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Report No: PAD4099

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A
PROPOSED CREDIT

IN THE AMOUNT OF EUR 102.5 MILLION
(US\$100.0 MILLION EQUIVALENT)

ON A
PROPOSED CREDIT

IN THE AMOUNT OF EUR 153.7 MILLION
(US\$150.0 MILLION EQUIVALENT)
FROM THE IDA SCALE UP WINDOW

TO THE

REPUBLIC OF MALI

FOR A

BAMAKO URBAN RESILIENCE PROJECT

November 6, 2022

Urban, Resilience and Land Global Practice
Western and Central Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30, 2022)

Currency Unit = Euro (EUR)

1US\$ = EUR 1.0244

1US\$ = XOF 672

FISCAL YEAR

January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
AFD	<i>Agence Française de Développement</i> (French Development Agency)
ADR	<i>Agence de Développement Régional</i> (Regional Development Agency)
AGETIPE	<i>Agence d'Exécution des Travaux d'Intérêt Public pour l'Emploi</i> (Agency for the Implementation of Public Works for Employment)
AGETIER	<i>Agence d'Exécution des Travaux d'Infrastructures et Equipements Ruraux</i> (Rural Infrastructure and Equipment Works Execution Agency)
ANGESEM	<i>Agence Nationale de Gestion des Stations d'Epuration du Mali</i> (National Agency for the Management of Wastewater Plants of Mali)
AWPB	Annual Work Plan and Budget
CERC	Contingent Emergency Response Component
CPF	Country Partnership Framework
CREDD	<i>Cadre Stratégique pour la Relance Economique et le Développement Durable</i> (Strategic Framework for Economic Recovery and Sustainable Development)
CRI	Corporate Results Indicator
DA	Designated Account
DCPND	<i>Document Cadre de Politique Nationale de Décentralisation</i> (National Framework Document for Decentralization)
DFM	Directorate for Financial Management
DNACPN	<i>Direction Nationale de l'Assainissement et du Contrôle de Pollutions et des Nuisances</i> (National Directorate for Sanitation and Control of Pollution and Nuisances)
DNUH	<i>Direction Nationale de l'Urbanisme et de l'Habitat</i> (National Directorate of Urbanism and Habitat)
ECOWAS	Economic Community of West African States
ERR	Economic Rate of Return
ESCP	Environmental and Social Commitment Plan
ESIA	Environmental and Social Impact Assessment
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FCV	Fragile, Conflict, and Violence
FSTP	Fecal Sludge Treatment Plant
FM	Financial Management
GBV	Gender-based Violence
GDP	Gross Domestic Product
GEMS	Geo-Enabling initiative for Monitoring and Supervision
GIE	<i>Groupements d'Intérêt Economique</i> (Economic Interest Group)
GIS	Geographic Information System
GoM	Government of Mali
GRID+	Green, Resilient, Inclusive Development, and Competitive

GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HEIS	Hands-on Expanded Implementation Support
IDP	Internally Displaced Persons
IFR	Interim Financial Report
ILO	International Labor Organization
IMF	International Monetary Fund
ISP	Implementation Support Plan
KfW	Kreditanstalt Für Wiederaufbau / Credit Institute for Reconstruction (German Development Bank)
M&E	Monitoring and Evaluation
MAFUH	<i>Ministère des Affaires Foncières, de l'Urbanisme et l'Habitat</i> (Ministry of Land Affairs, Urbanism and Housing)
MATD	<i>Ministère de l'Administration Territoriale et de la Décentralisation</i> (Ministry of Territorial Administration and Decentralization)
MEADD	<i>Ministère de l'Environnement, de l'Assainissement et du Développement Durable</i> (Ministry of Environment, Sanitation and Sustainable Development)
MHULS	<i>Ministère de l'Habitat, de l'Urbanisme et du Logement Social</i> (Ministry of Housing, Urban Planning and Social Shelter)
MOD	<i>Maîtrise d'Ouvrage Déléguee</i> (Delegated Management)
MTR	Mid-Term Review
MUHDATP	<i>Ministère de l'Urbanisme, de l'Habitat, des Domaines, de l'Aménagement du Territoire et de la Population</i> (Ministry of Urban, Housing, Land, Territorial Administration and Population)
NPV	Net Present value
O&M	Operation and Maintenance
OSR	Own Source Revenue
PACUM	<i>Projet d'Appui aux Communes Urbaines du Mali</i> (Urban Local Government Support Project)
PAP	Project Affected Person
PCU	Project Coordination Unit
PDNA	Post Disaster Needs Assessment
PDO	Project Development Objective
PEMU	<i>Projet d'Approvisionnement en Eau en Milieu Urbain</i> (Urban Water Supply Project)
PIM	Project Implementation Manual
PMTC	Project Management and Technical Committee
PP	Procurement Plan
PPA	Project Preparation Advance
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
PSC	Project Steering Committee
PSP	Private Sector Participation
RAP	Resettlement Action Plan
RIAP	Revenue Improvement Action Plan
RPF	Resettlement Policy Framework
SDAB	<i>Schéma Directeur d'Assainissement de Bamako</i> (Bamako Sanitation Master Plan)

SEA/SH	Sexual Exploitation and Abuse and Sexual Harassment
SEP	Stakeholder Engagement Plan
SESA	Strategic Environmental and Social Assessment
SME	Small and Medium-sized Enterprise
SMI-GB	<i>Syndicat Mixte Intercollectivités Grand Bamako</i> (Inter-Governmental Mixed Syndicate for Greater Bamako)
SOMAGEP	<i>Société Malienne de Gestion de l'Eau Potable</i> (Mali National Potable Water Management Utility)
SOMAPEC	<i>Société Malienne de Patrimoine de l'Eau Potable</i> (Mali National Potable Water Company)
SPN	Special Procurement Notices
STEP	Systematic Tracking of Exchanges of Procurement
SUW	Scale Up Window
SWM	Solid Waste Management
ToR	Terms of Reference
ULG	Urban Local Government
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WBG	World Bank Group
WHO	World Health Organization

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Mali	Bamako Urban Resilience Project	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P171658	Investment Project Financing	High

Financing & Implementation Modalities

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

Expected Approval Date	Expected Closing Date
30-Nov-2022	30-Dec-2028

Bank/IFC Collaboration

No

Proposed Development Objective(s)

Improve access to urban waste, sanitation and water services, increase resilience to floods in selected vulnerable areas of the District of Bamako and targeted neighboring communes, and strengthen urban management capacity.



Components

Component Name	Cost (US\$, millions)
Improved Solid Waste Management	60.00
Improved Water Supply, Sanitation and Hygiene	70.00
Investments in Resilient Infrastructure	90.00
Strengthening Institutional Capacity	18.00
Project Coordination	12.00
Contingent Emergency Response Component (CERC)	0.00

Organizations

Borrower: Republic of Mali

Implementing Agency: Ministry of Urban, Housing, Land, Territorial Administration and Population

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	250.00
Total Financing	250.00
of which IBRD/IDA	250.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	250.00
IDA Credit	250.00

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	SML Amount	Guarantee Amount	Total Amount
Mali	250.00	0.00	0.00	0.00	250.00



National Performance-Based Allocations (PBA)	100.00	0.00	0.00	0.00	100.00
Scale-Up Window (SUW)	150.00	0.00	0.00	0.00	150.00
Total	250.00	0.00	0.00	0.00	250.00

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2023	2024	2025	2026	2027	2028	2029
Annual	8.62	24.90	54.83	75.52	56.69	28.43	1.00
Cumulative	8.62	33.52	88.35	163.88	220.57	249.00	250.00

INSTITUTIONAL DATA**Practice Area (Lead)**

Urban, Resilience and Land

Contributing Practice Areas

Digital Development, Finance, Competitiveness and Innovation, Transport, Water

Climate Change and Disaster Screening

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

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

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



9. Other	● Moderate
10. Overall	● High

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

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).



Legal Covenants

Sections and Description

FA - Schedule 2, Section I, A.2 (a): Not later than one (1) month after the Effective Date, or such later date as agreed by the Association, the Recipient shall establish and maintain, at all times during the implementation of the Project, a Project steering committee with a mandate, composition and resources satisfactory to the Association ("PSC").

Sections and Description

FA - Schedule 2, Section I, A.3 (a): No later than one (1) month after the Effective Date, or such later date as agreed by the Association, the Recipient shall establish and maintain, at all times during the implementation of the Project, a Project Monitoring and Technical Committee with a mandate, composition and resources satisfactory to the Association ("PMTC").

Sections and Description

FA - Schedule 2, Section I, A.4 (d): Not later than three (3) months after the Effective Date, the two senior accountants, the procurement assistant, the communication specialist and the two technical specialists referred to in sub-paragraph (c) of this paragraph shall have been recruited and appointed

Sections and Description

FA - Schedule 2, Section I, A.4 (e): Not later than six (6) months after the Effective Date, the statutory independent auditor shall have recruited and appointed on the basis of terms of reference, qualifications, integrity and experience acceptable to the Association.

Sections and Description

FA - Schedule 2, Section I, A.4 (f): Not later than three (3) months after the Effective Date, the Recipient shall have acquired, installed and customized a computerized accounting software, satisfactory to the Association.

Sections and Description

FA - Schedule 2, Section I D 1: The Recipient shall, not later than four (4) months after the Effective Date, enter into agreements with AGETIER and AGETIPE (Delegated Contract Management Agency), under terms and conditions satisfactory to the Association and in accordance with the provisions of this Agreement and the provisions of the PIM ("Delegated Contract Management Agreements"), to carry out, on behalf of the Recipient, Parts 1.1 (a) and Part 1.1 (b) and 3.1 of the Project.

Sections and Description

ESCP - Section 1.1: Entities to recruit an environmental and social safeguards specialist no later than three (3) months after the signing the Delegated Management Contract (AGETIER, AGETIPE) and the Subsidiary Agreement (SOMAPEP) with the Beneficiary.

Sections and Description

ESCP - Section 1.3: The Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) Action Plan shall be prepared, consulted upon, disclosed and adopted not later than three (3) months of the Effective Date.

Sections and Description

ESCP - Section 5.1: RAPs shall be disclosed no later than 6 months after project effective date, and implemented



prior to commencing Project activities that involve land acquisition and resettlement.

Sections and Description

ESCP - Section 10.2: The Project Grievance Mechanism (GM) shall be operational not later than three (3) months after the Effective Date.

