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LIST OF ABBREVIATIONS

3R	Reduce-Reuse-Recycle
ADB	Asian Development Bank
APBD	Anggaran Pendapatan dan Belanja Daerah (Local Government Revenue and Expenditure)
BAPPEDA	Badan Perencanaan Pembangunan Daerah (City Development Planning Agency)
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
BKM	Badan Keswadayaan Masyarakat (or Community Board of Trustees)
CBO	Community-Based Organization
CDIA	Cities Development Initiative for Asia
CSR	Corporate Social Responsibility
DAK	Dana Alokasi Khusus (Special Allocation Fund)
DG	Directorate General
DGHS	Directorate General of Human Settlements
FS	Feasibility Study
GEF	Global Environmental Facility
GOI	Government of Indonesia
ha	hectare
HH	Household
IDR	Indonesian Rupiah
IUIDP	Integrated Urban Infrastructure Development Program
Kelurahan	Urban Ward
KIP	Kampung Improvement Program
KOTAKU	Kota Tanpa Kumuh (City without Slum)
LG	Local Government
l/s	liters per second
lpcd	liters per capita per day
MCK	*Mandi, Cuci, Kakus* – shower, dishwashing, and latrines
MHT/KIP	Muhammad Husni Thamrin/Kampung Improvement Project
MoF	Ministry of Finance
MOHA	Ministry of Home Affairs
MPWH	Ministry of Public Works and People's Housing
MSW	Municipal Solid Waste

NGO	Non-government Organization
NPMU	National Project Management Unit
NRW	Non-revenue water
NSUP	National Slum Upgrading Project
NUSP	National Urban Water and Sanitation Program
O&M	Operation and Maintenance
PDAM	Perusahaan Daerah Air Minum (local government water supply enterprise)
PDPAL	Perusahaan Daerah Pengolahan Air Limbah (Municipal Wastewater Company)
PFS	Pre-Feasibility Study
PIU	Project Implementation Unit
PMU	Project Management Unit
PRKP	Dinas Perumahan Rakyat dan Kawasan Pemukiman (Housing and Residential Areas)
PSC	Project Steering Committee
RK-2	Rancana Kawasan
RKPD	Rencana Kerja Pemerintah Daerah (annual workplans)
RPJMD	Rencana Pembangunan Jangka Menengah Daerah (national medium-term development program)
RPJMN	Rencana Pembangunan Jangka Menengah Daerah (regional medium-term development program)
SISHA	Slum Improvement in Strategic Human Settlements Area
SOP	Standard Operating Procedures
SPS	Safeguard Policy Statement
SW	Solid Waste
SWM	Solid Waste Management
SWOT	Strengths, Weaknesses, Opportunities, Strengths Analysis
TPA	Tempat Pembuangan Akhir (landfill)
TPST	Tempat Pengolahan Sampah Terpadu (Integrated Disposal Sites)
UPP	Urban Poverty Program
USD	United States Dollar
USDRP	Urban Sector Development Reform Program
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

ES1. The Government of Indonesia (GOI) slum alleviation policy aims to improve access to urban services—drinking water, wastewater and solid waste management, drainage, and local roads—and thereby living conditions for slum residents. While GOI has conducted a range of slum alleviation projects since the 1960s, it currently recognizes that while these have resulted in a reduction in the number of slums and improved access to urban services, they have failed to counter the development of new slums. Considering the existing rapid urbanization rate and the already existing 35,000 hectares of slums nationwide, there is a need to re-assess previous programs and develop a new approach that will accelerate their slum alleviation efforts and prevent the proliferation of new slums.

ES2. Accordingly, the Directorate General of Human Settlements (DGHS) of the Ministry of Public Works (MPWH) submitted an application for project preparation assistance to the Cities Development Initiative for Asia (CDIA) for the Slum Improvement in Strategic Human Settlements Areas (SISHA) Pre-Feasibility Study (PFS), which was duly reviewed and approved. Working under the umbrella of ADB's ongoing assistance program to the Government of Indonesia, CDIA is assisting DGHS to achieve its slum alleviation and development objectives in identified priority cities in Indonesia. Following this PFS, a full Feasibility Study (FS) is planned to further develop the individual city-scale projects and the overall SISHA Project—hereinafter referred to as the Project—which will be tentatively supported by an ADB loan.

ES3. The Project will contribute to the achievement in the selected slum areas of GOI's so called "100-0-100" objective stated in the National Medium-Term Development Plan (2015-2019), in which "0" refers to the elimination of slums and "100" to universal access to clean water and sanitation. The Project will increase the capacities of the central and local governments to formulate integrated slum alleviation programs, improve the integration of pro-poor dimensions into urban planning, and enhance the abilities of municipal utilities to deliver essential urban services.

ES4. As part of this PFS, a new approach to slum alleviation— "The SISHA Concept"—has been developed. This Concept differs from previous approaches in a number of ways: it (i) takes a city-wide rather than site-specific approach to slum alleviation, adding prevention as an important strategy; (ii) integrates the traditional sector-by-sector physical interventions rather than addressing them as silos; (iii) addresses underlying issues such as land tenure, housing, social and economic development; and (iv) tailors its approach according to the nature of each city and its slum areas rather than using a "one size fits all approach".

ES5. Five cities were selected using pre-determined criteria (see paragraph 3), as well as priority slums. Based on the said concept, slum prevention and alleviation strategy frameworks have been developed, including the identification of priority packages.

ES6. In **Banjarmasin,** in the priority area of **Rancana Kawasan 2**—a riparian, flood-prone area—the Project will build upon the city's vision, which is to be a riverine city focused on transportation and tourism. Houses encroaching on rivers or canals will be removed, and in situ two or three-storey houses (with commercial spaces on the ground floor) will be constructed as needed. Support will be provided for upgrading existing houses and the extension of basic urban services—water, sewerage, solid waste management, and drainage—as well as for dredging and the construction of embankments. Riverside piers to facilitate transport and commerce will be constructed.

ES7. In **Cirebon,** in the priority project areas of **Kasepuhan** and **Lemah Wungkuk**, the Project will focus on redeveloping and re-orienting the city's seafront while upgrading services and providing vertical housing for its residents. Using redeveloped coastal land and shallow wetlands, two or three-storey mixed-use buildings will be constructed for residents occupying

untenable sites. Additional commercial facilities—restaurants, a marina, and small-scale stores—will be developed and managed by residents as cost recovery and income generating investment projects. New housing will be constructed in situ or in adjacent areas and the existing basic urban services will be expanded. The city will take measures to reduce flooding and improve drainage through actions upstream.

ES8. **Makassar**'s **Mariso** slum is overcrowded and straddles a canal. The focus of the project will be on improving drainage through upstream dredging, the construction of embankments, expansion of footpaths and, in some limited cases, the relocation of residents. New two or three-storey housing will be constructed with commercial and workshop facilities. Existing urban services will be extended and expanded.

ES9. The focus in **Palembang** will be the **Ulu 1-4** slum adjacent to the Musi River; and the Sekanak area straddling a tributary of the Musi River. In Ulu 1-4 urban services will be extended and expanded, and protective walls against tidal flooding will be constructed where feasible along the Musi River, including some regularization of internal canals. Social services—education facilities and health centers—will be constructed. In **Sekanak**, the Project proposes that some existing houses that are obstructing the inspection road along the river and others that are in poor condition be removed and consolidated with vacant spaces for in situ relocations to new low-rise vertical housing buildings. Infrastructure will be expanded along with social services, as income generating workshops and shops will be provided.

ES10. In **Sorong**, Doom Island and Malawei are the selected priority areas. In **Doom** Island, the Project will focus on supporting the island's development as a self-sustaining entity as a model for other isolated islands elsewhere in Indonesia. A port will be constructed to strengthen connections to the city, facilitate fishing industry activities and promote commercial development. The island's infrastructure networks, including a communal piped wastewater system and a spring-fed drinking water system, will be expanded. Support for pilot urban agriculture schemes will be provided. In **Malawei**, which is a seafront area, urban services will be expanded, both on the basis of existing citywide systems and through internal development. Assistance will be provided to improve individual houses, many of which are on stilts over marshland or open water.

ES11. The proposed investment (including taxes and contingencies) amounts to **USD 118.1 million**, spread across sectors as follows (**infrastructure base costs only**, **in million USD**): 1) Water supply: **6.1**; 2) Wastewater management: **14.4**; 3) Solid waste: **6.4**; 4) Drainage **11.3**; 5) Roads **6**; 6) Firefighting: **0.7**; 7) Flood Protection and coastal development: **2.9**; 8) Jetties and docks: **4.8**; 9) Open Spaces: **2.2**; 10) Housing and buildings: **26.5**. Technical assistance including project implementation support, institutional strengthening, capacity building, and behavior change measures is assessed to amount to USD 14.7 million (about 14% of the Project amount excluding taxes).

ES12. The SISHA Project will be tentatively financed out of a USD 100 million loan to the GOI, a portion of which will then be provided as a grant to the Project cities. Further funding sources—such as participation from the private sector and from the communities—and cost-recovery mechanisms—e.g. repayments of long-term and low interest rate mortgaging loans by slum dwellers for purchasing housing units, rental of shops and rooftop gardens located in the proposed three-storey buildings if not used by the residents—need to be explored in the framework of the subsequent FS.

