonesian cities." *Journal of Japan Society of Civil Engineers*, Ser. G (Environmental Research) 68, no. 6 (2012): II\_79-II\_88.

*Kebijakan Pengadaan Barang dan Jasa Pemerintah*), Bank Indonesia, the Ministry of Public Works and Housing, and World Bank data.<sup>33</sup>

3. **Costs.** The costs of the program are financed from a combination of World Bank contributions and allocations from the Government budget. For this analysis, costs are calculated over the 8 years of program implementation and a further 10 years of operation and maintenance of the resulting assets. Investment costs are grouped into three categories: (i) sanitary landfills, (ii) waste collection and transportation, and (iii) waste segregation and recycling. Operation and maintenance costs considered include repair and maintenance costs for the carts, containers, and dump trucks; fuel consumption, and labor costs. Figure A4.1 illustrates a breakdown of cost components used for the analytical model.





4. **Benefits.** The analysis estimates economic benefits in four categories: the benefit arises from reduced greenhouse gas (GHG) emissions<sup>34</sup>, the costs avoided by household members who would otherwise dispose of solid waste themselves, the value of improvements to community health resulting from better waste management, and the market value of recyclables reclaimed and sold. This is not an exhaustive list of potential benefits arising from planned investments. For example, improvements in environmental outcomes and corporate profitability due to improved processing technologies for residual waste have not been included in the analysis given that the exact type and scale of investments are still being determined. Thus, the total benefits of the program are likely to be greater than those quantified here.

5. Program benefits are estimated using detailed data collected from the cities and districts surrounding the Upper *Citarum* River Watershed that have around 8 million residents. The selected area consists of City of Bandung, City of Cimahi, District of Bandung, District of West Bandung. The components of the benefit calculation will be based for these four urban areas, as illustrated in Figure A4.2.

<sup>&</sup>lt;sup>33</sup> Susenas, National Socio-Economic Survey, March 2016; Sakernas, National Labor Survey, February 2016; E-Catalogue, LKPP. https://e-katalog.lkpp.go.id; Intergovernmental Panel on Climate Change (IPCC). 2012; Ministry of Public Works and Housing Database on Solid Waste Management;

<sup>&</sup>lt;sup>34</sup> Total benefit from reduced GHG emissions is calculated by multiplying the annual shadow price of carbon (USD/tCO2e, increasing from \$38 to \$50 per ton over 12 years) with the annual GHG emissions (tCO2e) over the economic lifetime of the project (see Annex 5). To calculate GHG emission from the Greater Area Bandung, the calculation was done using proportion of waste generated in the four selected cities out of 44 selected cities in the original calculation.







6. **Cost Benefit Calculation.** Total costs and total benefits are projected over an 18-year period from 2021 to 2038. Costs and benefits occurring in future years are discounted to present value as of 2019 using a 7 percent discount rate.<sup>35</sup> The present value of these costs and benefits are then summed to yield an Economic Net Present Value (ENPV) of the project. In addition to the ENPV, we calculate an Economic Internal Rate of return (EIRR). The ENPV of SWM Program over 18 years, at the 7 percent discount rate, is

<sup>&</sup>lt;sup>35</sup> Per standard World Bank guidance on economic analysis, the discount rate used is the estimated long-term GDP growth rate for the country.

estimated at US\$657.2 million; and the EIRR at 22.9 percent. The positive ENPV and positive gap between the EIRR and the discount rate imply that this program is economically feasible.

7. **Sensitivity Analysis.** Sensitivity analysis of the Program was done with respect to two variables: (i) percentage of waste handled in 2025; and (ii) a change in the operation and maintenance costs (O&M). The result shows that the Program is not sensitive to change in these two key variables. All else equal, the program could sustain if the waste handled rate in 2025 decrease no more than -41.4 bps in average and still be economically feasible. Similarly, it would take an increase of almost 201.5 percent in annual O&M costs to reach a negative ENPV.