Conditions

Type Effectiveness	Financing source IBRD/IDA	Description Article V. 5.01 (a). The Project Agreement has been duly executed by the Association and SOMAPEP, authorized by SOMAPEP, and is legally binding upon SOMAPEP in accordance with its terms.
Type Effectiveness	Financing source IBRD/IDA	Description Article V. 5.01 (b). The Subsidiary Agreement has been duly executed or authorized by the Recipient and SOMAPEP and is legally binding upon the Recipient and SOMAPEP in accordance with its terms.
Type Effectiveness	Financing source IBRD/IDA	Description Article V. 5.01 (c). The Recipient has maintained within the ministry in charge of urbanism, the Project Coordination Unit (PCU), with adequate staff hired pursuant to terms of reference qualifications, integrity and experience satisfactory to the Association, and resources satisfactory to the Association, including: (i) a coordinator; (ii) a procurement specialist; (iii) a financial management specialist; (iv) an internal auditor; (v) a monitoring and evaluation specialist; (vi) an environmental specialist; (vii) a social development specialist, and (viii) two accounting assistants.
Type Effectiveness	Financing source IBRD/IDA	Description Article V. 5.01 (d). The Project Implementation Manual (PIM) has been adopted in form and substance satisfactory to the Association in accordance with Section I.B of Schedule 2 of the Financing Agreement.
Type Disbursement	Financing source IBRD/IDA	Description Schedule 2, Section III, B.1 (b). No withdrawal shall be made under Category (2)(a) until and unless the Association has received satisfactory evidence that the Recipient has prepared and disclosed the ESIA for the FSTP for the Tienfala Site; all in form and substance satisfactory to the Association;



Type Disbursement	Financing source IBRD/IDA	Description <p>Schedule 2, Section III, B.1 (c). No withdrawal shall be made under Category (2)(b) until and unless the Association has received satisfactory evidence that the Recipient has prepared and disclosed the ESIA for the FSTP for the International Airport Site; all in form and substance satisfactory to the Association;</p>
Type Disbursement	Financing source IBRD/IDA	Description <p>Schedule 2, Section III, B.1 (d). No withdrawal shall be made under Category (4) until and unless the Association has received evidence satisfactory that Recipient has prepared and adopted the Grant Manual and the Grant Agreement template in form and substance satisfactory to the Association and (ii) at least one Grant Agreement has been duly executed, authorized or ratified by the Recipient and one Selected Local Association, and is legally binding upon the Recipient and the Selected Local Association in accordance with its terms;</p>



I. STRATEGIC CONTEXT

A. Country Context

1. **Mali, a Sahelian country, is struggling with overlapping and compounding shocks and stresses, related to security and political instability.** The country witnessed two military coups between August 2020 and May 2021 and entered a recession in 2020. Following the coup on May 24, 2021, the World Bank Operational Policy OP7.30 "Dealing with de facto government" was triggered and disbursements were placed on a temporary hold. Based on the conclusions of the OP7.30 assessment, World Bank regional management decided to re-engage with Mali as of September 7, 2021. The six-month Economic Community of West African States (ECOWAS) sanctions between January 9, 2022 and July 3, 2022 dampened the growth and macro-fiscal outlook over the medium-term, while growing security and social pressures have narrowed the fiscal space for prospective interventions. This is compounded by the Ukraine war, and additional monetary tightening in the Eurozone through elevated inflation and debt refinancing costs on the regional market. The under-diversified economy remains vulnerable to external shocks including commodity price volatilities and adverse weather. Intensification of conflicts in Mali could lead to further violence, thus posing a major threat to macroeconomic conditions and incomes.
2. **Mali is among the poorest countries in the world, ranking 184 out of 189 on the 2022 Human Development Index.** Prior to the pandemic, Mali experienced relatively strong economic performance with GDP growth averaging 5.7 percent over 2014-2019 (2.6 percent per capita). However, more than 40 percent of the population live in poverty – 90 percent of them in rural areas in the south of the country, which concentrates most of the population and economic activity. Whilst the young age structure of the population presents a unique opportunity to secure the demographic dividend, in the context of limited security and widespread underemployment, it can have the opposite effect. Political tensions and insecurity have increased since 2012 in the north and central regions, leading to a surge of internally displaced persons (IDPs). This has come at a high cost to public finances and resources for delivering public services. Violent conflicts and gaps in service provision are mutually reinforcing: if Mali's violent conflicts partly stem from a loss of public confidence in state institutions, the conflicts themselves entrench a vicious cycle where the costs of conflict further hamper the state's ability to finance itself and deliver services. The Government of Mali (GoM) prepared and adopted a strategy for the mitigation of conflict and violence risks (2020-2023), and improvement in living conditions of the population is an important pillar to directly address the root causes of conflict.
3. **Mali entered a recession in 2020 and the economic recovery in 2021 was weak due to insecurity and political instability.** Real GDP contracted by 1.2 percent in 2020 due to the COVID-19 pandemic, the August 2020 unconstitutional regime change, and a mediocre agricultural campaign. The expected recovery in 2021 was cut short by another military coup in May 2021, the expansion of violence to the Center, and the continued knock-on effects of the 2020 agricultural campaign. Real GDP grew by 3.1 percent in 2021 which was just above the population growth rate estimated at 3 percent. As a result, per capita GDP stagnated, and the national poverty rate remained at 44.4 percent with an additional 50,000 people in extreme poverty. Meanwhile, food agriculture continued to decline in 2021 adding to inflation pressures and contributing to the current food insecurity crisis. In 2021, 1.3 million people, experienced an increased level of acute food insecurity representing the highest level recorded since 2015. Inflation rose to 4 percent in 2021, pushed by foodstuffs (5.2 percent) particularly cereal (8.9 percent) and continues to accelerate in 2022. This combined with the six-month ECOWAS sanctions has dampened the



outlook for 2022 with GDP growth now projected at 1.8 percent.

4. **Mali's population of 18 million is vulnerable to current and future impacts of climate change.** People, agriculture, food security, infrastructure, and productive assets are highly exposed to both drought and flooding, and vulnerable to climate variability and change, including projected temperature increase, more erratic rainfall, increased crop pests, rainfall shortages, and desertification over past decades. Anticipated continued increases in maximum and minimum temperatures, alongside more erratic rainfall patterns, are expected to amplify the incidence and impact of natural disasters.¹ Uncertainty in the evolution of rainfall patterns has increased the country's vulnerability to climate change – this is evident in the increased incidence of both floods and droughts.² Physical vulnerability is exacerbated by demographic, socioeconomic and environmental factors. These include settlements in floodplains due to demographic pressure and migration towards urban areas that concentrate 50 percent of the economic activities and assets. This is also worsened by a high rate of poverty and inequality, weak urban and land-use planning and limited capacities of governments and communities. Support for climate change adaptation measures through more resilient infrastructure in cities is critical.
5. **Mali continues to face significant challenges to deliver basic services and make progress towards the Sustainable Development Goals.** Human capital in Mali is among the lowest in the world, driven in large measure by poor health outcomes. Malaria is endemic and diarrheal diseases have remained among the top three causes of premature mortality over 2000–2017, in part due to the lack or poor quality of water and sanitation services and poor hygienic living conditions. Inadequate solid waste and drainage management exacerbate sanitary risks during the rainy season and flood events, especially in densely populated areas and slums. Water and sanitation are essential elements in preventing disease and protecting human health during outbreaks of infectious diseases.
6. **Mali ranks 158 out of 162 on the Gender Inequality Index (United Nations Development Program 2021),** which measures three important aspects of human development—reproductive health, empowerment, and economic status. Conflict, militarization, and insecurity in some areas of the country have further exacerbated pre-existing risks of gender-based violence (GBV). In addition, 52.6 percent of girls are married before the age of 18,³ and 35.6 percent of women gave birth before the age of 18.⁴ This situation may be exacerbated in situations of high insecurity as families may see marrying their young daughters to older men to protect them and to improve access to natural and financial resources. There are no laws on domestic violence, marital rape, or sexual harassment in Mali.
7. **Many of Mali's development challenges have a spatial dimension, with cities at the heart of development.** Mali's rate of urbanization has risen above 40 percent in the last few years, and the country is urbanizing rapidly, almost twice as fast as its rate of population growth⁵. However, urbanization has not been associated with commensurate increases in GDP and has, in fact, been accompanied by deindustrialization. The degrading security situation has brought questions of economic geography to the

¹ World Bank (2022) G5 Sahel Region Country Climate and Development Report

² Herman, Rebecca, Michela Biasutti, Alessandra Giannini, and Yochanan Kushnir, *The Effects of Anthropogenic and Volcanic Aerosols and Greenhouse Gases on 20th Century Sahel Precipitation*, Earth and Space Science Open Archive (ESSOAr), April 2020.

³ ibid

⁴ ibid

⁵ Mali's annual urbanization growth rate at 4.9 percent per annum exceeds by far the overall population growth rate of 2.9 percent per annum.



center of attention. The Africapolis project led by the Organization for Economic Co-operation and Development (2020) shows how violent deaths in Mali have decreased significantly in urban areas despite the rapid population growth of cities. And yet, the risk of conflict in southern Mali could escalate, which would threaten more productive parts of the country, and thereby elevating overall levels of insecurity. Pressures to create jobs and provide housing and services have grown in more densely populated southern parts of the country. At the same time, low levels of wealth, fiscal resource, service delivery, and weak institutions make it more challenging to address regional disparities and target public resources where it would be more efficient and equitable to increase productivity and livability for Malian residents⁶. This is underscored by the fact that over 80 percent of Mali's economic activity occurs in the Southern regions of the country, which has been more resilient to conflict risks.

8. **Bamako dominates the country's economic landscape and is at the core of the urbanization challenge in Mali.** The economic importance of Bamako cannot be understated – it is the nerve center of the national economy and accounts for 35 percent of GDP. Its population has more than doubled over the 2000-2015 period and is expected to expand steadily in the coming decades. Bamako and the neighboring commune of Koulikoro were the only net recipients of migrants (2009 Household Census), while the regions of Ségou, Mopti, Tombouctou, and Gao were the largest net contributors of migrants. Urbanization trends in Bamako are exacerbated by the influx of urban forcibly displaced populations (or IDPs) due to the significant deterioration of the security situation in the country. The country continues to face widespread increased extremist violence, internal displacement, and marginalization of certain communities. Typically, when unmanaged, these marginalized populations tend to settle in informal neighborhoods, intensifying demand on local basic services. Bamako has potential to be one of the regional hubs in West Africa - recent analysis for the Sahel region⁷ found that among inland capitals, Bamako would be one of the biggest gainers from investments to relieve present transportation bottlenecks across West Africa.

B. Sectoral and Institutional Context

9. **Bamako is the world's sixth fastest growing city – but it is not fulfilling its role as an engine of urban growth and service delivery.** Bamako's urban population growth averaged 5.4 percent between 1998-2009, and its city population is expected to reach 4.2 million by 2025.⁸ Bamako accounted for 35 percent of GDP in 2015. Thus, Bamako is the nerve center of the Malian economy. Despite its importance to the national economy, Bamako has failed to make progress on delivering urban services for its citizens. Access to basic services such as potable water, sanitation, and waste collection lag other Sub-Saharan African cities. Traffic congestion poses a big burden on livability. These gaps are also demonstrated by the higher share of informal settlements in Bamako (63 percent) compared to the average urban areas of the region (55 percent).⁹ The Bamako Urban Sector Review (2018)¹⁰ found that fragmentation, both spatial and institutional, hinders the realization of the advantages associated with city growth and increases social and gender inequalities affecting particularly communities in vulnerable areas. The capital has also seen frequent demonstrations, as social tensions rise with most of the population depending on outside work for subsistence and for access to basic goods amid strict lockdown measures. Capital expenditures,

⁶ World Bank (2015) The Geography of Poverty in Mali.

⁷ World Bank (2018) Unlocking Productivity and Livability – A Tale of 3 West African Cities.

⁸ Ville de Bamako. 2012. *Bamako 2030: Croissance et Développement – Imaginer des Stratégies Urbaines pour un Avenir Maîtrisé et Partagé*.

⁹ While the estimates for the Sub-Saharan African regions are based on the United Nations (UN) Human Settlements Program definition, the estimate for Bamako is based only on housing quality

¹⁰ WBG (2018) Bamako Urban Sector Review: An Engine of Growth and Service Delivery



already quite low, will be further affected and will negatively affect the ability of the capital to drive social and economic development, locally and nationally.