ES13. **Social impacts and benefits: The social benefits of the Project** will be extensive. Residents of the priority areas will benefit from enhanced access to infrastructure (71,000 direct beneficiaries by the time of project completion), improved housing, livelihood opportunities and security of tenure. Better infrastructure will lead to reduction in health problems. Efforts to increase security of tenure for informal area residents will give the poor greater certainty regarding their situation, increasing family willingness to invest in structures and improve access to credit and public services. Other residents of the cities will also benefit

from citywide interventions such as river dredging or investments in solid waste collection. With expected increased land values and likely additional investments by private investors, city tax revenues will increase as well as citywide job opportunities.

ES14. However, attention will need to be paid to particular groups. Community residents will need to be involved at an early stage so that programs are responsive to their needs. Efforts need to be made to involve women during all stages of the Project design and implementation. Relocation efforts will need to be carefully planned and implemented to ensure that residents are not negatively affected. More attention will need to be paid to the particular needs of the disabled. With many very low-income slum residents, approaches must be developed to support people's participation in the program through cross-subsidies, specific rates for lower income groups and "sweat equity" programs allowing non-monetary contribution from the residents to the investment (for instance, through their participation as workers for the construction activities).

ES15. Based on the initial review of land acquisition and resettlement impacts, as most interventions entail in situ relocation of households, the Project would be categorized in **involuntary resettlement** as: Category A for Cirebon; Category A for Palembang; Category B for Banjarmasin; Category A for Makassar, and Category B for Sorong. Overall, the Project is categorized as Category A for involuntary resettlement.

ES16. **Environmental impacts**: The Project will eventually have significant positive environmental impacts. However, during pre-construction and construction some adverse environmental impacts will temporarily occur, and therefore the sub-projects are classified as Category B (projects judged to have some adverse environmental impacts, but of a lesser degree and/or significance than those of category A). An **initial environmental examination (IEE)** with **environmental management plan (EMP) is required.** Furthermore, a **climate and disaster risk and vulnerability assessment** shall be required during the feasibility study phase.

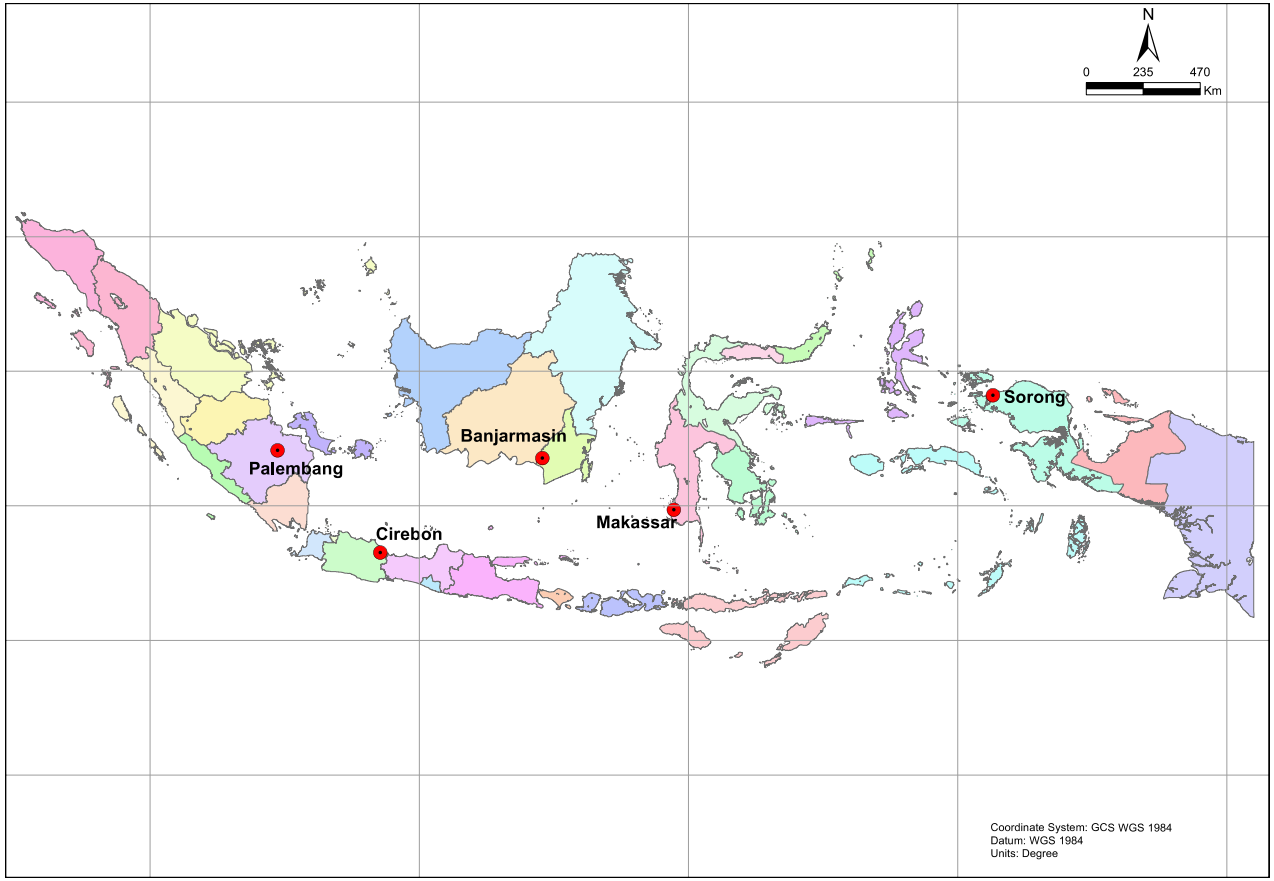
ES17. The Project will be implemented at the national level by a Project Steering Committee which will provide overall guidance and project monitoring. A National Project Management Unit will be established at the MPWH which will be the key implementing agency. Within each city a Project Implementation Unit will be established within the Housing and Human Settlements Agency to manage the day-to-day operations of the Project.

ES18. As part of the subsequent FS, it is also proposed that community involvement mechanisms be defined in greater detail, enabling the business and local communities to co-design some of the Project interventions (e.g. housing and economic development opportunities).

ES19. As in all such projects there are risks that must be addressed—for instance, that the Government will not be committed to the Project, that ADB will not provide a loan, that local government commitments wane, that costs increase to unsustainable levels, or that low levels of capacity in the participating cities impede Project implementation. More specific to this Project is the risk that the slum dwellers refuse to relocate to vertical housing since they are used to living in houses; this risk should therefore be mitigated by involving the direct beneficiaries in the co-design of in situ relocation measures. Further mitigation measures are detailed in Section 4.2. of this Main report.

MAP

Figure 1: SISHA Project cities



1. INTRODUCTION

1. The PFS of the "Slum Improvement in Strategic Human Settlements Area (SISHA) Project" is being supported by the Cities Development Initiative for Asia[1] (CDIA) in close collaboration and coordination with the Asian Development Bank (ADB) and Agence Francaise de Developpement (AFD). Working under the umbrella of ADB's ongoing assistance program to the Government of Indonesia (GOI), CDIA is assisting the Ministry of Public Works and Housing (MPWH) Directorate General of Human Settlements (DGHS), to achieve its slum[2] alleviation and development objectives in identified priority cities in Indonesia. It is intended to fund the SISHA Project via an ADB loan, which is tentatively projected at USD 100 million.

2. DGHS applied for project preparation assistance to CDIA for SISHA. The scope of this CDIA-funded assignment includes the preparation of pre-feasibility studies (PFS) for priority interventions packages in five cities—namely Cirebon, Banjarmasin, Makassar, Palembang and Sorong. This PFS was prepared by a Joint-Venture comprising SCE, Groupe Huit, and FCG Asia, in association with Osana International, hereinafter jointly referred to as "the Consultant".

3. The first phase of the PFS developed a concept that introduced innovative dimensions to the Government's approach to slum alleviation. Then, a city prioritization process was undertaken to select five cities from an initial list of eight, which initially included Surakarta, Mataram, and Balikpapan. The selection criteria included, among others: (i) Commitment of the local government; (ii) Land availability and need for relocation; (iii) Types of slum areas (densely settled and poor housing/infrastructure, slum areas over or adjacent to water, historical slum areas, slum areas susceptible to disasters); (iv) Need for infrastructure interventions; (v) Public willingness and existence of active community organizations; (vi) Experience of the local government in managing other slum alleviation programs; (vii) Existence of possible projects that would fit with the SISHA concept developed in the first phase. A City Prioritization Matrix based on these criteria was prepared, and the proposed list of cities was discussed and agreed upon with CDIA, ADB, and DGHS. After the development of slum alleviation and prevention strategy frameworks for each city, the last phase of the assignment focused on the development of the PFS of priority integrated intervention packages.

4. A wide range of stakeholders, both at city and central level and including multilateral development banks (e.g. ADB, the World Bank, and on-going programs such as KOTAKU), were involved in the Project design through the organization of workshops at various stages of the assignment, on aspects including the concept development, the definition of the strategy frameworks, the identification of priority slums and intervention packages, and the immediate

[1] CDIA is a multi-donor trust fund managed by the Asian Development Bank (ADB). It works closely with medium-sized cities in Asia and the Pacific to address gaps in infrastructure development and financing. It uses a demand-driven approach to support infrastructure projects that emphasize poverty reduction, environmental improvement, climate change mitigation or adaptation, and good governance. To facilitate these initiatives at the city level, CDIA provides a range of international and domestic expertise that can include, among others, support for project preparation studies for high priority infrastructure investment projects.
CDIA is implemented by ADB and Agence Française de Développement (AFD). It receives funding support from the governments of Austria, Germany, Sweden, Switzerland, the United Kingdom and the United States of America, as well as the European Union and The Rockefeller Foundation. It was established in 2007 by the ADB and the German government with the intent of improving the lives of 1.6 billion people in Asia and the Pacific.