Table A4.2. Switching values norma ba	13e case Live v 01 055570.5 mil	
Variable	Unit of change	Switching Value
A Change in Percentage of waste	Bps	-41.4
handled (Average for four		
cities/districts)		
O&M Costs per year	Percent	201.5

### Table A4.2. Switching values from a base case ENPV of US\$370.3 million

# Financial Analysis

8. The financial analysis models the impact of the project on key participating subnational governments. The analysis comprises a detailed review of financial projections of solid waste operations in four of the selected local governments that will receive around 80% of the Project's investment funds, namely City Government of Bandung, City Government of Cimahi, District Government of Bandung, and District Government of West Bandung.

9. **Context and Key Assumptions.** The investment in *Citarum* River Watershed will be conducted in four selected local governments (two cities and two districts). The Greater Bandung Area, comprising City of Bandung, City of Cimahi, District of Bandung, and District of West Bandung together have a population of around 8 million, classified as a metropolitan area. City of Bandung and City and Cimahi have population around 2,574,149 and 661,269 as of 2015 and rate of unhandled waste of about 20.34 and 57.16 percent of the area's waste, respectively. The total investment cost for these two cities will be US\$33.98 million and US\$17.83 million, respectively.

10. The District of Bandung has a higher population compared to City of Bandung and Cimahi, with highest unhandled waste, with around 3.7 million people as of 2015. Total investment cost for the solid waste management will be US\$33.11 million, including collection, transportation, MBTI, and landfill. The District of West Bandung has a lower population compared to the District of Bandung, but with lower service area of 42%. The total investment for District of West Bandung to address 61.49 percent unhandled waste will be US\$33.11 million.

11. **Financial model.** The financial analysis focuses on measuring net present value and financial internal rate of return for the proposed SWM facilities in four selected cities, from the perspective of the local governments. Because the investment and service arrangements differ between the four cases, the model analyses each case separately. However, the financial analysis was not conducted from the perspective of Provincial Government who will handle the landfill of Legok Nangka. The Legok Nangka

landfill serves more than one district and will be operated by the Province of West Java, which will charge a tipping fee to the districts to use the landfill. Therefore, for those city and district governments, the tipping fee is a cost with the proceeds of which accrue to the Province of West Java. The local governments will only earn revenue from household user-charge and the recyclables and compost they reclaim and sell before sending the residual waste to the landfill.





12. **Revenues.** The local governments will receive two revenue streams: (1) household user-charge; (2) revenue stream from recyclables and compost. The revenue figure for recyclables and compost is calculated as shown in Figure A4.4 below. Compost produced (tons) is multiplied with the market price to calculate revenue from composting activities. Income from sales of recyclable materials is measured by multiplying quantity of recyclables with identified market price. The cash flows for tipping fees as expenditures for the districts are calculated based on the tipping fee assumption stated above multiplied by the estimated volume of waste sent to the landfill, which includes both direct dumping and residual waste from the Intermediate Transfer Facility (ITF) after recovery of recyclables.





13. **Costs.** The cost of the proposed investments breaks down into capital (or investment cost) and operational (O&M) expenditures. The proposed investments will take about two years to complete. Regular operations and maintenance costs start in the second year, such as replacement of equipment, preventive and required maintenance works, overhauling of gas generator engines, additional staff, and escalation of prices for the various operating expenses and related items. The model is designed to account for the effect of variation in the quantity of planned investments on projections for operations and maintenance costs over the life of the resulting assets which may depend on projection of waste produced in each local government.

14. **Financial Feasibility.** The NPV for each case was calculated over period of 18 years (2021-2038), but for the sake of a conservative estimate does not include any residual value of assets at termination. Base-case results of the model are summarized in Table A4.4, and lead to key two observations. First, with the exception of District of West Bandung, the revenues are not expected to cover the full costs of planned investments within the period projected. Second, the case of City of Bandung differs in that it faces a particularly heavy net present cost, as volume of waste recycled is not expected to reach a level that would allow positive cash flows from sale of recyclables. In addition, City of Bandung requires high expenditure on tipping fee because of high quantity of waste generation. Net cash flows for the four subnational governments are shown in Figure A4.5.