10. **Bamako's growth, in part, has been propelled by the influx of IDPs from the North of Mali.** Bamako's population has more than doubled in size in the last 20 years – from approximately 1.3 million in 2002 to 2.8 million in 2022. Since 2018, 50,000 IDPs have moved to Bamako and neighboring communes¹¹. The World Bank Group's G5 Sahel Region Country Climate and Development Report (2022) and the forthcoming World Bank Group Flagship Report on Climate Change and Cities (2022) find that increasing frequency and intensity of climate change-related shocks and stresses, including droughts, have resulted in increased migration to urban areas, including the capital city. In addition, the research demonstrates that many of these migrants are settling in informal and vulnerable neighborhoods. These trends are reflected in the poverty numbers, with the poverty rate in Bamako skyrocketing from 4 percent in 2017 to almost 16 percent in 2021 – reversing progress made over previous decades. As described in more detail later, Bamako is struggling to keep up with the demands – for access to urban service delivery, for infrastructure that is resilient to floods, and for economic opportunities.
11. **On May 16, 2019, flooding in Bamako killed 16 people and 2,576 people were affected in one night.** The post-disaster needs assessment (PDNA) for May 2019 floods conducted by GoM with support from the development partners found a total damage and loss of US\$9 million and needs for recovery of US\$33 million. Infrastructure around strategic economic facilities, including for instance, several roads and drainage were damaged owing to their location in flood-prone areas. From 2007 to 2020, Mali was impacted by six large flooding events (two in 2007, 2013, 2016, 2017, and 2019) impacting more than 4.2 million people. At the institutional level, Mali has set up a disaster management system monitored by the Directorate General of Civil Protection (*Direction Générale de la Protection Civile*), a national platform for disaster risk reduction (in 2005), a national multi-risk plan for disaster preparedness and response (in 2012), a National Strategy for Disaster Risk Reduction or SNRRC (in 2013) and an action plan (in 2015) implemented at regional and local scales. However, climate change linked pressures on the city continue to grow - 111kms of roads, 22% of schools and 24% of hospitals are in high flood-risk areas.
12. **Sites and investments for urban upgrading are not guided by an understanding of disaster risks despite high-profile events in the past.** Efforts have been mainly focused on emergency management, lacking integrated risk management and have not yet been fully operationalized for the District of Bamako. Flooding events have often been a function of rivers, waterways and domestic latrines overflowing, combined with drainage system failures and accumulation of solid waste. This has also been linked to a lack of adequate land use planning, followed by uncontrolled occupation of flood prone lowlands, rivers beds and floodplains. Institutional fragmentation has hampered data coordination and efforts to properly map existing infrastructure and planned investments. The situation is worsened by the lack of consultation of the neighborhood leaders and local mayors. Informal settlements are also in areas prone to environmental risks and have been unable to capture the returns due to land improvements, such as infrastructure investments and regularized lay-outs, and low investments have been associated with very low land prices.¹² While long-term trends may be difficult to identify within existing climate variability, potential future climate impacts for the water sector in the Bamako region show a high level of flood

¹¹ <https://www.diis.dk/en/research/internally-displaced-people-in-malis-capital-city>

¹² Lall, S. V., Henderson, J. V., and Venables, A. J. (2017). *Africa's Cities: Opening Doors to the World*. World Bank.



indicator for 2030¹³. This project will contribute to mitigate current and future climate risks and implement the vision and recommendations set out in the disaster recovery framework elaborated following the PDNA report to make Bamako a town resilient to flooding by 2030.¹⁴

13. **Urban development in Bamako has been fragmented spatially.** Instead of coordinated urban planning, Bamako is built through the growth of uncoordinated, underserviced and often informal areas (*lotissements*).¹⁵ This has hindered land-use planning, leading to unplanned and spatially-fragmented urban expansion. Much of the new urban construction in Bamako has taken place far from existing urban concentrations, exacerbating the challenges of urban accessibility and access to services. Historically most urban development took place on the left bank of the river (*Rive Gauche*), while new growth has been on the right bank (*Rive Droite*) – although this has consisted mainly in leapfrog development, i.e., spatially discontinued urban expansion. Adequate investments in infrastructure and service delivery have failed to keep pace with urban growth. The high level of urban fragmentation is fettering productivity, by preventing opportunities for matching people and jobs, and livability, by driving up the costs of urban infrastructure and service delivery.
14. **At the same time, the administrative landscape is characterized by institutional fragmentation.** The District of Bamako is part of the Bamako metropolitan region and is becoming integrated with the cities of Kati and Koulikoro into a multi-city agglomeration marked by fragmented governance structures.¹⁶ National, parastatal and city-level agencies are involved in infrastructure investments and service provision, with overlapping and unclear regulatory scope and responsibilities. Central government ministries plan and implement by sector, but there is a lack of coordinated planning for development of the urban space and for service delivery in urban extension areas. Given the risk of a worsening security situation in the south of the country, better coordination for service delivery would contribute to increasing resilience of the populations and address drivers of fragility.
15. **The District of Bamako and the six communes of Bamako have urban planning departments, and the District has developed a plan to address identified shortcomings.** The Bamako ‘Vision 2030’ includes investments to, among others, densify the commercial center of the city, minimize heavy transport and unloading in the city through construction of dry ports, and rebalance the development of the city through moving some institutions and commercial activities to the right bank of the Niger River. Relying on the provisions of the National Framework Document for Decentralization (*Document Cadre de Politique Nationale de Décentralisation*, DCPND), the District of Bamako and its six communes decided in late 2018 to mutualize their resources with the other 18 surrounding communes, through the InterCollectivity Syndic called the Great Bamako (*Syndicat Mixte Intercollectivités - Grand Bamako*, SMI-GB), for achieving common development goals over the Bamako metropolitan urban area.
16. **Consistently, the transfer of urban waste and sanitation management responsibilities to local authorities has increased the need for coordination and efficiency.** The three strategies for solid waste,

¹³ Based on the WBG Climate Change Knowledge Portal: <https://climateknowledgeportal.worldbank.org/country/mali/impacts-water>

¹⁴ Strengthening Climate Resilience in Mali (P161406)

¹⁵ The subdivision of a single piece of bare land into plots with appropriate provision of infrastructure and collective facilities to host the buildings to be erected by the future occupants

¹⁶ The District of Bamako has a governing council elected by direct suffrage and is under oversight by the Ministry of Local Government, while the greater Bamako metropolitan region comprises in total 25 local governments i.e., the District of Bamako, the six communes of Bamako and 18 additional surrounding communes.



liquid waste, and stormwater (drainage) fall under the National Sanitation Policy (2009) and the oversight of the Ministry of Environment, Sanitation and Sustainable Development (*Ministère de l'Environnement, de l'Assainissement et du Développement Durable*, MEADD) and its National Directorate for Sanitation and Control of Pollution and Nuisances (*Direction Nationale de l'Assainissement et du Contrôle de Pollutions et des Nuisances*, DNACPN). The Bamako Sanitation Master Plan (*Schéma Directeur d'Assainissement de Bamako*, SDAB) was updated in 2016 along with the Bamako Strategy for Solid Waste. It provides an integrated framework for investment planning, sector financing and management of these subsectors in line with the setup of the Grand Bamako.

17. **Solid waste management (SWM) exemplifies some of the coordination failures related to urban planning and service delivery in the Greater Bamako area.** On average, the District generates 1,500 tons of household waste each day. Bamako fares reasonably well in terms of collection rates compared to regional benchmarks,¹⁷ with 57 percent collection rate and about 71 percent of households subscribing to private door-to-door collection services provided by about 200 small Economic Interest Groups (*groupements d'intérêt économique*, GIE).¹⁸ However, the lack of adequate infrastructure and regulation across the entire value chain hampers substantially the performance of service management. Erratic disposal practices are often observed such as dumping in drains or burning in open air, increasing the residents' vulnerability to pollution and diseases and related climate risks. The limited ability of the District and other communes in the metropolitan area to collaborate is compounded by the absence of revenues from, and low level of investments in SWM in local budgets – US\$0.03 per capita for the District of Bamako. In 2011, the Government commissioned and developed a modern landfill in Noumoubougou, about 35 km from the city center. Yet the facility remains widely underused, at only 10 percent of its total capacity, owing to the lack of efficient mechanism to transport waste to the site and concerns expressed by the neighboring communities. Three additional sites (Mountougoula, Kourale, Mande) were considered in the Solid Waste Management Strategy of Bamako in 2016, for the development of disposal capacity. None of these facilities has yet materialized. Improvements expected from a private firm, Ozone Mali, contracted in 2014 by the Government to transport waste from storage points and dispose of it outside of the District – and for street sweeping and cleaning of the stormwater network as well – are yet to become visible.
18. **Similarly, the sanitation sector is barely organized and access to sanitation services is particularly dire in Bamako.** Only 40 percent of the Malian population has access to at least basic sanitation services (per Sustainable Development Goal 6.2 definition) against 53 percent in urban areas. However, only 9 percent of these urban dwellers benefit from safely-managed services, against 26 percent in rural areas. Urban density makes it more difficult to safely contain and dispose of sludge and septage from latrines, cesspools or septic tanks, and most cities don't have sewers and treatment facilities to discharge them. Public schools and health centers are also underequipped in basic sanitation and handwashing facilities, and sometimes even of functional water connections. In Bamako, sewer networks are almost nonexistent, and 98 percent of the population still rely on onsite sanitation. The capital city does not have any controlled fecal sludge and septage treatment facility, in part due to difficulties to secure sites. Private mechanized septage haulers / emptiers (*camions spiros*), most of which affiliated to the Malian Association of Emptiers (*Association des Vidangeurs du Mali*), have no other choice but to dispose fecal sludge and septage they collected from households wherever possible. The lack of adequate regulation of the sanitation services

¹⁷ Kaza, Silpa; Yao, Lisa C.; Bhada-Tata, Perinaz; Van Woerden, Frank. 2018. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development. Washington, DC: World Bank.

¹⁸ Mukim, M et al. 2019. The Bamako Urban Sector Review. Washington, DC: World Bank.



chain, including on tariffs, affects the providers' profitability, and raises tensions between local authorities and residents over environmental and sanitary risks, which are exacerbated during the rainy season and floods and further increase vulnerability.