[2] According to Regulation of MPWH No. 2/2016, slum settlement is a settlement that is not suitable for residence due to irregularity of buildings, high building density, and low quality of buildings and infrastructure (water supply, sanitation, roads and footpaths, drainage, solid waste management, housing and building lay out, fire-fighting and prevention) as well as residential facilities below standards (article 1 [6]).

and mid-term steps towards the implementation of the SISHA concept and proposed interventions.

2. RATIONALE: SECTOR PERFORMANCE, PROBLEMS AND OPPORTUNITIES

2.1. Performance Indicators and Analysis

5. **National context**: Following the Asian economic crisis in the late 1990s, Indonesia's economy has accelerated over the past ten years; the country's GDP per capita has steadily risen from $857 in 2000 to $3,847 in 2017[3]. Indonesia has also reduced its poverty rate by more than half since 1999, to 9.8% in 2018.[4] Despite such economic growth, significant challenges still remain. Indeed, Indonesia's pattern of growth—relying on palm oil, extractive industries, and luxury real-estate property—has resulted in concentrated ownership and insufficient new jobs. As a result, inequality has increased, with high levels of poverty in the eastern islands, and in rural and coastal areas. Growth has been accompanied by increasing water and air pollution, while climate change impacts are already being felt in the form of intense floods, drought, forest fires, and storm surges.[5] The ADB Country Partnership Strategy thus identifies improved infrastructure services as one of the priority areas in order for Indonesia to achieve more inclusive and environmentally sustainable economic growth.

6. Indonesia has approximately 137 million urban dwellers which account for approximately 54% of the total population. The country's urban population increased at an average rate of 4.1% per year between 2000 and 2010, which is faster than in any other country in Asia and has placed service delivery under strain. By 2025, an estimated 68% of Indonesians will live in cities.[6]

7. **Project cities**: The population and poverty rates as of 2017 are shown below.

Table 1: Population and poverty rate in the Project cities[7]

City	Population	Households (No.)	Population forecast		Poverty rate
			2030	2050	
Cirebon	313,325	83,777	405,836	604,235	9,66%
Banjarmasin	692,793	179,460	815,261	1,047,261	4.19%
Sorong	239,815	51,545	361,626	680,291	NA
Palembang	1,623,099	405,775	1,849,617	2,261,358	11.40%
Makassar	1,489,011	358,054	1,765,775	2,295,297	4.59%

8. **Slum areas:** Slums are a prominent feature of urban areas in Indonesia despite the efforts made in the past decades to alleviate them. The World Bank estimates that about 22% (approximately 29 million) of Indonesia's urban population lives in slums, which cover more than 38,000 hectares of land. The National Medium-Term Development Plan (2015-2019) sets a so called "100-0-100" development objective by 2019, whereby "0" refers to the elimination of slums and "100" to universal access to clean water and sanitation.

[3] Indonesian Statistical Central Agency (BPS) 2018 report

[4] The World Bank in Indonesia (https://www.worldbank.org/en/country/indonesia/overview)

[5] ADB Country Partnership Strategy. 2016. *Indonesia 2016-2019: Towards a Higher, More Inclusive and Sustainable Growth Path*.

[6] *Indonesia National Slum Upgrading Project*. Project Information Document (https://www.flandersinvestmentandtrade.com/export/sites/trade/files/attachments/Water%20sanitation%20transport%20WB%2BAIIB%20project%20Indonesia%202016.pdf)

[7] The data summarized in tables or paragraphs dealing with several cities can originate from various sources: in that case, the sources are mentioned in the individual City Reports

9. Slum improvement efforts have intensified since the end of the 1960s, in particular with the Kampong Improvement Program (KIP) which was implemented from 1969 to 1982 in many cities and which resulted in improved living conditions in 18,000 hectares of urban slums. The current slum improvement projects are run under the umbrella of the KOTAKU platform (KOTAKU is an abbreviation of "Kota Tanpa Kumuh" or Cities without Slums). The two major on-going projects—NSUP (National Slum Upgrading Program) and NUSP-2 (Neighborhood Upgrading Shelter Project)—target altogether about 19,000 hectares of slum areas; as a result, it is doubtful that the "100-0-100" target can be achieved. Besides, as these projects deal with only a part of the attributes which define an area as a slum, some of the targeted areas would still be classified as slums after these projects are completed. The proposed Project builds on these past initiatives by encompassing such areas.

10. In the Project cities, most slums are located along riverbanks or the seashore, and near the city centers. ***Table 2*** shows the surface area and population of areas classified as slums in each city under the existing Mayoral Decrees.

Table 2: Population and surface of slum areas in the Project cities

City	Surface and share of slum areas (has / %)	Population of slum areas, and share of total population
Cirebon	122.66 (1.6%)	72,651 inh. (23.2%)
Banjarmasin	308.89 (3.1%)	66,997 inh. (9.67%)
Sorong	116.13 (0.11%)	21,274 inh (8.87%)
Palembang	2,251 (5.6%)	221,393 inh. (13.6%)
Makassar	739.90 (3.7%)	85,520 inh (0,6%)

11. Rationale for selecting priority slums: In 2015, DGHS, through the BAPPEDAs (*Badan Perencanaan Pembangunan Daerah* or City Development Planning Agency), developed profiles of the slums in key cities in preparation for KOTAKU. Slums were ranked based on the criteria of infrastructure deprivations, social aspects and degree of urgency. Based on these profiles, as well as the city's proposals and site visits, slums meeting at least half of the GOI's priority criteria were selected. The criteria were as follows: (i) at plain with heavy slum; (ii) along bodies of water; (iii) at disaster prone areas; and in addition (iv) at historical and traditional areas[8]. The selection was further confirmed in a city consultation with key city stakeholders (LG, NGOs, Academia and the press). See ***Table 3*** for the classification of slums in each of the five cities according to the selection criteria.

Table 3: Slums classified according to the selection criteria

City	Slum area	Over-crowded*	By water bodies	Disaster prone	Historic/ traditional
Banjarmasin	Rencana Kawasan 2	X	XX		XX
Cirebon	Kasepuhan	XX	XX	XX	
	Lemah Wunkuk	XX	XX	XX	
Makassar	Mariso Canal	XX	XX	XX	
Palembang	Sungai Sekanak	XX	XX		
	Ulu 1-4	X	XX		XX
Sorong	Doom Island	X	XX	XX	XX
	Malawei	X	XX	XX	XX
	*** X in some areas XX throughout**				

12. **Urban services:** Urban services in Indonesia are far from sufficient, even though efforts have been made to meet the increasing demand of the urban population. Nationally, out of four services generally provided in urban areas (water supply, wastewater management, solid waste management and drainage), only public water supply enterprises (PDAMs) are providing a reasonably good level of service. According to the PDAMs Performance Report (2017), PDAMs served 45.9% of the national urban population in 2017. The remaining

[8] As per the Minister of Public Works and Housing's classification under Regulation No. 2/2016

population is served by private water companies or uses its own wells. Other services have even lower levels of coverage, such as wastewater management, to which only 0.05% of the urban population has access.

13. **Water supply**: The performance of the water supply utilities of the Project cities with regard to selected key parameters is summarized in Table 4.

Table 4: Summary of performance of PDAMs in the selected cities in 2017 (as defined by BPPDAM, "healthy" = score >2.8)

Indicator	Banjarmasin	Cirebon	Makassar	Palembang	Sorong
Service coverage (%)	100	84	70	96	30
Service hours (h/d)	24	19	22	12	3
Installed capacity (lpcd)	220	260	210	180	214
Actual production (lpcd)	160	240	200	170	110
NRW (%)	30	29	48	19	39
Water quality (%)	98	96	100	100	80
Return on Equity (%)	2	13	21	18	N.A.
Operational ratio	0.91	0.91	0.82	0.66	N.A.
Billing/collection efficiency (%)	90	95	98	98	60
Overall assessment (max 5)	**3.65/healthy**	**3.76/healthy**	**3.62/healthy**	**3.74/healthy**	N.A.

Source: BPPDAM, 2017 and PT. Tirta Remu

14. These PDAMs have slightly improved their overall performance rating in the last couple of years (2015-2017), except Palembang. All except Banjarmasin, which already has a very high connection rate, have expanded their service coverage, reduced non-revenue water and provided more reliable water pressure to their customers.

15. **The main issues:** Despite a good performance rating, PDAM Banjarmasin increasingly has difficulty maintaining adequate pressure in the distribution system—less than 6% of the customers had adequate pressure in 2017. Though PDAM Makassar has made great progress in pressure management, the NRW level remains very high. The low connection rate may indicate a high number of non-paying customers. PDAM Palembang performs well in some areas (service coverage, NRW, and water quality), and better than the other four utilities in pressure management; that said, since water is supplied intermittently, it suggests that pressure cannot be maintained.