	City	City Government	District	District
	Government of	of Cimahi	Government of	Government of
	Bandung		Bandung	West Bandung
NPV (USD )	-73.88	-9.06	-22.84	1.27
IRR	NA	-3.3%	-3.5%	11.2%
Positive cashflow from year	-	4	2	2

#### Table A4.4. Base case financial results for four subnational governments





15. **Sensitivity Analysis.** The sensitivity analysis for financial feasibilities of the SWM projects in four selected local governments were also conducted with respect to two key variables: (i) a change in the investment and OM costs; and (ii) a change in percentage of tipping fee. The switching values for these two variables are shown in Table A4.4 below.

Assumption	City Government of Bandung	City Government of Cimahi	District Government of Bandung	District Government of West Bandung
Base case NPV (USD thousands)	-73.88	-9.06	-22.84	1.27
Tipping fee rate (percent change)	No switch	No switch	No switch	17.8%
O&M costs (percent change per year)	-60.1%	-34.0%	-56.0%	4.8%

Table A4.4. Switching	values of O&M and tir	oping fee assumptions -	<ul> <li>four subnational governments</li> </ul>

Note: NPV values rounded to nearest thousand.

16. First key point is that project financial cashflow is not sensitive to change in tipping fee, with the exception of District of West Bandung. For City of Bandung, City of Cimahi, and District of Bandung, even dropping the tipping rate to zero would have little effect, with an NPV still below negative. In the case of West Bandung, the tipping fee does affect the outcome which will require 17.8 percent increase to switch to a negative NPV. However, decreasing the tipping fee to help city and district governments would cause a greater negative impact to the Province of West Java because the tipping fee will be accounted as revenue.

A second key point is that all first three district-level governments are less sensitive to changes in O&M costs than tipping fee, with the exception of District Government of West Bandung. However, the level of sensitivity to O&M costs also differs notably between cases. For City of Cimahi, an annual decrease of only 34 percent would switch the project overall to a positive NPV; for City of Bandung it would require a decrease of nearly 60.1 percent, and for District Government of Bandung O&M would need to



decrease by almost 56 percent.



## ANNEX 5: CLIMATE CHANGE ANALYSIS

**COUNTRY** : Indonesia

Improvement of Solid Waste Management to Support Regional and Metropolitan Cities

## **Climate Co-Benefits**

Climate Concern Project Design Feature to Address Concern				
	Mitigation			
Emissions from transporting waste	Optimizing transportation The Project will expand waste collection services in Indonesia and will look at improving route efficiencies and where feasible introduction of transfer station to reduce transportation and associated emissions. Where incorporated into the collection and transport system, transfer stations will allow for productive use of some waste and limited transport of other waste.			
Emissions from disposal of waste	Diversion of waste for productive use By requiring segregation of waste at the household level and diverting recyclables and organic waste, the Project to some extend will reduce overall emissions as well as the overall quantity of waste that needs to be transported to landfill sites. Awareness raising efforts and capacity building incorporated into the Project will allow for some source segregation of waste at the household level and improvements in management of waste facilities. Composting Composting is a form of solid waste management disposal that generates fewer emissions than dumpsites and landfills because of the manner in which organic waste is managed. It is expected that composting can be introduced in a number of the participating cities in Indonesia. Landfill gas collection The main impact in terms of GHG reduction will come from large scale introduction of sanitary landfilling and thus collection of landfill gas. The gas generated from decomposing organic waste will be captured and depending on scale used for power generation or to be flared rather than released into the air as occurs with dumping.			
	Adaptation			
Flooding, storm surges, sea level rise, cyclones, and tsunamis	Infrastructure design Large parts of Indonesia are prone to flooding and risk are increasing with rising sea levels. New facilities and existing facilities to be extended or upgrading will be designed to withstand rising levels of flooding when they occur. This is already applied for the Makassar landfill development, one of			

the first investments prepared for the program.