19. **While access to quality water services in Bamako is about to achieve major breakthroughs, improving sanitation is a priority.** Based on the Bamako Water Supply Master Plan 2012-2032, implemented since 2014, the flagship, multi-donor Bamako Water Supply Project from the locality of Kabala, known as the Kabala program¹⁹ will multiply by ten water production and storage capacity. The new water treatment plant located in Kabala provides an additional capacity of 288,000 cubic meters since 2020, of which half already supplies the city. Close to one million people will get a new access to safe water at home through 116,000 social household connections by 2022. The design of the Kabala water program, anticipating that such an increase in water consumption would translate into more wastewater being generated and discharged, included a companion sanitation program to address the current absence of adequate sanitation systems and treatment options and high risks of groundwater pollution, bacteriological contamination and degraded living conditions, especially when combined with the accumulation of solid waste and exacerbated during flood episodes. Both GoM and the communes of Grand Bamako have progressed towards developing this program and preliminary studies provide the grounds for further, and now urgent implementation. Mitigating these risks through combined solid waste, sanitation, and drainage investments as well as better urban planning is critical to reap the benefits of the water program and further, to improve livability and sustain economic growth in Bamako.
20. **Bamako's local governments lack the fiscal and other capabilities needed to develop and implement urban plans and invest in urban infrastructure.** This has contributed to ineffective spatial management of the Bamako metropolitan area. Local government budgets are largely used for recurrent spending²⁰, leaving only 4.6 percent for capital expenditure. The combined identifiable infrastructure expenditure (operating and capital expenditure) by the seven local governments in Bamako (the District and six communes) was an abysmal US\$0.72 per capita in 2016²¹, compared to US\$37 in other low-income cities. Local government own-source revenues are low by international standards (about US\$6.17 per capita) – a far cry from the resources needed to provide a reasonable level of services. In addition, dysfunction in land markets is a significant deterrent to productive investment in cities, affecting not just the patterns of land-use and building volumes, but also limiting the ability of local governments to capture the value of land (for instance, through taxation) for economic development investments. The loss in aggregate economic value due to low and stagnant land prices in informal areas in Bamako could equal almost US\$210 million.²²
21. **Urban plans and planning institutions are ineffective and lack the necessary coordination to effectively manage the spatial development of the metropolitan region.** The last approved urban structure plan for Bamako dates to 1995, and although it contains some considerations of trunk infrastructure in the metropolitan area, it is now irrelevant since it has been completely surpassed by development and

¹⁹ The Bamako Water Supply Project from the locality of Kabala (*Projet d'Approvisionnement en Eau Potable de Bamako à partir de la localité de Kabala*), known as the Kabala Program, is supported by eleven donors including the World Bank (Urban Water Supply Project, P122826, US\$130 million).

²⁰ Budgets typically contain high proportion of emoluments (62 percent on average) and only 4.6 percent of budgets go towards investments.

²¹ Analysis of latest available budget data for this report: Budget execution reports for 2016 for the District and communes, except Commune I for which budget execution for 2015 was used.

²² Bamako Urban Policy Dialogue (2019).



expansion of the city in the meantime. A 2005 revision was elaborated to integrate parts of the surrounding area into the District but was never approved, since the institutional stakeholders could not agree on the boundaries of the District. A further attempt was made by the District in 2014 to recruit a planning agency (with external funding) to update the structure plan but floundered due to disagreement between the government and the District of Bamako over planning authority. Thus, an update of urban plans, and support to planning institutions is sorely needed.

C. Relevance to Higher Level Objectives

22. **The World Bank Group (WBG) Country Partnership Framework (CPF)²³ for Mali for the period of FY16-19²⁴** is articulated around three focus areas: (a) improving governance; (b) creating economic opportunities; and (c) building resilience. The proposed project is consistent with all three focus areas of the CPF. It supports decentralization over the Grand Bamako area to strengthening local governments' capacities to deliver urban services and build resilience. The project will also contribute to the World Bank's engagement in Mali to improve efficiency and pro-poor public expenditures and to build citizen capacity to strengthen accountability, and in turn, to improve service delivery with focus on poor and vulnerable areas. Eventually, the project will seek for strategic partnerships with the private sector to improve overall investment capacity to deliver urban services. As a result of the Performance and Learning Review of the CPF implementation, undertaken in late FY19, the CPF period was extended to cover FY20 to reinforce the dialog with GoM to consolidate the World Bank's portfolio in Mali.
23. **This project is strongly aligned with the WBG's People-Centered Engagement for Mali.** The total number of direct beneficiaries of this project is estimated at 1,500,000, of which 750,000 are women. Project activities target the poor and the vulnerable – including women and youth, and IDPs who have often sought haven in the capital. The project does this through several interventions, which reinforce each other.
- First, the project provides basic service delivery – improved solid waste services and improved water supply, sanitation, and hygiene services – crucial to help rebuild trust and the social contract between the state and the people. These set of interventions will benefit some of the poorest communities, those that lack access to basic service delivery.
 - Second, the project supports building resilience to climate change related shocks and crisis, through interventions in improved flood protection. It is the informal and vulnerable communities whose exposure to such shocks is the highest and their ability to cope the lowest, that will be some of the main beneficiaries.
 - Third, the interventions targeted at vulnerable neighborhoods will also create economic opportunities for vulnerable members of these communities. As part of project preparation, youth and women in these communities have been directly involved and continue to be involved, for instance via a cash-for-digital-works program that pays people to collect and collate digital data on aspects of urban planning and infrastructure.
24. **The project is aligned with GoM's Strategic Framework for Economic Recovery and Sustainable Development (*Cadre Stratégique pour la Relance Economique et le Développement Durable, CREDD*) (2019-2023), a unique reference framework to integrate its economic, social and institutional policies,**

²³ A Country Engagement Note (CEN) is currently under preparation.

²⁴ Report No. 94005-ML. Discussed by the Board of Executive Directors on December 10, 2015.



relying on Mali's potentialities and resilience capacity for an inclusive development aiming at reducing poverty and inequalities. CREDD's objectives include (a) improving governance, including through deepening of decentralization, and improving land management mainly in urban areas; (b) promoting inclusive growth and structural transformation of the economy; and (c) protecting environment and developing resilience to climate change. In addition, the project will support national strategies and programs for sustainable development giving due consideration to decentralized urban management, including the National Strategy for City (*Politique Nationale de la Ville*) approved in February 2014, and the DCPND approved in February 2016. The 2009 National Sanitation Policy (*Politique Nationale d'Assainissement*), which revised version is pending endorsement, also reinforces the principles of decentralization in the subsectors covered by the project – solid waste, sanitation, stormwater. The project will also support the reconciliation and peacebuilding efforts initiated by the government through the recent National Strategy for Reconciliation and Social Cohesion and its Action Plan 2022-2026 (*Projet de Document de Stratégie Nationale de la Réconciliation et de la Cohésion Sociale et son Plan d'Action 2022-2026*), which lays the foundation for an area-based approach with Regional Teams and Municipal Committees for Reconciliation, and will allow to safely implement projects' investments and development initiatives.

25. **The project is aligned with the Bank's Strategy "Supporting a Resilient Recovery: Western & Central Africa Region Priorities 2021-2025"²⁵ with the goals to Adapt-Connect-Transform (ACT) and to promote Green, Resilient, Inclusive Development, and Competitive cities (GRID+).** The project will contribute to strengthening flood protection and resilience in Bamako from flooding events with a 10-year return period, improving access to SWM services, to Water supply, Sanitation, and Hygiene (WASH) services, and finally promoting socio-economic inclusion, better living conditions, and urban service delivery. The project activities are intended to promote transformational and sustainable impacts on communities, by prioritizing people-centered interventions that contribute to making Bamako a Green, Resilient, Inclusive, and Competitive City, in accordance with the World Bank's GRID+ framework and goals. The project is also aligned with the WBG's Global Crisis Response Framework, in particular, Pillar 2 (Protecting People and Preserving Jobs), Pillar 3 (Strengthening Resilience), and Pillar 4 (Strengthening Policies, Institutions and Investments for Rebuilding Better)²⁶. And finally, the project is also aligned with the Prevention and Resilience Allocation for IDA-19 for the period 2021-2023 (discussed by the Board of Executive Directors on May 18, 2021), which focuses on increasing resilience to shocks.
26. **The proposed project would also contribute to the World Bank's twin goals of reducing poverty and boosting shared prosperity in a sustainable manner, following higher goals and strategies:** (a) the current priorities of the Western and Central Africa Region, by mainstreaming Private Capital Mobilization, Human Capital and digital transformation, addressing climate change, and reducing fragility (including through a gender lens) across investments and components; (b) IDA 19 priorities related to climate co-benefits, jobs, gender, and IDA-20 whose theme is "*Building Back Better After the Crisis: Towards a Green, Resilient and Inclusive Future*" and will allow to support African countries like Mali hardly hit by recurring crises, including climate change, the COVID pandemic, rising insecurity, and most recently the crisis in Ukraine to better rebuild and accelerate their development and economic transformation; (c) World Bank's Western and Central African Region Priorities 2021-2025 and the Africa Regional Disaster Risk Reduction Strategy, which both emphasize the need to address Africa's infrastructure deficiencies to

²⁵ World Bank (2021) *Supporting A Resilient Recovery: The World Bank's Western and Central Africa Region Priorities 2021-2025*

²⁶ Large parts of components 1, 2 and 3 contribute to Pillar 3, sub-components 3.2 and 2.2 contribute largely to Pillar 2, and Component 4 contributes to Pillar 4.



mitigate disasters' impacts and achieve long-term sustainable growth and poverty eradication; and (d) the overall goal of the pipeline World Bank New Generation Africa Climate Business Plan, which is to strengthen Africa's pathway towards a climate future by encouraging the use of digital technologies, while deepening bottom-up mainstreaming efforts.

27. **The project is also well aligned with the objectives of the Scale-Up Window and is fully consistent with the World Bank's Sustainable Development Finance Policy (SDFP) and IMF borrowing limitations.** The latest Debt Sustainability Analysis (February 2021) shows that public debt is at moderate risk of overall and external debt distress, with some space for absorbing shocks. Currently there are no borrowing limitations - Mali does not currently have an IMF program and the World Bank's SDFP PPAs do not set borrowing limitation/ceilings for Mali. The project also has the potential for strong returns on investment, development impact and growth dividends. Investments under the project provide high potential returns in terms of long-term development and sustainable growth, both locally and nationally. Support for reforms and infrastructure investments in solid waste management, water supply, sanitation, and hygiene, and resilient infrastructure will contribute to expanding urban amenities, economic opportunities, and contribute to social development and human capital. The project will also improve health outcomes by reducing environmental and human exposure to pathogens through airborne dust, leachate, and contamination of groundwater resources through waste and fecal matters, which are key contributors to waterborne and vector diseases. The potential pool of beneficiaries for the infrastructure investments under the project is large. Social returns on the project investments will be amplified since the project targets the most vulnerable areas of the city in terms of both, poverty, and disaster risk. Such targeting allows for consolidation and magnification of impacts, also in conjunction with other ongoing interventions - by the WBG and other development partners. For example, project interventions are being coordinated with development partners, and internally, with the Water and Energy Global Practices, to layer improvements in WASH, solid waste management, community infrastructure etc. With support for a new master plan for the Greater Bamako region, the project is supporting capabilities for public asset inventories, which in turn aims to attract interest from private investors for a stream of potential partnerships for strategic assets, such as markets, bus stations, logistical platforms, commercial centers, and so on.

II. PROJECT DESCRIPTION

A. Project Development Objective (PDO)

28. **PDO Statement**

Improve access to urban waste, sanitation and water services, increase resilience to floods in selected vulnerable areas of the District of Bamako and targeted neighboring communes, and strengthen urban management capacity.