16. **Wastewater management:** Off-site wastewater treatment is not yet developed in Indonesia. There are only a few wastewater treatment plants (WWTPs) in operation; some of those are in the Project cities. In Cirebon and Banjarmasin, the existing WWTPs cover about 10% (7,400 house connections) and 5% (7,000 house connections) of the city population respectively and are compliant with the national regulations on effluent discharge. In Makassar, there is only one WWTP, which provides coverage for about 1% of the population. The total installed capacity is thus far from sufficient. Yet, existing plants are underutilized: in Banjarmasin, only 3% to 23% of the design capacity is in use and in Cirebon 3% to 43%. One reported explanation is the reluctance of households to pay a monthly wastewater surcharge. The following WWTPs are also being built:

- Banjarmasin: Sultan Adam (2,000 m^3/d);
- Makassar: under the Losari Off-site Wastewater Collection System and Treatment, a WWTP with a capacity of 7,000 m^3/d (16,000 HH) is to be completed by the end of 2020;
- Palembang: a WWTP serving 21,700 commercial and domestic properties.

17. Therefore, the vast majority of urban residents in the selected cities rely on on-site individual wastewater treatment systems (septic tanks) or decentralized wastewater treatment systems (DEWATS) servicing up to 70 households. While the performance of WWTPs is acceptable, randomly visited DEWATS were out of order, due to neglected maintenance and a lack of influent due to blocked or broken sewers. The disposal of septage is another problem.

Both Banjarmasin and Makassar have passed a regulation making desludging every other year compulsory. As for Makassar at least, this regulation is not respected, according to the septic tank desludging rate (2,000 HHs per year). This suggests that when households have to arrange and pay for septic tank emptying themselves, as it is the case in Makassar, they tend to delay or avoid using emptying services. The dumping of septage in canals, rivers, and so on, is common as vacuum truck operators try to avoid driving to disposal sites.

18. As a result, black water generally tends to leach into the subsoil or is conveyed untreated to the drainage system and ultimately discharged into canals, rivers and the sea.

19. **Drainage**: The performance of drainage has been improved through the expansion of networks, dredging of canals and rivers, and, in several cities, the provision of city maintenance workers who look after drainage channels. Some cities also plan to invest in this sector. For instance, Cirebon plans to separate stormwater and wastewater systems, to increase the retention of stormwater in parks and ponds, and to improve maintenance. Palembang plans to dredge the Musi River and main drainage canals, as well as build new infrastructure and rehabilitate existing systems, such as culverts, interconnections, flood gates, pumping stations, additional canals and retention ponds.

20. Meanwhile, drainage services face heavy challenges, such as the extension of unplanned settlements and paved surfaces, settlements that are low lying or below water, and increasing flood levels. Besides, the capacity of the drains is usually restricted due to the dumping of garbage and poor maintenance. All Project cities, except Sorong, have a flat topography or are located in low-lying areas; parts of Banjarmasin in particular are located below the mean sea level. Hence, in the four cities, a mix of wastewater and stormwater often floods residential areas.

21. **Solid waste management**: Overall, the country's urban population is estimated to generate about 85,000 tons of solid waste per day but only about 40% ends up in landfill or open dumps.[9] Based on the above rate of solid waste disposal, most dumping sites in urban areas will be full in less than five years. Thus, the development of measures such as 3R (reduce, reuse, and recycle), "waste banks" and waste-to-energy, is expected in the future. A waste bank allows individuals to deposit solid waste, which is sorted, weighed and given a monetary value which is then deposited in an account, based on rates set by waste collectors. The bank then sells the waste onwards. The individuals can then "withdraw" money from their account, as with a traditional bank.

22. The municipal solid waste (MSW) generated daily in the Project cities is as follows:

- Banjarmasin: 720 tons, of which about three quarters disposed of;
- Cirebon: 270 tons, two thirds disposed of;
- Makassar: 700 tons, 95% disposed of;
- Palembang: 1,080 tons, about 60% disposed of;
- Sorong: 96 tons, about 55% disposed of.

23. All Project cities have landfill sites (*Tempat Pembuangan Akhir* or TPA) but they are operated as open dumps rather than sanitary landfills. Makassar has actually transformed the TPA into a transfer station from where waste is eventually transported to a regional TPA. The remaining operating times vary between five years in Cirebon to 16 years in Sorong. The Project cities also have Integrated Disposal Sites (*Tempat Pengolahan Sampah Terpadu* or TPST) where waste is deposited and handled following a 3R approach, and waste banks are common. For example, the waste bank in Makassar City has around 11,000 members.

[9] Indonesia National Slum Upgrading Project. Project Information Document (https://www.flandersinvestmentandtrade.com/export/sites/trade/files/attachments/Water%20sanitation%20transport%20WB%2BAIIB%20project%20Indonesia%202016.pdf)

2.2. Analysis of Key Problems

24. **Water supply**: Access to piped water supply differs in the selected priority slum areas (70% in Lemah Wungkuk, 100% in Sekanak, 95% in 1, 2, 3/4 Ulu, 80% in RK-240% in Mariso, 60% in Malawei, and 0% in Doom Island). Households without access to a piped water supply rely on a mix of various water sources, some of which are unsafe (rivers, contaminated private wells). Water is usually bought from private vendors for drinking and cooking purposes, but at a much higher price than the tariff charged by PDAM. Even in areas where the access rate is high, low pressure and intermittent supply are issues which are commonly reported.

25. **Wastewater management / improved sanitation**: Nationwide, there is considerable inequality in terms of access to improved sanitation, with 100% access for the richest two quintiles compared to only 36% for the poorest quintile. None of the selected priority slum areas benefit from a centralized treatment system. Open defecation and/or direct discharge of excreta in the waterways remain an issue in all Project cities, and especially in slum areas, where hanging toilets discharging directly into rivers and the sea are rather common, particularly in houses on stilts. Some households in Banjarmasin use shared latrines. Septic tanks, as in other parts of the Project cities, are poorly maintained.

26. **Drainage and solid waste management**: All priority slum areas are located on or close to river banks, and/or on the seashore, i.e., downstream of catchment areas. As a result, they are affected by poor drainage, and are regularly flooded by a mix of wastewater and stormwater which also carries solid waste originating from upstream areas. Slums located on the seashore are impacted by sea floods during high tide, which also flush back solid waste. Careless dumping of garbage citywide and within the slums also clogs drains and canals. This emphasizes the necessity to provide infrastructure not only in the slum area, but also at a larger scale (drainage catchment area or any other relevant scale); if the interventions are inadequately scaled to need, they will not achieve the expected results. This also shows that drainage, wastewater treatment and solid waste collection need to be improved in parallel.

27. Besides improved urban services, slum dwellers also need to be provided with job opportunities or income-generating activities, hence the necessity to implement **local economic development** actions, and **social services**.

28. As demonstrated by most past slum alleviation initiatives in Indonesia, the parallel implementation of a **slum prevention strategy** to support slum upgrading efforts is lacking. This results in a limited impact on the absolute numbers of slum dwellers, as new slums appear while others are upgraded.

29. The following institutional and regulatory issues have also been identified: (i) Coordination between the various local government agencies responsible for slum alleviation efforts; (ii) Conflicts between programmatic approaches and procedures for infrastructure interventions and land tenure regulations managed by the central and local governments; (iii) Difficulties for local governments in developing and implementing long-term slum prevention and alleviation strategies.

2.3. Development Opportunities

30. The Project builds on the on-going slum alleviation program KOTAKU but would expand it to include citywide and slum prevention interventions. As such, it is complementary to KOTAKU and may contribute to improving the sustainability of its results. At a meso-level, development opportunities differ from city to city:

31. **Cirebon:** Cirebon welcomed about one million tourists in 2017. A new international airport—the second largest airport in Indonesia after Soekarno-Hatta on the outskirts of Jakarta—about 60 kilometers from the City of Cirebon, has been in operation since May 2018. This has triggered an increase in the number of hotels in Cirebon, which reflects the growing

tourism industry in the city in general. Besides, the City Government plans to develop an inspection road that runs along the seashore of Kasepuhan and Lemah Wungkuk, where coastal slums are located and south of an existing tourism area. Therefore, there is potential for the development of the tourism industry locally.

32. **Banjarmasin and Palembang:** Both cities are river based and respectively welcome one and two million tourists annually. Banjarmasin sees itself as a regional trading center and is developing its port facilities, Palembang as a regional hub wanting to enhance its role as a trade hub with links to other parts of the region via its river. In addition, the City Government of Banjarmasin also envisions river tourism as the key driver of the city's economic activity in the future. To address these needs, the proposed interventions include the development of river transportation systems. Opportunities for trade, tourism, income generation, and improved connectivity within the city and with the region will benefit city dwellers at large and slum dwellers in particular.

33. **Sorong:** Fishing is an important economic activity in Doom island, which even used to have its own fish processing factory. Developing this industry and trade with the city would improve the livelihood of the slum dwellers. Malawei is located close to the city center.

34. **Makassar:** Makassar is one of the few Indonesian cities where economic growth is outpacing Jakarta and the rest of the island of Java. The Mariso Canal, in particular, is located close to the city center, which is a fast-developing area where land value is rapidly increasing.