### Expanding waste collection

The waste collection services are being expanded over the Project area and this will serve to prevent waste from blocking drains and causing flooding.

## **Greenhouse Gas Emissions Impact**

## **<u>Project Boundary</u>**: Please list project activities for which GHG accounting is undertaken.

- The relevant project for this Greenhouse Gas Accounting exercise is the Indonesia Solid Waste Management Project which includes 8 cities/districts in the *Citarum* area and 4 additional cities/districts listed in Annex 1 of the Project Appraisal Document.
- Activities for which GHG impact was assessed include the construction of a new landfills/controlled dump sites, increased recycling and composting, and collection of solid waste.

## **Methodology:** *Please list tool(s) used for GHG accounting.*

The tools used for GHG accounting were:

- CURB: Climate Action for Urban Sustainability Waste Disposal
- Institute for Global Environmental Strategies (IGES) GHG Calculator for Solid Waste Waste Collection

### Baseline scenario: Please describe the assumed baseline (or without project) scenario

- Without project interventions, waste is expected to rise at the population growth rate. This would impact the amount of waste processed through landfilling and the amount of fuel used for transport.
- Total waste production in implementation year 2025 in the 12 participating cities is 16,500 tons/day of household waste. This figure was provided by the project team.
- 65% waste collected, out of which 5% is sent to sanitary landfill and the rest to open dump sites.
   From the remainder uncollected waste, 15% is collected by recyclers/waste pickers, 5% openly burned and 15% dumped in waterways and along roads.

## **Data sources**: Please describe the main project specific data sources used for GHG accounting

- Data for waste composition, collection, and disposal were obtained directly from the project team
  - Composition:

Paper	8.75%	wood	6.97%	metal	1.06%
Textiles	2.03%	rubber	0.11%	glass	0.99%



organic waste	63.18%	plastics	13.16%	other	3.83%	1
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- Collection: Waste is collected at community level in each city block or quarter (typically 1,000-2,000 people each) with handcarts or 3-wheeled motor carts and carried to a central collection point in each block. From the collection point, it is picked up by open dump trucks which transport the waste to the disposal site. The typical truck load is 3-4 tons. This information was provided by the project team.
- Disposal: 65% waste collected, out of which 5% is sent to sanitary landfill and the rest to open dump sites. From the remainder uncollected waste, 15% is collected by recyclers/waste pickers, 5% openly burned and 15% dumped in waterways and along roads.
- Population growth rates were obtained from the United Nations Population Division, Department of Economic and Social Affairs, 2015 edition

## Key assumptions: Please describe key assumptions made to undertake GHG accounting

- The benchmark year was chosen as 2024, the year before the implementation year.
- The baseline waste generation in 2024 was calculated using the 2025 waste generation figure provided by the project team and growth rates from the UN population projection.
- A proxy was used from CURB to estimate break up of organic waste into food and yard waste (80% and 20%, respectively).
- For calculation of GHG emissions from waste disposal in the baseline scenario, the following assumptions were made:
  - The 15% dumped in waterways and along roads was added to the 60 sent to open dump, making total waste in open dumps 75%.
  - 15 of non-organic waste were assumed as recycled.
- After project implementation in 2025, collection rates are expected to increase from 65% to 85%.
   From this 85%, 14% is recycled with organics composted. The remaining 71% goes to disposal sites with a 50/50-split between sanitary landfills and controlled dump sites. The uncollected 15% has a similar split between open burning and dumping along roads and in waterways as in the baseline.
- For calculation of emissions from waste disposal after project implementation, sanitary landfills are assumed to have a 50% methane capture rate. 75% of the methane is assumed to be used for electricity generation while 25% is flared. The waste dumped along roads and in waterways is considered open dump.



- It is assumed that future waste amounts and fuel consumption would grow year-over-year by the population growth rate, which was calculated through UN population projections from 2025 to 2065.
- Tool defaults were used regarding emissions factors.