29. **PDO Level Indicators**

The selected PDO Indicators include the following:



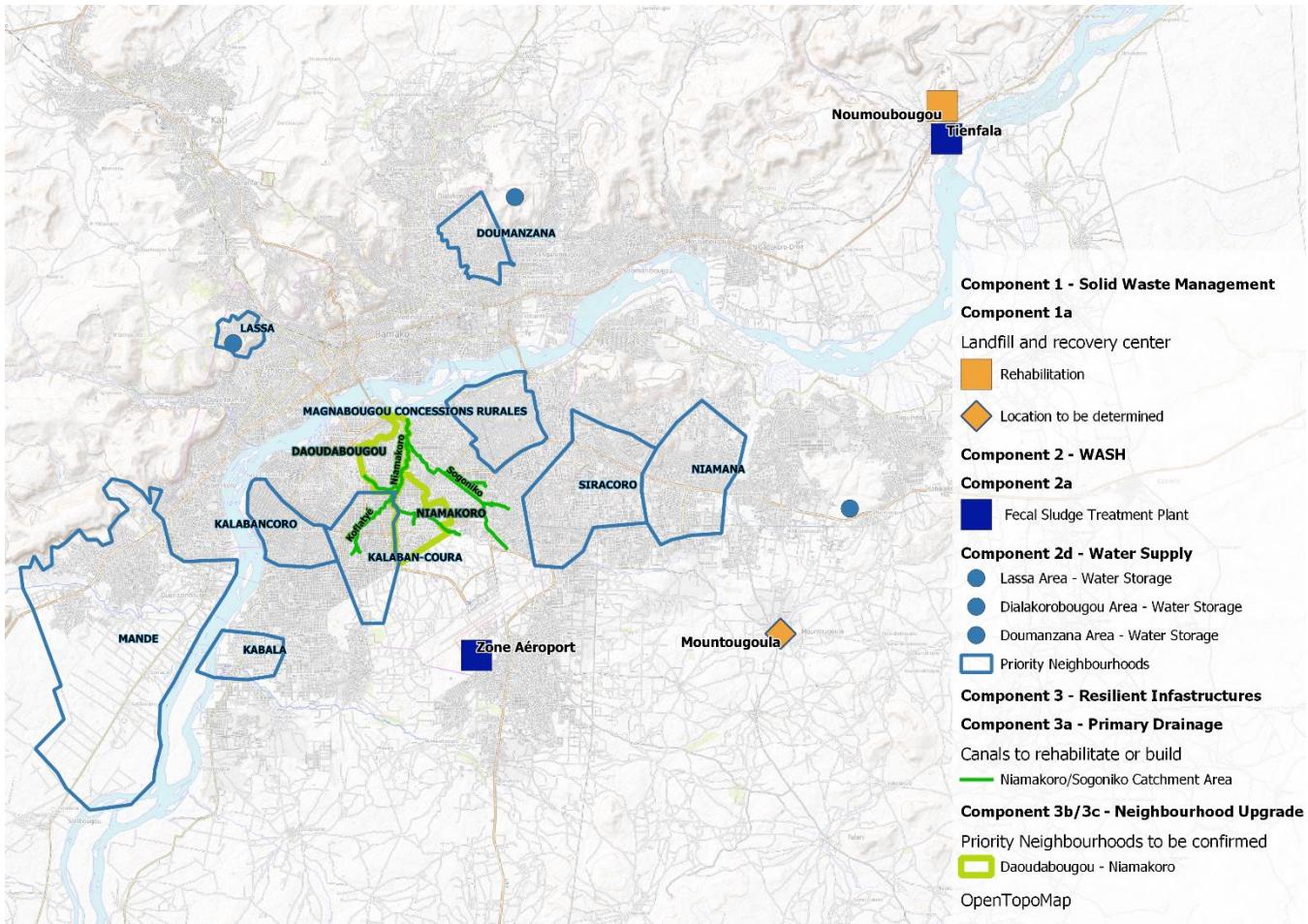
1. People provided with improved access to Solid Waste Management services (sub-indicator: those who are female)
2. People provided with access to improved sanitation services (sub-indicator: those who are female)—*Corporate Results Indicator (CRI)*
3. People provided with access to improved water sources (sub-indicator: those who are female)—*CRI*
4. Area protected from a flooding event with a 10-year return period – *Corporate Climate Indicator*
5. People provided with improved urban living conditions (sub-indicator: those who are female)—*CRI*
6. Beneficiaries that feel project investments reflected their needs (sub-indicator: percent of which female) – *Citizen Engagement Indicator*
7. A digital platform (skills, data, and tools) is used to inform critical urban planning activities and investment studies in the project areas

B. Project Components

30. Learning from past experiences, including urban operations in secondary cities in Mali, the project prioritizes fewer and larger projects with longer timeframes, uses technical assistance to encourage capacity building at all levels of government, has a flexible design that also deploys a spatially differentiated approach, uses innovative monitoring techniques, and provides strong support to the project implementation unit. The project will have the following components and sub-components (project areas and interventions are also show in the figure below).



Figure 1: Map of Project Area and Interventions



Component 1: Improved Solid Waste Management (SWM) (US\$60 million equivalent)

31. Activities under this component aim to (a) rehabilitate and expand infrastructure needed to restore primary waste management functions i.e., collection, transfer and treatment, and (b) improve the sector's performance by strengthening the institutional and organizational framework as well as sector financing, which is a requirement to further enhance PSP and support job creation initiatives along the value chain.
32. **Sub-component 1.1: Development of Solid Waste Management infrastructure (US\$55 million).** The proposed investments consist of redeveloping the Noumoubougou landfill to provide the Greater Bamako with 20-year treatment capacity. This capacity will be increased by (a) retrofitting the existing cell which would cover the city's disposal needs for the first three years, (b) designing and developing the expansion of the Noumoubougou landfill to reach an additional two-million-ton capacity on the remaining 40 hectares of the site. This sub-component will also carry out the preparation and feasibility studies for a new landfill on the right bank of the Niger River, near Mountougoula, as planned under the National SWM strategy of 2016 to reduce transportation costs for communes located south of the river. Additionally, this sub-component will expand infrastructure to effectively collect and transfer solid waste through: (a)



construction of sorting and recycling facilities; and (b) development and construction of a network of modern and safe transfer points equipped with bins for effective transfer of waste collected by Small and Medium-sized Enterprises (SMEs). It is estimated that up to 25 transfer points will be required, exact locations will be determined in collaboration with collectors for optimal spatial distribution to match collection routes, based on the current mapping of dumpsites. Once transfer and disposal capacity is in place, illegal dumpsites will be cleaned, and waste transported to the landfill.

33. **Sub-component 1.2: Performance improvement of solid waste management services (US\$5 million).** This sub-component seeks to strengthen the performance of selected solid waste management actors as further detailed in the PIM and contribute to the formulation of a comprehensive sector strategy, through the provision of technical assistance and capacity building covering: (a) studies to establish an effective framework for PSP specifically targeting the construction and operation of investments foreseen under sub-component 1.1; (b) studies to enhance sector performance including mapping of current collection system, transit point, and dumpsites; (c) designing and implementing a performance management system for tracking operational and financial performance including data management and improved monitoring and evaluation (M&E) for project indicators; (d) developing an upstream policy to strengthen the institutional and regulatory framework, focusing, *inter alia*, on minimizing non-recyclable products, including a review of policies and regulations targeting manufacturing and delivery systems, and enhanced institutional collaboration; and (e) supporting job creation initiatives along the value chain specifically targeting youth and women from selected communities affected by the project implementation or/and belonging to vulnerable groups.
34. **Local and international Non-Governmental Organizations (NGOs) will organize consultations** and develop and implement a social and gender program addressing project-specific resettlement and livelihood issues through (a) the socio-economic reintegration of vulnerable groups such as the elderly, women, and children; and (b) the closure of urban dumpsites and construction of transfer points and material recovery facilities operated by cooperatives of project Affected Persons (PAPs) under acceptable health and safety conditions. This program will include specific calls for female participation to encourage women's inclusion. Job creation initiatives will target 40 percent of the jobs created going to women, more than the current female participation (22 percent) in permanent full-time jobs in Bamako.²⁷
35. The project will support institutional and fiscal reforms focusing on financial sustainability by conducting a sector finance study reviewing allocation of central government financing, subsidies, payment mechanisms and tariffs. Training will be provided for institutional strengthening to properly manage complex structures and processes involved in procuring, managing, and auditing current and future Public-Private Partnership (PPP) contracts. Procurement and transaction support could potentially be provided in collaboration with the International Finance Corporation (IFC).
36. **Both sub-components under Component 1 will address climate vulnerability through several different activities and investments.** First, the landfill investments under sub-component 1.1 will incorporate advanced landfilling technology including methane capture to support climate mitigations by reducing Greenhouse Gas (GHG) emissions. The component will also support stronger regulations to prevent and reduce open burning of waste, along with better optimizing waste collection routes to further reduce GHG emissions. The improved landfill infrastructure will also contribute to climate change adaptation by improving landfill gas capture and flaring practices. The reduction in GHG emissions associated with this

²⁷ Enterprise Survey Data



component is estimated at 4,390,258 teqCO₂ (further detail in Annex 4).

Component 2: Improved Water Supply, Sanitation and Hygiene (WASH) (US\$70 million equivalent)

37. In the early stage of the large-scale Kabala water program, a sanitation program was identified as part of the 2016 SDAB to mitigate the health, environmental and social risks associated with the planned additional delivery of 288,000 cubic meters of safe water per day, and proportional increased discharge of wastewater. To ensure water and sanitation would be addressed jointly, a priority sanitation project was prepared under African Development Bank (AfDB) financing but did not materialize due to land tenure issues for the proposed septage treatment facilities.²⁸ Existing studies provide a strong basis for sanitation activities proposed under this component, focused both on improved sanitation services and new treatment facilities and accompanying measures to help strengthen the sanitation sector's institutional, organizational, and financial framework. The component will address current and future climate vulnerability. Addressing constraints to the supply of clean water is an important aspect of climate change adaptation and resilience to droughts. Reducing water losses and improving sanitation services will also support GHG emission reductions estimated at 595,648 t_{eq}CO₂ (further detail in Annex 4). To expand access to improved water and sanitation services, this component will finance the following sub-components:
38. **Sub-component 2.1: Fecal sludge treatment plants (US\$18 million).** This sub-component will increase the capacity of fecal sludge and septage treatment in Bamako through financing the construction of two fecal sludge treatment plants (FSTPs), as prioritized in the SDAB, to address the current absence of any appropriate wastewater system in Bamako. The two FSTPs will have a total daily capacity of 600 cubic meters, equivalent to 42 tons of dry matter, benefiting an estimated 700,000 inhabitants. The Senou Airport area on the right bank (Commune VI) and Tienfala area on the left bank (commune of Tienfala) have been identified by GoM to host the FSTPs. To mitigate risks, an environmental and social impact pre-assessment of the plants was prepared and disclosed in May 2021, which then informed the selection of the sites. Environmental and Social Impact Assessments (ESIAs) are now underway. These FSTPs will provide an environmentally-sound disposal solution to septage haulers. The proposed treatment process is lagoon system, which will help minimize GHG emissions, hence contributing to climate change mitigation and protecting riverine communities from wild dumps of untreated sludge, while providing farmers with opportunities for valorization of dried sludges. The component will also support the construction of access roads for each FSTP.
39. **Sub-component 2.2: WASH in schools and health centers, domestic latrines and behavior change (US\$15 million):** This sub-component will improve domestic and institutional sanitation services through financing the following activities: (a) construction of up to 800 latrines and hand washing facilities in selected public schools, health centers and public markets, (b) rehabilitation and/or construction of up to 20,000 domestic latrines along with sumps for grey water, targeted at the poorest households located in the vicinity of those selected establishments, (c) behavior change and communication and awareness raising campaigns, particularly for students and health workers on hygiene practices, and for adequate operation and maintenance (O&M) of the facilities. Following national standards, selected schools will be

²⁸ Necessary due diligence for the sites selected for the AfDB-financed projects could not be completed in due time by GoM. These sites are not available anymore. Alternative areas were identified for the present project and a scoping assessment of the environmental and social risks in those areas has been prepared. On this basis, GoM is finalizing the process of site selection for the site-specific technical and safeguards studies to be prepared.



equipped with sanitary blocks including Ventilated Improved Pit latrines and one to five cabins, depending on the number of students.²⁹ They will be geographically separated for girls and boys. A geographic targeting will be used to select beneficiaries of domestic latrines to prevent the neighboring population, over a radius of 200 meters, from using the schools' or health centers' sanitary blocks as public latrines. Selected households will be limited to those without latrines or with only dilapidated ones, who are typically the very poor and cannot afford to invest in their own latrine and will be fully subsidized. In line with the overall project's communication strategy aimed to accompany the development of new infrastructure and promote behavior change toward better sanitary practices, this sub-component will also include activities targeted specifically at women and girls in schools and health centers, including providing gender-sensitive facilities, and information and trainings for menstrual hygiene management and handwashing.