3. THE PROPOSED PROJECT

3.1. Impact and Outcome

35. **Impact:** The Project will contribute to the achievement in the selected slum areas of GOI's so called "100-0-100" objective stated in the National Medium-Term Development Plan (2015-2019), in which "0" refers to the elimination of slums and "100" to universal access to clean water and sanitation.

36. **Outcome:** The Project will result in a reduction in the number of slum residents in each Project city.

3.2. Outputs

3.2.1. A new concept

37. Target 1 of Sustainable Development Goal 11 states that: "By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums". Based on lessons learnt globally, this goal is further outlined in paragraph 109 of the New Urban Agenda as aiming to: "consider increased allocation of resources for *upgrading* and *prevention* of slums with strategies that go beyond physical and environmental improvements, to ensure that slums are integrated into the social; economic; cultural; and, political dimensions of cities. These strategies should include […] access to sustainable, adequate, safe, and affordable *housing*; *basic and social services*; and safe, inclusive, accessible, *green*, and *quality public spaces*; and they should promote *security of tenure* and its *regularization*, as well as measures for conflict prevention and mediation."

38. The SISHA concept elaborates on these two global commitments by UN Member States. Its differences compared to other approaches are summarized in Table 5:

Table 5: SISHA concept in comparison to traditional slum upgrading projects

	SISHA concept	Traditional slum upgrading
Scale	**Citywide approach** with an overall vision for the city and its slums, linking slums being upgraded to the city fabric with important linkages including jobs, road networks, access to social facilities, and ensuring that issues are tackled at the right geographic scale (drainage for instance)	**Locality/site** interventions only at settlement or slum level, in isolation of the city
Themes/ elements	**Integrated and holistic investment combining:** ❑ **Physical improvements** as per the seven areas of the traditional concept focusing not only on access but also on the **quality of the service** provided ❑ **Local economic development** addressing job creation and income generation ❑ **Environmental** protection and regeneration ❑ **Provision of affordable land and housing** options to prevent new slum formation ❑ **Provision of social services** such as education facilities or health centers ❑ **Increased resilience** through risk prevention (fire, flood, etc.) and risk management investments (shelters, safe havens)	Focus only on **physical improvements of:** (1) water supply; (2) sanitation; (3) solid waste management; (4) storm drainage; (5) housing; (6) roads; and, (7) fire protection
Timeframe	❑ Projects embedded in **a long-term slum alleviation and prevention strategy**, thereby reducing the risk of new slums forming in the first place and ensuring that the interventions build upon the city development and growth plans ❑ **A programmatic approach based on phased investments**	One-shot projects, focusing only on slum upgrading
Other innovative features	❑ Provision of **security of tenure** to the slum dwellers, and land reform and policies ❑ Based on a community-driven approach ❑ Mobilization of **communities and the private sector as partners** in planning, implementation, management and financing ❑ Cost recovery through **land value capture** and private sector involvement.	

39. **Partnership driven slum alleviation and prevention**. Through the subsequent FS and implementation phases, SISHA will foster partnerships between the local governments, informal settlement dwellers, the business community, academia and civil society (NGOs, CBOs and Faith Based Organizations (FBOs), the media and others). The aim is to integrate partnerships with CSR and ASR (corporate and academic social responsibility) and FBOs, thus, bringing on board the financial, intellectual, human and spiritual capacities to address slum and poverty alleviation.

3.2.2. Infrastructure Interventions

40. All cities will benefit from interventions aimed at improving water supply, solid waste management, drainage, fire protection, and roads, as described in

41. Table 6. Integrated intervention packages have been defined for each Project city. These include pilot or demonstration subprojects—hereinafter called “featured” projects—which aim to foster local economic and social development. These projects build on a vision developed for each city, based on the city’s specific historical and cultural background, as well as on its strengths and development opportunities. Further details and better resolution pictures are provided in the City Reports (Volumes 3 to 8 of this Final Report).

Table 6: Upgrading interventions

Sector	Description of the sub-project	Scale / beneficiaries
Wastewater management	The intervention aims at providing **100% access to improved sanitation**. In all cities but Sorong, a sewer network including house connections will be developed in the slums and interconnected with the municipal network, for the effluents to be treated by existing WWTPs or WWTPs under construction (in Makassar for instance). Houses which cannot be connected to the network—e.g. houses on stilts—will be provided with individual or	Within the selected slum areas Approx. **71,000 direct beneficiaries** by

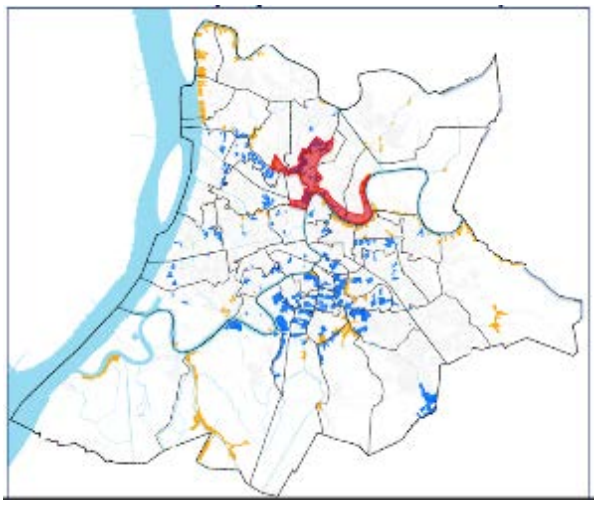
	shared septic tanks, or with communal treatment units (25 to 50 HHs). In Sorong, a mix of on-site treatment facilities will be provided to all households. In all cities, MCK (shared showers, latrines and dishwashing facilities) will be provided for households with no access to such facilities. This support needs to be associated with capacity building on O&M of communal units and shared facilities, and institutional strengthening for septage management. Awareness on and willingness-to-pay for improved sanitation should be raised via a combination of approaches (Community Led Total Sanitation, sanitation marketing, etc.).	completion of the Project (2024): - Banjarmasin: 10,000 - Cirebon: 9,000 - Makassar: 7,000 - Palembang: 30,000 - Sorong: 15,000
Water supply	The intervention aims to provide **100% access to a quality water supply**. House connections and water meters will be provided or rehabilitated, and network performance will be improved with the installation of booster pumps or reservoirs, and the creation of District Metering Areas. This is to be coupled with awareness raising on the use of safe water, to encourage HHs to stop using water from unsafe sources, and capacity building for PDAM.	
Roads	Widening of roads and rehabilitation of deteriorated pathways, solar street lights.	
Fire protection	Besides the widening of roads and the creation of open spaces, provision of fire hydrants and firefighting equipment	
Solid waste	Provision of bins, and small capacity collection equipment (hand carts, motorcycle dumpers) and temporary disposal facilities	
	Provision of collection and transportation equipment at the district scale (trucks). Behavior change measures to prevent illegal dumping of solid waste and promote 3 R. Institutional strengthening to improve solid waste collection.	District and city scale
Housing	Construction of three-storey buildings, each featuring four apartments, shops and workshops at ground floor level and green roofs	476 HHs (44 HHs in Palembang and Banjarmasin, 148 HH in Cirebon, and 240 HH I Makassar)
Drainage & flood protection	Improvement of the drainage system: canal dredging and embankments, creation of ditches and drains. Tidal flood protection for coastal slums to prevent solid waste from being flushed back during high tide.	Catchment area

42. **Banjarmasin – Selected slums**: The selected slum, Rancana Kawasan 2 (RK 2), is a riparian flood-prone area (46.4 has) that has not been addressed by other programs (Figure 2).

43. **Banjarmasin – Vision**: The use of the rivers is anchored in the cultural background of Banjarmasin. Banjarmasin wants to promote the river and waterways as key city features, including as a transportation system for trading and tourism. Notably, the selected slum areas are home to heritage buildings and handicrafts (in particular Sasirangan batik, a traditional batik from South Kalimantan). The Consultant builds on this vision including the construction of multi-use piers in the slums and elsewhere in the city for city and slum dwellers to benefit from these interventions.

44. **Banjarmasin – Featured intervention** (Figure 3): Development of a **river transportation system** including construction of piers in slum areas for: (i) Docking of ferryboats, river buses, taxis, rowing boats; (ii) Firefighting with river water pump-driven hydrant; (iii) Municipal services provision and inspection (solid waste or septage collection). The piers will be equipped with retail kiosks and passengers seating areas. To support economic activity and tourism in the slums, **heritage buildings** will be rehabilitated, and a **batik center** built. Education and health facilities will be built for the residents.

Figure 2: Location and boundaries of Rencana Kawasan 2 (RK 2) in Banjarmasin

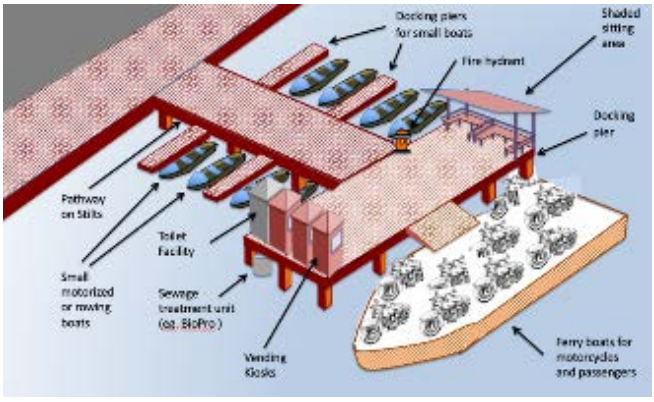


RK 2 slum area in the city

RK2 Slum area (red) and impacted areas

Figure 3: River transportation and circulation improvement

River jetties for circulation network



Conceptual design for multi-vessel jetty

45. **<u>Cirebon</u> – selected slums (Figure 4)**: The selected slum areas are Kasepuhan (20.89 has) and Lemah Wungkuk (19.4 has).