**<u>Results:</u>** Please describe interim results to calculate net GHG emissions over the economic lifetime of the project and annual average

Summary	Disposal	Transport	Total
Economic Lifetime (years)	40	40	40
Gross Emissions (t co2e)	232,613,553	158,966	232,772,518
Net Emissions Reduction* (t co2e)	60,081,407	-37,332	60,044,075
Average Annual Emissions (t co2e)	5,673,501	3,877	5,677,379

\*negative indicates increase in emissions



#### ANNEX 6: ALIGNMENT WITH OTHER EXISTING WORLD BANK PROJECTS

1. This annex details the linkages between this project with other relevant World Bank projects and government programs that are ongoing or in the pipeline.

2. The project will work together with the **Indonesian Oceans Future MDTF** hosted under the Coordinating Ministry of Maritime Affairs and Investment (Kemenko Maritim dan Investasi). The Government has requested an initial priority focus on supporting the National Action Plan on Marine Debris, including an initial program of analytical and piloting work focused on key solid waste management issues to stop the land-based and sea-based leakages. This component will finance analytical and pilot investment support – aligned specifically to provide value-added to the implementation of the National Solid Waste Management Project in specifically reducing plastic debris in Indonesia's coastal areas, managing plastic in the sea, and increasing research and innovation in handling of marine debris. These would include: (i) design and implementation of awareness, communications and behavior change campaigns for primary waste collection and recycling in priority cities ("champion cities" to combat local marine debris); (ii) support for the design of a database and monitoring system for key cities, waterways and coastal areas; (iii) a diagnostic and action plan for improving waste management targeting hotspot communities; and (iv) support for critical studies.

3. **The National Urban Slum Upgrading Program (NSUP)** is a World Bank-financed project (also under the same executing agency as the National Solid Waste Program) with development objective to improve access to basic urban services in targeted slums in Indonesia. Currently under implementation (2017-2022), the NSUP is a \$1.7 billion program that is expected to include 9.7 million slum dwellers in 154 cities across all of Indonesia. Within a shorter list of 50 cities, NSUP finances a wide range of investments including roads, solid waste collection, sanitation, water supply, drainage systems, fire safety, and other site improvements. Hence, the Solid Waste Management Project currently proposed would help strengthen the NSUP's investments in cities where the projects overlap by improving the overall city solid waste management services that would be responsible for transporting and disposing of the waste collected in the upgraded slums. The NSUP might also benefit from the Solid Waste Management Project's investments in behavioral change outreach campaigns and waste management monitoring.

4. **The National Tourism Development Project** is another World Bank-financed project that is expected to be delivered in 2018 with a total financing package of \$750 million. The proposed development objective is to improve the quality of, and access to, tourism-relevant basic infrastructure and services, strengthen local economy linkages to tourism, and attract private investment in selected tourism destinations in Indonesia. As mentioned earlier, poor solid waste management and ocean plastic plastics pollution is an increasingly dire threat to the tourism "brand" of Indonesia. The proposed National Tourism Development Project proposed solid waste management investments in strategic tourism sites (e.g. Gili Islands, Lombok, Lake Toba). It will be critical that the funds allocated under this Project are coordinated with both the Solid Waste Management Project and Indonesian Oceans Future MDTF.

5. **Indonesia Sustainable Urbanization Programmatic ASA**: The project will also benefit from a range of ongoing and planned activities under the. This PASA supports sustainable urbanization in Indonesia and contributes to the development of policy and financing frameworks to effectively channel advisory and investmet to Indonesian cities to meet pressing urban infrastructure and management needs. Specifically, technical assistance is provided in areas of public financial management, municipal finance, creditworthiness, spatial



planning and analytics, and strategic investment planning. The activities within the PASA provide support to the executing agency of this project as well as to a sub-set of local governments included in this project. Such capacity building will be directly beneficial to this project, particularly with respect to long term city and district government governance through enhanced capacity to implement evidence based urban spatial development strategies.