40. **Sub-component 2.3: Strengthening institutional framework of the sanitation sector and capacity building for DNACPN and ANGESEM³⁰ (US\$4.3 million):** The institutional framework of the sanitation sector is fragmented, with overlapping roles and responsibilities, weak policies and strategies and regulations. There is no sanitation utility and a lack of regulation and financing mechanisms to ensure sustainable fecal sludge management services. To improve the sanitation service chain, the sub-component will:
- Provide technical assistance, studies, and capacity building to DNACPN and ANGESEM. It will help further to clarify roles and responsibilities and strengthen the institutional framework of the sanitation sector through an assessment of their respective missions and lessons learned in the region. Within the framework of decentralization, the communes / Grand Bamako, have the ultimate responsibility for the sanitation services but lack technical and financial means necessary for their mission. To overcome the lack of capacity of existing entities, technical assistance will support the establishment of financial mechanisms to cover O&M costs and determine a management model for the FSTPs while keeping sanitation services affordable. This support will help relevant stakeholders to establish a framework for effective PSP for the operation of the FSTPs, based on lessons learned from other PSP experiences in the region. Support will also help improve the design to build resilience and incorporate O&M standards, including contingency planning, to address climate risks and avoid service disruption and contamination in the event of floods.
 - Support to manual and mechanical service providers, through (a) an accreditation program of qualified emptiers incentivizing proper discharge at official sites, improved working conditions for sanitation workers and permitting them to develop sound business development plans; and (b) the scaling up of the existing 'Uber-type' app piloted by NGOs ("Allo Vidanges") to connect households with emptiers. The app will also inform the development of a digital monitoring system of sanitation services to help Grand Bamako and ANGESEM to control and plan sanitation services delivery. Technical assistance and twinning with a sanitation utility with

²⁹ Based on UNICEF design and ratios applied in Mali: the number of blocks per school will be determined based on a 70 students per latrine, latrines dedicated to girls will be equipped for menstrual hygiene management and handwashing posts will be installed.

³⁰ National Agency for the Management of Wastewater Plants of Mali (*Agence Nationale de Gestion des Stations d'Epuration du Mali*, ANGESEM) is a public agency that was initially created for the management of wastewater treatment plants. In Bamako, it manages the only three, small-scale existing wastewater treatment plants, in hospitals and the industrial area, with poor results both in terms of quality of service and overall management. Its mission was revised in November 2020 to expand its scope to both collective and onsite sanitation infrastructure, especially through technical assistance to sanitation operators and delegated project management on behalf of decentralized authorities (communes).



proven track records in the subregion will support capacity development for both ANGESEM and selected private operators.

- c. Feasibility studies and accompanying safeguards instruments for future upgrading of the urban sanitation systems in Bamako, including the development of sewers and wastewater treatment plants as envisioned in the Sanitation Master Plan will be progressively implemented after the priority phase. And these are budgeted for in the 18-month PP. In compliance with the Operational Policy OP7.50 on International Waters, ToRs of these feasibility studies will include an assessment of any potential riparian issues and transboundary impacts before any decision to go forward on the wastewater treatment plants.

41. **Sub-component 2.4: Urban water supply (US\$32.7 million):** This sub-component will build on the successful implementation of the first phase of the Kabala program³¹ and the need of additional support to address bottlenecks. The new Kabala water treatment plant is operational since 2019, providing an additional capacity of 280,000 m³/day. As a result, 660,000 customers on the right bank benefit from an improved, continuous service. Additionally, over 1,600 km of new distribution networks, 1,100 standpipes and 59,000 new social household connections, out of the 105,144 that are planned to be provided by 2022 (40,000 of which under the World Bank financing), providing access to safe water at home to 600,000 people. However, upgrading, and further densification of critical parts of the water network is still needed to supply the left bank and expand access to the outskirts of the district on the right bank. The sub-component will therefore finance infrastructure planned in the second phase of the Kabala program to: (a) increase water storage capacity (watertight concrete towers and tanks) by approximately 16,000 m³ to further improve and regulate the distribution of the current and proposed water system and service delivery in Bamako and its neighboring communes (such as Lassa and Doumanzana on the left bank, Dialakorobougou on the right bank), (b) expand the water distribution networks in unserved areas by up to 300 km and rehabilitate existing networks, and (c) increase access to piped water by installing up to 17,500 social household connections. It will also finance (a) consulting services (including safeguards studies) and supervision service, monitoring, evaluation, and audits as well as technical assistance to strengthen SOMAPEP's management capacity. This will help SOMAPEP and the public water operator SOMAGEP³² to develop more climate resilient, less-carbonized solutions, including reducing water losses, hence reducing operational costs, and building resilience of the sector. The two public water utilities work hand in hand in line with the provisions of the lease contract that clearly defines the roles and responsibilities of sector stakeholders, including the regulator. The proposed project will support activities to reduce the non-revenue-water that is key factor supporting the sustainability of water services in Bamako.

Component 3: Investments in Resilient Infrastructure (US\$90 million equivalent)

42. **The objective of this component is to enhance flood resilience and urban living conditions in selected vulnerable neighborhoods, in turn increasing resilience to COVID19 compound risks.** This component will finance a range of complementary and integrated investments in drainage infrastructure, nature-based solutions, neighborhood upgrading, driven by a participatory approach for the selection, design, and realization of the infrastructures. This participatory approach will maximize local livelihood opportunities through grants for micro-projects led by local organizations as well as labor-intensive works

³¹ The program is implemented by the national asset-holding company, the Mali National Potable Water Company (*Société Malienne de Patrimoine de l'Eau Potable*, SOMAPEP)

³² The Mali National Potable Water Management Utility (*Société Malienne de Gestion de l'Eau Potable*, SOMEGEP)



for larger infrastructure fostering job creation and economic recovery in the wake of COVID19. This component will incorporate investments to improve areas such as streetlighting, public spaces, and stormwater drainage systems to increase resilience and reduce flood vulnerability; thus, supporting both climate change adaptation and mitigation.

43. **The investments will target flood vulnerable hotspots and associated catchment areas that have been identified throughout the District of Bamako using the drainage masterplan, participatory flood mapping, and socio-economic indicators.** The hotspots to be addressed will be selected according to the following criteria: (a) level of exposure to flood risk hazard; (b) priority in the drainage masterplan; (c) vulnerability and poverty of the affected population; (d) opportunities to secure and enhance public spaces, and complementary neighborhood upgrade; (e) number of beneficiaries from upgraded neighborhood; (f) complementarity with ongoing or future interventions from development partners; and (g) limit demolition and resettlement. A study was procured under the PPA and will be carried out during the first six months of the project to confirm the selection of three neighborhood and catchment areas to be selected for this component. The intervention will be combined with investments from components 1 and 2 on solid waste and sanitation management in the same geographic areas targeted for a larger integrated impact.
44. **Sub-Component 3.1: Investments in Drainage Infrastructure (US\$56 million)** This component will finance construction and/or rehabilitation of urban drainage, and nature-based solution infrastructures to restore, increase and protect the capacity of the drainage network and reduce the negative impacts of recurrent flooding. With the drainage network, integrated storm water management will be adopted where possible, developing public and green spaces along canals and securing and enhancing the public spaces that are in poor condition and being threatened by encroachment to retain water during storm events. The pluvial drainage masterplan elaborated in 2016 identifies US\$60 million priority works on drainage across the city and provides preliminary design for recalibration and rehabilitation of hydraulic structure. This information will be complemented by further studies to support the improvement of the flood management strategy such as a flood risk assessment study and urban audit that will consider green solutions and the development of public spaces in the flood management strategy. The final details of such infrastructure will be available during the first 18 months of project implementation. Priority works are being financed under several projects. As the German Development Bank (*Kreditanstalt Für Wiederaufbau, KfW*) funded project focuses on areas that suffered from 2013 floods, the project will focus first on catchment area who suffered the most from the 2019 flooding such as Niamakoro. Given the scope of the works, the public work agency, Agency for the Implementation of Public Works for Employment (*Agence d'Exécution des Travaux d'Intérêt Public pour l'Emploi, AGETIPE*) will be the delegated project manager coordinating closely with the communes and DNACPN, ultimately in charge of the maintenance. These investments are complementary to the soft measures such as early warning systems and outreach campaign being implemented by the Strengthening Climate Resilience in Mali project (P161406).
45. **Sub-component 3.2: Investments in Neighborhood Upgrading (US\$30 million):** In selected neighborhood within those catchment areas, this sub-component will finance construction and rehabilitation of demand-driven neighborhood improvement infrastructure, including *inter alia*, local roads, pedestrian paths, small bridges, street lighting, secondary storm water drainage systems, community facilities (notably small health centers, schools, and youth or community centers) and other public spaces (including public squares, leisure/social sports spaces, parks and green areas, and streetscapes). Specific



investments are driven by the needs of each beneficiary community. They will be identified using a participatory approach through urban audits resulting in neighborhood improvement plans, considering the study on public spaces and public space management experiences developed under the Urban Local Government Support Project (*Projet d'Appui aux Communes Urbaines du Mali*, PACUM). Daoudabougou and Niamakoro neighbourhoods will be the first neighborhoods where citizen-driven urban audits would start to define and prioritize detailed neighborhood improvement plan within the first 18 months of project implementation. They are the two most populated and less structured neighborhood of the Niamakoro catchment area. These interventions will include gender-informed design by engaging women in the planning and design process, through participatory planning workshops and consultations conducted by the firms in charge of the urban audit and pre-feasibility studies. During implementation, the public works firms will be required to suggest approaches to foster hiring of local workforce where possible in rehabilitation and maintenance works, including specific strategies to recruit women.

46. **Sub-component 3.3: Support to local initiatives focusing on urban services and economic inclusion (US\$4 million):** To complement the larger infrastructure works, and have early results during the study period for sub-components 3.1 and 3.2, this sub-component will finance (a) fast-disbursing grants to selected local associations to develop micro-projects to support economically inclusive neighborhood improvement initiatives with a priority on the inclusion of young people, particularly young women, and (b) the provision of technical assistance and training to selected beneficiary communities. The Project Coordination Unit (PCU) will implement this activity with support from the Regional Development Agency (*Agence de Développement Régional*, ADR) who will be engaging with the selected communes, neighborhood committees, and local associations while the grant management and capacity building will be managed by an NGO or consortium of NGOs recruited through a selection procedure. A grant management operational manual will outline the details of the selection process, fiduciary, procurement, and M&E to be used in the implementation of this sub-component. A review of the social fabric and local non-profit sector combined with results from the public place studies recently released will be used to define and issue calls for proposal on key social and urban development issues aligned with the preparation of sub-component 3.2. Eligible local initiatives could include: improvement of facades, public spaces and green spaces, sport and cultural equipment and events, labor-intensive work approaches to enhance the urban image of the neighborhood and maintain local infrastructure and services, improvement of local services, environmental care, maintenance of local infrastructure, as well as skills development, ICT activities and other income generating activities. Besides creating local economic opportunities, these activities facilitate the emergence of space uses, local initiatives and actors that can be considered in the investment program and support the preparation, ownership, and use and sustainability of the infrastructure to be financed under sub-components 3.1 and 3.2. This sub-component will ensure female participation in these micro-projects targeting women in particular to respond to calls for participation, by promoting these initiatives within women's community groups, and by reaching out to women led organizations. All of these efforts will be aimed at reaching the target of 40 percent female for the jobs created.