Figure 4: Location and boundaries of Kasepuhan and Lemah Wungkuk in Cirebon

46. **Cirebon – Vision**: Most of the city seafront is occupied by slums or protected natural areas (mangroves which are jeopardized by the growth of the slums). In order for the city to regain access to the seafront from slum development, the concept calls for a coastal development project for Cirebon. This will provide the city with an outlet to the sea both for

visitors from the city and outside, providing opportunities for recreation and leisure and more importantly providing much-needed services, job opportunities and fire-fighting capability for the slum areas it abuts.

47. **Cirebon – Featured intervention** (Figure 5)

- Flood protection with coastal flood wall and inspection road
- Coastal development on reclaimed land to transform seafront, including:
  - Marina (fishing, leisure...)
  - Restaurants and food stalls
  - Open & recreational spaces
  - Three-storey vertical houses with: (i) Housing units, (ii) Retail, services & workshops, (iii) Preschools and clinics; (iv) Green roofs (urban agriculture)

Figure 5: Coastal development in Cirebon: Indicative Layout and Cross-section

48. **<u>Makassar</u> – Selected slums**: The selected slum area is Mariso (26.04 has). It is overcrowded and straddles a canal that is not functioning to its full capacity.

49. **Makassar – Vision:** To address storm drainage inefficiencies in Makassar, the concept of intervention at city and slum level will focus on improving stormwater drainage by improving the capacity of the Mariso canal. The intervention will focus on the Mariso slum area and will extend beyond it to the contiguous areas. **Water sensitive approaches** or **other approaches** on improved management of the hydrological water cycle (e.g. sponge cities) can be applied through the introduction of green roofs, green pavement, rainwater harvesting, etc. This intervention will serve as an example for stormwater management for the city.

50. **Makassar – Featured interventions**: The improvement of the canal requires extensive in situ relocation which allows to introduce:

- A road along both sides of the improved canal;
- Three-storey vertical houses) with: (i) Ground floor retail, services, workshops & garages; (ii) 2nd & 3rd floors: four housing units; (iii) Green roofs for urban agriculture & rainwater harvesting;
- Open and green spaces;
- Social services, pre-schools, health unit, which can also serve as safe havens.

51. **Palembang – Selected slums (Figure 6):** The city officials had requested that the Consultant focus on the Sekanak River site with a slum on the banks of the river on land. The Consultant requested permission to also review the large slum areas on the southern side of the Musi river, the slums areas of Ulu 1, 2, 3 and 4.

Figure 6: Selected areas Sekanak and 1-4 Ulu in Palembang.

Sekanak 1-4 Ulu location | Selected area along Sekanak | 1-4 Ulu area

52. **Palembang – Vision**: The vision of Palembang is to promote the river and waterways as key city features, primarily as a transportation corridor for trading and tourism. Moreover, the local government has started to embellish the Sekanak river banks and plans to redevelop the slum area. In order to prevent this plan resulting in a gentrification of the area or from being merely a superficial embellishment project, an alternative development, which takes into consideration the buildings already negotiated for removal, is proposed. This alternative scheme proposes that additional run-down buildings be demolished and that these be consolidated with vacant spaces. This will provide a large area of land along the river for the development of mixed-income and mixed-use residential zones.

53. **Palembang – Featured intervention** (Figure 7):

- **River transportation system** with similar components to that of the Banjarmasin intervention
- **Redevelopment of the Sekanak slum area** including: (i) widening of the inspection road along the Sekanak river; (ii) relocation of dwellings to in situ three-storey houses (with shops on the ground floor and green roofs); (iii) community services (pre-school, health clinic, etc.)

Figure 7: Indicative redevelopment scheme for Sekanak slum area

54. **Sorong – Selected slums (Figure 8)**: Doom Island and the Malawei slum are the priority slum areas addressed in the Project.

Figure 8: Location and boundaries of Doom Island and the Malawei slum in Sorong.

Doom and Malawai Location

Doom Island slum boundaries

Malawei slum boundaries

55. **Sorong – Vision:** Doom Island needs to become **self-sustaining** in the long term. Therefore, as part of the upgrading of the slum areas, the proposal is to include self-sustaining urban and architectural interventions. Experimentation is encouraged here as there are many similar islands in Indonesia that could benefit from these concepts. Malawei will benefit from slum upgrading interventions as described in Table 6.

56. **Sorong – Featured intervention**:

- Enhancement of local means of subsistence through the revitalization of the local fishing industry: (i) port improvement for: large cargo ships, small cargo and goods boats, passenger transportation and fishing boats; (ii) fishing facilities: seafood market/processing & food kiosks, refrigeration facilities
- Restriction of the dependence on the mainland for instance thanks to: management of water demand via rainwater harvesting and/or wastewater reuse to preserve groundwater sources; promotion of 3R & zero waste approaches to limit waste transportation to the mainland, introduction of renewable energies.

3.2.3. Institutional Capacity Development and Institutional Strengthening

57. Based on an institutional and legal analysis, an Institutional Capacity Development Road Map has been prepared. It includes measures relating to Project implementation such as the setting-up of implementation structures (Project Steering Committee and Management Units) and capacity building for implementing ADB-funded projects (e.g. project implementation support, and the provision of training in financial management, procurement, construction management, and social/environmental safeguards), and for assets management (towards PDAM and wastewater utilities). In this regard, as part of the subsequent FS, it is also proposed to further define community involvement mechanisms enabling the business and local communities to co-design some of the Project interventions (e.g. housing and economic development opportunities).

58. **Changes to the legal/regulatory framework** are recommended: Besides regulations relating to solid waste and fecal sludge collection, an emphasis is placed on land tenure with the proposal to (i) ensure consistency between central and local regulations regarding the legality of settlements along riverbanks or foreshores; (ii) support efforts to regularize tenure status when applicable; and (iii) support cities in stipulating the boundaries of riverbanks and foreshores to provide clarity as to where housing is permitted.

59. As slum prevention is a key aspect of the Concept, it is proposed in addition to:

- Provide assistance to local governments in developing **long-term strategies and plans for citywide slum alleviation programs**: Such plans should identify (i) viable infill areas for affordable housing to lower income groups; (ii) new zones to be designed as mixed-used areas to provide jobs and income-generating opportunities for prospective residents. These areas would be designed to accommodate residents of informal areas that need to be de-densified or for the relocation of residents in areas exposed to life-threatening hazards, and should be seen as alternatives to the formation of new informal areas; and

- Strengthen coordination mechanisms between key agencies at the local and national levels, including collaboration and joint planning between infrastructure, planning, economic investments, transportation and other departments to plan urban infill areas as well as expansions for informal development prevention.

3.3. Project Investment Plan

60. The proposed investment is around USD 23 million per city including physical contingencies (Table 7) or a total of USD 118 million including contingencies and taxes.

Table 7: Summary Project investment costs (USD)

No	Sector		Banjarmasin	Cirebon	Makassar	Palembang	Sorong	TOTAL
A	**Water supply**		710 000	670 000	490 000	1 605 000	2 630 000	6 105 000
B	**Wastewater**		5 075 000	1 650 000	1 800 000	3 255 000	2 595 000	14 375 000
C	**Solid waste**		1 625 000	600 000	700 000	1 490 000	1 960 000	6 375 000
D	**Drainage**		2 930 000	1 585 000	1 960 000	2 805 000	2 060 000	11 340 000
E	**Roads**		1 395 000	595 000	900 000	1 085 000	2 055 000	6 030 000
F	**Fire protection**		135 000	45 000	90 000	125 000	285 000	680 000
G	**Flood protection and coastal dev**		15 000	2 795 000		90 000		2 900 000
H	**Jetties and docks**		990 000	770 000		800 000	2 200 000	4 760 000
I	**Open spaces**		300 000	500 000	60 000	1 020 000	330 000	2 210 000
J	**Housing and buildings**		3 590 000	7 040 000	9 250 000	3 780 000	2 805 000	26 465 000
	Sub-total A to J		***16 765 000***	***16 250 000***	***15 250 000***	***16 055 000***	***16 920 000***	***81 240 000***
	Physical contingencies	**5%**	838 250	812 500	762 500	802 750	846 000	4 062 000
K	**Soft components**	**15%**	2 514 750	2 437 500	2 287 500	2 408 250	2 538 000	12 186 000
L1	**Land acquisition and resettlement costs**		983 000	1 767 000	1 971 000	643 000	1 637 000	7 001 000
L2	**Environmental compensation**	**1%**	167 650	162 500	152 500	160 550	169 200	812 400
	A to L (with phys. contingencies)		***21 268 650***	***21 429 500***	***20 423 500***	***20 069 550***	***22 110 200***	***105 301 400***
	Price contingencies	**2%**	425 373	428 590	408 470	401 391	442 204	2 106 028
	A to L (with all contigencies)		***21 694 023***	***21 858 090***	***20 831 970***	***20 470 941***	***22 552 404***	***107 407 428***
	Tax	**10%**	2 169 402	2 185 809	2 083 197	2 047 094	2 255 240	10 740 743
	GRAND TOTAL		**23 863 425**	**24 043 899**	**22 915 167**	**22 518 035**	**24 807 644**	**118 148 171**

3.4. Financing Plan

61. The financing sources for the Project will include funds from ADB and counterpart funds i.e.

- contribution from the National Government of around at least 15% (assumed level of 20% in the financial analysis), funding at a minimum the land acquisition and resettlement costs, and the environmental mitigation measures;
- funds from the cities' budget; and potentially
- contributions from the community and beneficiaries; and
- other co-financier and/or private sector funds.

62. The Project and its subsequent phases are proposed to be financed out of a loan to the GOI (USD100 million in case GOI contributes to 15% and that no other funding sources are mobilized), a portion of which will then be granted to the Project cities. Further funding sources and mechanisms (e.g. mortgage loans to slum residents, participation of the private sector to the interventions fostering local economic development such as the jetties and marina) need to be explored during the subsequent FS.

3.5. Implementation Arrangements

63. The main implementation agency is the MPWH. It is foreseen that the project preparation be finalized thanks to a nine-month feasibility study after completion of this PFS, then that the Project be implemented over four years and completed early 2024.

64. A National Project Steering Committee (PSC) will be established with high-level participation from key ministries, likely consisting of BAPPENAS (National Development Planning Agency), the Ministry of Finance, Ministry of Home Affairs and MPWH. Its function will be to provide overall policy guidance to the Project. Additionally, a National Project Management Unit (PMU), which should be established within MPWH, will act as the key interface between national agencies and the local governments. Project Implementation Units (PIU) will be established in each Project city. Mechanisms to allow the participation of a wide range of stakeholders in the project design, implementation—e.g. involving a local university or NGO in the design and implementation to engage with the communities and stakeholders, in order to better broker agreements and ensure commitments and ownership of the proposals from all parties—and financing need to be explored under the subsequent FS.

4. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS AND RISKS

4.1. Major Benefits and Impacts

4.1.1. Institutional and Policy

65. The Project will strengthen the participating local governments' ability to effectively develop and implement slum alleviation programs that address the needs of their residents. It will do so through targeted institutional capacity development efforts and through project consultants working with officials during the development and implementation phases. The key benefits will include: 1) local governments will have a better understanding of the need for long-term, citywide programs rather than the current approach based on short-term, one-off projects focused on narrowly-defined slum areas; 2) local governments will better understand the need to focus, at an early stage, on slum prevention efforts; 3) coordinating mechanisms will be strengthened to ensure that the inputs of various technical agencies are better targeted and synchronized; 4) personnel and agencies will be better able to implement programs in addition to the SISHA Project; and 5) local regulations related to tenure security will be clarified and better enforced.

4.1.2. Social

66. **Expected positive impacts**: Overall, the Project is expected to contribute to a decrease in urban poverty and an improvement in the urban environment in the Project cities as: (i) the improvement and availability of clean water, drainage, and sanitation will improve public health, and the latter two will also improve the urban environment in the impacted areas; (ii) households being relocated will benefit from improved housing built following safety and health standards; (iii) livelihoods and resilience of the slum dwellers will be improved by providing work opportunities associated with the infrastructure developed, including during construction, access to health and education services, safe havens and other disaster-resistant infrastructure. Long-term business opportunities will be diversified and improved through the provision of shop space at ground floor level and small market areas, both associated with appropriate business and vocational training; (iv) better access to and within slum settlements will be beneficial overall for economic activity and safety.

67. **Potential negative impacts and proposed mitigation measures**: Though the social impacts of the Project mainly originate from land acquisition and resettlement, there are some social risks that need to be mitigated. The major ones are: (i) slum dwellers, including vulnerable groups and women, will only benefit marginally from the business and livelihood opportunities compared to other stakeholders (e.g. the private sector) —this calls for the co-design of local economic development interventions with the involvement of slum communities, measures allowing their participation during implementation (e.g. criteria on the employment

of local workers in bidding documents) and an affirmative approach in helping vulnerable beneficiary groups; (ii) slum dwellers are used to living in houses, making apartment options potentially unacceptable; in addition to intensive participatory consultation, the Project will explore options to construct a model relocation apartment block as an example of vertical consolidation.

4.1.3. Municipal & Project Financial Analysis & Project Sustainability

68. **Revenue-generating components** (water supply and wastewater management): The assumptions used in the financial analysis are the following (i) Project life of 30 years; (ii) Average consumption per HH per month of 20 m^3; (iii) Wastewater tariff at 20% of water tariff; (iv) 5% increase in tariff every five years; (v) Annual O&M costs estimated to be 5% of the capital costs; and (vi) Financing mix of 80% ADB loan and 20% government financing assumed for the assessment of weighted average cost of capital (WACC).

69. The financial analysis (Table 8) indicates that the proposed water supply and wastewater subprojects can be financially viable at the proposed tariff of USD 0.32 to USD 0.67 per m^3 for HHs and USD 0.64 to USD 1.67 per m^3 for commercial establishments. The base case financial internal rates of return (FIRRs) range from 2.16% to 2.86%, which are higher than the WACC of 1.72%. The financial net present values (FNPVs) are all positive.

Table 8: Results of the financial analysis

	Cirebon	Makassar	Banjarmasin	Palembang	Sorong
Year 1 tariff for HH (USD per m^3)	0.34	0.55	0.67	0.34	0.32
Tariff for commercial establishments (USD per m^3)	0.69	1.37	1.67	0.69	0.64
Base Case FIRR (%)	2.23%	2.72%	2.16%	2.74%	2.86%
Base Case FNPV (US$'000)	333.17	695.98	745.46	1,488.46	1,813.22

70. While the subprojects are financially viable, they will have negative cash flows during the first nine to ten years of operations because O&M costs will exceed revenues from tariffs. However, this, as well as the overall financial viability of the Project, should be confirmed at the feasibility stage, as (i) the cost estimates (O&M as well as capital costs) will be refined at this stage; (ii) the WACC depends on financing assumptions (loan-equity ratio, repayment period, etc.) that will be ascertained therein.

71. The assumed willingness-to-pay (IDR 50,000 based on interviews made in Cirebon i.e. approx. USD 3.52) is lower than the proposed tariffs. A survey must be undertaken during the feasibility study in each of the Project cities to obtain a more accurate willingness-to-pay and either confirm the proposed tariffs or propose a subsidy scheme.

72. **Non-revenue generating components**: The financing capacity of the five cities was estimated by deducting personnel expenses, priority expenses and debt repayment from total revenues, and is the estimated amount that a city can allocate for capital expenses for public works and spatial planning, public housing and settlements, and environmental projects. It is assumed that the cities can allocate 3% of such financing capacity to slum alleviation i.e. to the Project and other similar programs. The city governments are expected to provide funding for at least the O&M costs. The estimated slum area allocations are indicated in Table 9.

Table 9: Annual financing capacity of the Project cities for slum alleviation (2020 to 2024)

	Cirebon	Makassar	Banjarmasin	Palembang	Sorong
Financing capacity for capital expenses	USD 8.58 to 13.02 million	USD 31.88 to 54.22 million	USD 12.59 to 14.26 million	USD 28.5 to 55.47 million	USD 20.67 to 21.53 million
3% available for slum alleviation	USD 0.25 to 0.39 million	USD 0.96 to 1.63 million	USD 0.38 to 0.42 million	USD 0.86 to 1.66 million	USD 0.62 to 0.64 million

4.1.4. Economic Analysis

73. The economic analysis (see Table 10) indicates that the subprojects are economically viable, with a base case economic internal rate of return (EIRR) for the five cities higher than ADB's economic opportunity cost of capital of 9%. The base case economic net present values (ENPV) are all positive. The only exceptions are: 1) the wastewater management project in Banjarmasin with an EIRR of 8.82% (lower than the 9% hurdle rate) and a negative ENPV of –USD 99,000; and 2) the slum upgrading/flood protection subprojects in Banjarmasin with an EIRR of 8.69% and a negative ENPV of –USD 130,000. It must be noted though that environmental benefits are not yet considered in the analysis so the subprojects may still be economically viable if all possible benefits are quantified (to be confirmed during the subsequent FS). Sensitivity analysis was also undertaken using the following scenarios (results shown in the supplementary appendices): (i) 10% increase in capital costs; (ii) 10% increase in annual O&M costs; (iii) 10% reduction in benefits; (iv) 10% increase in capital and O&M costs plus 10% reduction in benefits; and (v) benefits delayed by one year.

Table 10: Results of the economic analysis

Base Case EIRR and NPV	Cirebon	Makassar	Banjarmasin	Palembang	Sorong
Water Supply					
EIRR (%)	17.42%	12.45%	14.97%	14.60%	11.86%
ENPV (US$'000)	1,363	305	891	1,847	1,346
Wastewater Management					
EIRR (%)	29.16%	12.26%	8.82%	25.20%	21.98%
ENPV (US$'000)	6,159	627	-99	7,693	5,628
Solid Waste Management					
EIRR (%)	16.53%	12.14%	10.08%	13.46%	15.37%
ENPV (US$'000)	606	291	205	796	2,179
Housing and Related Improvements					
EIRR (%)	14.43%	17.07%	12.79%	13.44%	11.18%
ENPV (US$'000)	5,039	12,429	2,250	2,399	1,130
Coastal Development, Slum Upgrading and Flood Protection					
EIRR (%)	12.71%	14.02%	8.69%	10.78%	13.17%
ENPV (US$'000)	2,178	938	-130	856	2,343

4.1.5. Environmental Safeguards

74. The Project will eventually have significant positive environmental impacts. However, during pre-construction and construction some adverse environmental impacts will temporarily occur, and therefore the sub-projects are classified as **Category B** (projects judged to have some adverse environmental impacts, but of a lesser degree and/or significance than those for category A). An **initial environmental examination (IEE)** with **environmental management plan (EMP) is required** and shall be prepared during the feasibility study phase**.** The environmental category of the project will be confirmed during the IEE process, as at this conceptual stage, only a preliminary environmental assessment was carried out according to ADB SPS 2009[10].