Component 4: Strengthening Institutional Capacity (US\$18 million equivalent)

47. This component, operating interdependently with Components 1, 2 and 3 will be implemented under the management responsibility of the PCU. It will support capacity building to strengthen targeted entities at both local and central levels to enable them to carry out their respective mandates more effectively as part of project implementation, including development of appropriate and sound strategic urban planning



as well as administrative, financial and technical management systems, tools and capabilities to effectively deliver local services. Such activities will include, inter alia, support for: (4.1) operationalization of the newly created Inter-collectivity Syndic or Grand Bamako; (4.2) setting up of a digital platform for resilience, (4.3) elaboration of the Grand Bamako master plan; and (4.4) developing capacity to better identify and increase own-source revenues, including from public assets.

48. **Sub-component 4.1: Support for Operationalization of the Grand Bamako (US\$3 million):** The objective of this activity is to assist the Board of the Syndicat Mixte Inter-collectivités or Grand Bamako to put in place the administrative and accountability structure required to make the Grand Bamako operational. Specifically, the sub-component aims to support the preparation of the relevant critical management tools, on the basis of the competencies that the District of Bamako and the other member local governments of the Grand Bamako have agreed to take in charge together. Hence, technical assistance will be put in place through a specialized firm with the mandate to support the Council of the Grand Bamako in setting up, adopting, and implementing a strategy to launch the operationalization of the Grand Bamako. The main activities to be carried out accordingly are:
- a. Identify the critical functions to be fulfilled in order to quickly and effectively boost the operationalization dynamic of the Grand Bamako, and define the roles and responsibilities of the respective structures;
 - b. Develop and make proposals for the immediate establishment of targeted critical structures (general secretariat - others) and build their capacity to fulfill specific tasks;
 - c. Support the development of an administrative, budgetary, financial and accounting procedures manual for the Grand Bamako;
 - d. Support the development of a communication and accountability building strategy;
 - e. Support the preparation of a multi-year (three to five years) development plan for the Grand Bamako to integrate the investment backlogs in the priority infrastructures and services for the populations as identified through community participation;
 - f. Support the preparation, based on the multi-year development plan and in consultation with communities, of both a three-year investment program and the budget deriving from the investment priorities for the first year of the said investment program; and,
 - g. Initiate, if necessary, feasibility analyzes and detailed studies for the financing and implementation of priority investments.
49. The PCU will be in charge of the overall coordination of activities to be undertaken for the operationalization of the Grand Bamako, in relation with the various entities that have been identified as strategic at both central and local level.
50. **Sub-component 4.2: Digital Platform for Resilience – foundation for the Urban Master Plan and Local Economic Development plans (US\$4.5 million):** ADR has started to support the District of Bamako and its communes to leverage geospatial technology and data for investments and urban service planning in sectors such as health and education. Building on this work financed by ADR's resources, and technical assistance financed by the Korean Green Growth Trust Fund, this activity will provide technical assistance and training to selected local and national authorities' staff and selected recent graduates to collect digital geospatial data using low-cost, open, innovative geospatial technology such as GPS mobile phones and drones for them to develop a detailed digital base map for the District of Bamako that is open to all stakeholders. A city platform will provide interactive and dynamic access to the data so that it can be used in local development plans as well as integrated in operational procedures on flood management across



agencies. The base mapping and technology will also serve as a base for M&E data collection. This data will help to reduce vulnerability to flood risk, leading toward better climate change adaptation. To sustain this approach, the activity will support selected educational institutions to develop and produce short courses and update traditional curriculum with digital tools for urban planning and resilience to train the workforce to be involved in the project and beyond. This activity will promote involvement of women in digital and geospatial technologies, it will specifically target female staff for short training as well as long training as a career path. Participatory data collection will put an emphasis on supporting female participation as well as capturing gender specific needs for urban planning and flood resilience. ADR will be strengthened to take in charge the establishment of the Digital Platform for Resilience, in relation with the diverse entities that would have been identified as strategic for at both central and local levels of government.

51. **Sub-component 4.3: Support Urban Master Plan (US\$5.5 million):** The objective of this sub-component is to support the establishment of a master plan at the scale of the Grand Bamako as well as to support the establishment of local development plans that would be initiated by targeted member local governments. The process to establishing the master plan will rely on a resilient planning and risk management approach, particularly in terms of land management and flood prevention, while avoiding, among other things, the encroachment of non-constructible areas and other public domains as the creation of possible new risks under the pressure of the Grand Bamako rapid spatial expansion. Better urban planning will also help to reduce the city's carbon footprint through traffic reductions and better planning of public services. The resiliency approach incorporated into this planning will help to enable better climate change adaptation, while traffic reductions will support mitigation. The master plan will integrate the strategic priorities that would have been included in Components 1, 2 and 3, namely infrastructure planned for solid waste management, drinking water supply, and sanitation and drainage services, while informing the preparation of the multi-year local development plan and investment program to be established in support of operationalization of the Grand Bamako. The master will also integrate strategic measures and investments to improve accessibility and urban mobility in the Grand Bamako metropolitan area. Data collection and the establishment of the digital platform (see sub-component 4.2) will be undertaken accordingly with the aim to inform both the establishment and the periodic revisions of the master plan to make its implementation as adaptive and effective as possible. The activity will also provide support for establishment / revisions of local development plans in targeted communes of the Grand Bamako. The specific studies and activities to be carried out under this sub-component are:
- a. Strategic Environmental and Social Assessment (SESA), an instrument that will describe analytical and participatory approaches that aim to integrate environmental and social considerations into policies, plans and programs and evaluate their inter linkages with economic considerations;
 - b. Preparatory and community engagement studies for the preventive resettlement and restructuring of informal neighborhoods for communities at risk;
 - c. Resilient and integrated urban planning studies in targeted neighborhoods in the District of Bamako and other communes that are members of the Grand Bamako with emphasis on local mobilization for the implementation of flood mitigation measures;
 - d. Preparation and development of detailed urban plans integrating flood risk management for the six communes of the District of Bamako; and,
 - e. Studies for better management of public space with a view to contribute to increased traffic speeds through measures aimed, among other things, at: (a) preserving spaces reserved for



specific uses (sidewalks, sales areas, vehicle parking areas, lanes for two-wheeled vehicles, corridors and stops for public transport vehicles, etc.); (b) reducing traffic on the primary road network by improving practicability and increasing average speed on secondary roads; and (c) better ensuring the respect of the freight transport requirements throughout the metropolitan area to avoid fueling urban congestion.

The establishment of a master plan and local development plans will include digital files deliverables as well as an online interface to be used in 4.2 implementation.

52. The Grand Bamako Urban Agency (*Agence Urbaine du Grand Bamako*) has been positioned as the key agency supporting the implementation of the activities to establish the master plan, in relation with the diverse entities that have been identified as strategic at both central and local levels of government.³³ The agency will need to be strengthened accordingly.

53. **Sub-component 4.4: Municipal finance and asset management for service delivery (US\$5 million):** The purpose of this activity is to assist the District and Communes in strengthening their capacities (a) to manage revenues and expenditures and (b) to manage physical assets (e.g., roads, buildings, and public spaces), with the overall aim of improving municipal service delivery. Financing provided under this activity will cover technical assistance, capacity development inputs (training and systems development), and limited upgrading of Urban Local Government (ULG) offices and ICT equipment. Existing asset management systems (inventories, maintenance, and finance) will be strengthened/upgraded and linked to existing (and adapted) Geographic Information System (GIS) platforms and to planning and budgeting processes (for O&M, mobilizing private capital, etc.). Activities will include a diagnostic review of ULG expenditures, followed by investments to establish and apply improved processes and systems for areas such as payroll management, expenditure controls, etc. This is consistent with and will strengthen ongoing Government initiatives to introduce program and results-based budgeting approaches to local government. The sub-component will also explore options for more efficient municipal spending and for increasing own-source revenues (particularly property taxes), including establishment and implementation of Revenue Improvement Action Plans. Through this sub-component, the project will contribute to an increase in the quantum of local expenditure allocated to investments, asset maintenance and service delivery. This sub-component will also finance preparatory studies for a limited number (one or two at maximum) for public assets deemed high potential for mobilizing private sector investment.

Component 5: Project Coordination Unit (US\$12 million equivalent)

54. This component will finance incremental project management costs, financial and technical audits, M&E of project activities (including gender disaggregated data), oversight and implementation of environmental and social safeguards, communication, technical assistance and consultant services, training, and knowledge exchange. The PCU will take in charge the component management in coordination with all the respective specific agencies as identified for technical implementation of project components 1, 2, 3, and 4. Component 5 will also finance a technical assistance package to strengthen capacity of the PCU.

³³ These include, *inter alia*, the National Directorate of Urbanism and Habitat (*Direction Nationale de l'Urbanisme et de l'Habitat*, DNUH), the National Directorate for Sanitation and Control of Pollution and Nuisances (*Direction Nationale de l'Assainissement et du Contrôle des Pollutions et Nuisances*, DNACPN), the National Directorate of Roads (*Direction Nationale des Routes*, DNR), the National Directorate of Land and Maritime Transportation (*Direction Nationale des Transports Terrestre et Maritime*, DNTTM) as well as their respective deconcentrated entities within the Grand Bamako metropolitan area.



Consultants will be hired to support implementation of various components, including supervision engineers. Implementation of specific sub-components related to large infrastructure may be delegated to qualified sector agencies.

Component 6: Contingent Emergency Response Component (CERC) (US\$0 million)

55. This component is a ‘zero-assignment’ CERC that will provide funding for immediate response in the event of an eligible crisis or emergency, defined as an event that has caused or is likely to imminently cause a major adverse economic and/or social impact associated with natural or man-made crises or disasters.