75. The climate change risks are roughly presented in each city report, which also include checklists for preliminary climate risk, indicating in which cases the designs are likely to be affected by climate conditions. The predicted climate change impacts vary in different project locations, including tropical cyclones, sea level rise, temperature increase and long-term

[10] ADB SPS 2009 (https://www.adb.org/documents/safeguard-policy-statement?ref=site/safeguards/main)

changes in rainfall patterns, flooding as well as drought. Risks of other disasters such as earthquakes, tsunamis and landslides are highest in Cirebon, but exist to some extent in other Project cities as well and need to be taken into account in infrastructure planning in order to create resilient city environments. A detailed **climate and disaster risk and vulnerability assessment** shall be carried out as a separate assignment before the feasibility study or at the early stage of the feasibility study phase.

76. Table 11 describes the main environmental considerations in the Project locations.

Table 11: Summary of environmental impacts and climate and disaster risks in the Project locations

Environmental concern/risk	Cirebon	Palembang	Banjamarsin	Makassar	Sorong
Project siting in legally protected areas, wetlands or mangrove areas	Activities (eg. dock jetties, dyke) are located in beach borders/coastal areas that are considered protected areas by Indonesian regulations. There is a 0.3 ha mangrove area at Kasepuhan Village.	Many activities are located in river borders/ banks (Sekanak river). Much of the slum area is by the Sekanak River.	Banjamarsin is a "river city". Many activities are located along river borders/ banks.	Many activities are located along river borders/ banks (Mariso canal improvement).	Many activities are located on beach borders - in Doom Island and Malaway.
Disturbance to precious ecology (e.g. sensitive or protected areas)?	Temporary small-scale adverse impacts may occur on coastal and river bank works. A detailed environmental management plan (EMP) must be prepared and followed. In the long run, the Project will improve the coastal and river areas. In Cirebon the Project will improve and extend the mangrove area.				
Impact on historical/cultural areas or resources.	Some of the selected slum areas have buildings with cultural/heritage value (eg. mosques, private 19th-century residences). The project will ensure they are not impacted (this needs to be ensured in the EMP), while improve the environmental conditions around the buildings to reduce risk of flooding by improving drainage.				
Alteration or deterioration of surface water hydrology of waterways.	Temporary small-scale impacts; to be mitigated by following the EMP, which is to be prepared during the IEE (in the feasibility study phase).				
Increased air pollution, noise or vibration due to project construction and operation.	Temporary small-scale impacts during pre-construction and construction; to be mitigated by following the EMP. (Pre-construction includes demolition of existing buildings.)				
Risks and vulnerabilities related to occupational health and safety.	Minor and temporary construction related impacts; EMP needs to be prepared and followed.				
Risks to community health and safety.	Minor and temporary construction related impacts; EMP needs to be prepared and followed.				
Generation of waste and wastewater during construction or operation.	Some impacts especially during construction, to be mitigated by following the EMP.				
Environmental category	B	B	B	B	B
Climate change related risks:					
• **Cyclones**	High	High	High	High	--
• **Floods and landslides**	√	--	√	√	√
• **Coastal / river erosion**	√	√	√	√	√
• **Sea level rise**	√	--	--	--	√
• **Landslides**	√	--	√	√	√
• **Drought**	High	Moderate	High	High	Low
Seismic/Earthquake risk	High	Moderate	Low	Moderate	Moderate
Tsunami risk	√	--	--	--	--

√ = risk exists -- = minor/no risk

4.1.6. Social Safeguards

77. The Project would be categorized as Category A for involuntary resettlement based on the significant land acquisition and resettlement impacts. The main impacts relating to land acquisition and resettlement are summarized in Table 12.

Table 12: Major land acquisition and resettlement impacts

Cirebon	Palembang	Banjarmasin	Makassar	Sorong
		Land		
IR category: A	**IR category:** A	**IR category:** B	**IR category:** A	**IR category:** B
Approximately 30,000 m²	Approximately 4,839 m²	Approximately 10,000 m2	Approximately 29,500 m²	Approximately 700 m²
Consists of land compensated at replacement cost for legal owners (21,000 m²) and reclaimed illegally occupied land (9,000 m²).	Land compensated for legal owners.	Required for vertical housing, solid waste TPS and TPST sites and houses built on top and at embankment of canal. Land compensated at replacement cost for legal owners.	Impact along both sides of Mariso canal, and selected sites within the slum. Land compensated at replacement cost for legal owners.	Land compensated for legal owners.
90% legal	80% legal	85% legal	85% legal	85% legal
		Houses		
Approximately 148 HHs impacted	Full / partial impact: approx. 44 /1,000 HHs respectively	Approximately 1,544 HHs	Approximately 240 HHs	Approximately 65 HHs
Approximately 54 HHs relocated and approximately 94 HHs partially affected.	Houses to be relocated on-site where possible. On-site low-cost housing option for illegal settlers.	Approx. 1,500 HHs affected by the "Titian pathway to the river", line canal and drainage. Relocation of approximately 44 HHs constructed on top of river, and some additional houses relocated to make space for TPS and TPST sites. Partial impact where roads, paths and drainage widened.	Impact along both sides of Mariso canal, and selected sites within the slum. Houses to be relocated on-site. On-site low-cost housing option for illegal settlers.	Houses to be repaired because affected by road arrangement and drainage.
		Vulnerable households		
Many slum dwellers are expected to be classified as poor, and there are many female-headed or elderly households. Additional support will be given to vulnerable affected households.				

* Total estimated footprint of the Project, out of which some is already public land (paths etc.), private ownership, use rights, and illegal settlers. Details of the land ownership and exact area of impact is not known at PFS stage.
** Number of HHs based on rough roof count from Google Imagery and is only indicative.

78. Illegal settlers will receive no compensation for land, but will have relocation options under the low-cost housing component. The Project will prepare a Planning Document for Handling Social Impacts.

79. There are no indigenous peoples[11] identified in the Project areas that would be positively or negatively affected by the Project. Initially the Project would be categorized as Category C under the ADB's indigenous peoples safeguards.

[11] Government Acts and Decrees use the terms *masyarakat adat* **(**Customary Communities) or *masyarakat hukum adat* (Customary Law Communities) as per 18B paragraph 2, which resulted from amendments in year 2000 to Article 18 of the Basic Law of Government of Indonesia (1945). In principle, these customary communities are considered to be Indonesia's indigenous peoples (IP). Further clarification on the identification of IPs is provided by the Minister of Home Affairs Regulation Number 52 of 2014 concerning Guidelines for Recognition and Protection of Customary Law Communities.

4.2. Major Risks and Mitigation Measures

80. In addition to the risks listed above, Table 13 summarizes the major risks and possible mitigation measures.

Table 13: Risks and Mitigations
Possibility: *L = Likely; M = Maybe; U = Unlikely /* ***Severity:*** *H = High; M = Medium; L = Low*

Risk	Possibility	Severity	Possible Mitigation Measures
Political/Commitment			
MPWH changes its willingness to support project	M	H	• Closely monitor and provide support as MPWH works with Bappenas to request ADB loan • Convince high/mid-level policy officials to support project
City is not committed to project	U	H	• Consult closely and frequently with city officials • When appropriate, provide relevant information and support to local legislature (DPRD) to ensure their support
Change of Mayor/Vice-Mayor	L	M	• During early stages, engage with new political figures • Ensure project in the city's medium- and long-term development plans to ensure continuity
Funding/Financing			
Private sector investments do not materialize	L	L	• Work with private sector to ensure investments materialize • Revise plans to respond to private sector opportunities
City contributions (land, APBD, in-kind) less than planned or not available	M	H	• Work closely with city to ensure project is included in city development plans and annual budget (APBD) as well as mid-year budget revisions
Implementation			
Capacities of LG institutions/staff are low	L	M	• Implement steps identified in the Institutional Capacity Building Road Map
Poor coordination between key city agencies	L	M	• Strengthen existing coordination mechanisms such a *Pokja* • Work to secure high-level understanding from coordination officials such as *Sekda* and Bappeda
Residents' behavioral change not successful	M	L	• Assess behavior campaign and re-design if necessary
Community involvement not as deep as expected including potential resistance to the Project and interventions do not respond to needs	M	M	• Need to include community in project planning, design, implementation and financing • Use existing community planning mechanisms such as the KOTAKU network and the *MUSRENBANG* planning process to involve the community • Work with key agencies to ensure that they respond to community needs
Difficulties in procuring required land	L	M	• Explore alternative sites and other sources for land • City to expand budget for land acquisition • Re-design of project components to reduce need for land