Table 1: Project Cost (US\$, millions)

Components and Sub-Components	IDA financing
Component 1: Improved Solid Waste Management	60.0
Sub-component 1.1: Development of Solid Waste Management infrastructure	55.0
– <i>Redevelopment of Noumoubougou landfill; Retrofit of existing cell; Construction of new cell; New landfill on the right bank, near Mountougoula</i>	35.0
– <i>Sorting and recycling facilities, landfill gas use in Noumoubougou</i>	5.0
– <i>Construction of transfer points</i>	13.0
– <i>Cleaning of dumpsites</i>	2.0
Sub-component 1.2: Performance improvement of solid waste management services	5.0
– <i>Framework for effective private sector participation</i>	0.7
– <i>Enhancing efficiency and effectiveness of the solid waste sector</i>	0.5
– <i>Upstream policy development</i>	0.3
– <i>Community level and job creation activities</i>	3.5
Component 2: Improved Water Supply, Sanitation and Hygiene	70.0
Sub-component 2.1: Fecal Sludge Treatment Plants	18.0
– <i>Construction and supervision of 2 fecal sludge treatment plants</i>	18.0
Sub-component 2.2: WASH in schools and health centers, domestic latrines and behavior change	15.0
– <i>Construction of WASH facilities in schools</i>	1.7
– <i>Construction of WASH facilities in health centers</i>	0.8
– <i>Provision of domestic latrines</i>	12
– <i>Behavior change communication campaigns</i>	0.5
Sub-component 2.3: Strengthening institutional framework of the sanitation sector and capacity building for DNACPN and ANGESEM	4.3
– <i>Support to sector agencies</i>	1.8
– <i>Support to service providers</i>	1.3
– <i>Studies for the development of Bamako sanitation systems</i>	1.2
Sub-component 2.4: Urban Water Supply	32.7



Components and Sub-Components	IDA financing
– <i>Construction of water storage infrastructure</i>	11.0
– <i>Construction of water distribution networks</i>	15.7
– <i>Provision of social household connections</i>	4.0
– <i>Consultant services and support to SOMAEP</i>	2.0
Component 3: Investments in Resilient Infrastructure	90.0
<i>Sub-component 3.1: Investments in Drainage</i>	56.0
– <i>Investment in Niamakoro catchment area</i>	18.0
– <i>Investments in catchment areas to-be-determined</i>	37.0
– <i>Institutional mapping and strengthening of O&M</i>	1.0
<i>Sub-component 3.2: Neighborhood Upgrading</i>	30.0
<i>Sub-component 3.3: Support to local initiatives focusing on urban services and economic inclusion</i>	4.0
– <i>Grants to be awarded to local initiatives in 4 neighborhoods</i>	4.0
Component 4: Strengthening Institutional Capacity	18.0
<i>Sub-component 4.1: Support for Operationalization of Grand Bamako</i>	3.0
<i>Sub-component 4.2: Digital Platform for Resilience</i>	4.5
<i>Sub-component 4.3: Support the Urban Master Plan</i>	5.5
<i>Sub-component 4.4: Municipal finance and asset management for service delivery</i>	5.0
Component 5: Project Coordination Unit	12.0
Component 6: Contingent Emergency Response Component	0.0
Total costs	250.0

C. Project Beneficiaries

56. The project exemplifies the people-centric approach, and focuses on communities and vulnerable groups including youth, women, and IDPs. The total number of direct beneficiaries of this project is estimated at 1,500,000, of which 750,000 are women. These direct beneficiaries include the following categories: households located in proximity to the SWM, WASH, drainage, and neighborhood investments under the different project components, the various government agencies supported under Component 4, and individuals trained across the different project activities. It includes activities with a special focus on employment and local citizen participation such as an employment program for the waste sector, and the involvement of local NGOs in the development of neighborhood infrastructures, both with a particular attention on gender. More specifically, 150,000,000 people will benefit from improved solid waste management services, 250,000 people will benefit from improved sanitation services and water resources, and 80,000 people in vulnerable neighborhood will benefit from community infrastructure, and 20,000 people will benefit from primary drainage infrastructure for flood protection. In determining the location of the different infrastructure investments, the project has employed a hot-spot oriented approach, as



such targeting neighborhoods (and as a result beneficiaries) that are most vulnerable.

D. Results Chain

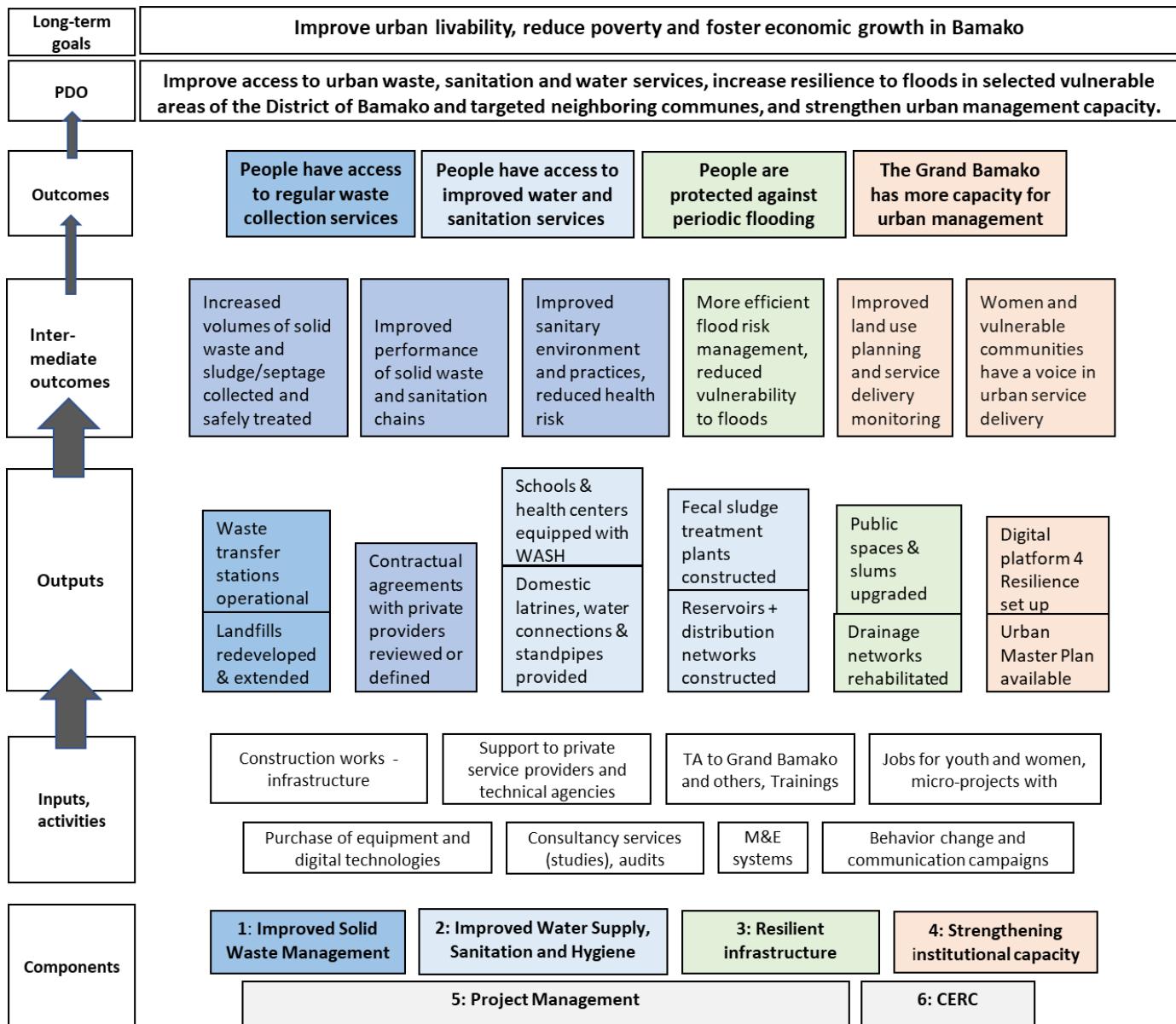
57. **The theory of change underlying the proposed project interventions** (see next page) is that delivering prioritized urban infrastructure and services to reduce health, environmental, and climate risks, and to increase resilience to floods in vulnerable target areas and supporting urban management capacity in the Grand Bamako – all of these interventions would support the Government’s efforts to demonstrate visible and tangible improvements in the lives of urban citizens in the capital city in the longer term. This is critical for reducing poverty and at the same time increasing the economic attractiveness of Bamako as an engine of growth.
58. **The project intends to address bottlenecks impacting urban livability and resilience in Bamako.** Badly managed urban growth has been associated with worsening livability and increasing disaster risks. The project therefore attempts to (a) improve urban service delivery, particularly solid waste, sanitation, and water (Components 1 and 2) as well as flood risk management (Component 3), and (b) support institutional and coordination capacity to ensure a sustainable urban development, the adequate financing of O&M of service delivery and inclusive monitoring and accountability of urban management (Component 4). At the same time, interventions will contribute to leverage digital technologies and enhance a conducive environment to maximize private capital mobilization.
59. **The project will also address vulnerabilities amplified by health and other crises.** This includes establishing reliable databases on hotspots of disease spread and establishing a monitoring system (in real time) through feeding GIS based inputs into a mapping system. In addition, the project will inject funds in vulnerable neighborhoods for urban upgrading and adaptation to future disasters and expand basic urban service delivery, creating jobs and raising awareness. The project also establishes an effective framework for participation by vulnerable youth in communities and by private sector. It does this through a focus on (a) economic recovery activities, including use of GIS to target economic clusters and cash for digital work during project preparation, and undertaking of drainage and neighborhoods upgrading during implementation; (b) adaptation measures in terms of identifying risks and transmission hotspots during project preparation; and (c) applying appropriate approaches to plan, finance and invest in relevant infrastructures for sustainable delivery of basic services.
60. **The project will also prioritize the geographical areas of interventions and types of investments to maximize multisectoral, cumulative impacts.** First, the project lays out the main criteria to select different project sites and investments. These include the levels of poverty and vulnerability, the potential number of beneficiaries, flooding risk reduction, and level of readiness. Second, the project seeks demonstrable impact in selected ‘hot spot’ locations through combining, to the extent possible, multi-sector investments – in improved waste and fecal sludge and septage collection and treatment, WASH facilities at household and institutional levels, drainage, open spaces, informal settlements upgrading – and sites for private investments – to maximize impact on the beneficiaries across the various sector interventions.
61. **The project will address climate change vulnerabilities.** Activities to address climate-related risks (such as flooding) and build resilience include activities and investments in relevant technologies and standards, O&M options, etc., discussed in detail in the section “Cross-cutting considerations”. The assessment of adaptation and mitigation co-benefits and GHG accounting is detailed in Annex 4.



62. **The project will contribute to human capital development.** Interventions planned at community level to improve sanitary conditions (waste, sanitation, and water), as well as the upgrading of the areas bordering drainage canals and WASH in schools and health centers, including handwashing, have a direct impact on waterborne and respiratory diseases, both among the top premature mortality causes in Mali. The high prevalence rates of malaria, increased in rainy season, and diarrheal diseases, are largely due to poor sanitation practices. The lack of adequate WASH facilities in schools affects school attendance, and girls' dropout rate increases when schools are not equipped with separate toilets equipped for menstrual hygiene. Washing hands with water and soap has proved a critical measure to prevent the spread of infectious diseases such as COVID-19. Proposed interventions would therefore decrease the burden of diseases and result in better education for students, including female students, and improved human capital.
63. **The project will foster citizen engagement, gender, and inclusion.** This includes incorporating citizen engagement into the choice of activities under Component 3 through consultations alongside the launch of project activities and at mid-term. Priority activities selected by beneficiaries will be implemented, and will receive community feedback through community monitoring mechanisms, including surveys and focus groups. Gender-based activities will be incorporated across the components. While the focus of the project's citizen engagement is on residents in the Greater Bamako area that benefit from project activities and investments, the project will also incorporate wider citizen engagement into the site selection as part of consultations, and evaluation and development process as part of community monitoring to assess investments under Component 3. A PDO indicator will measure citizen engagement through a beneficiary survey across the components to be conducted first at mid-term, and then annually until project close. These survey results will be used to inform project interventions going forward with implementation. The project also incorporates a range of activities to address gender-based challenges in Bamako, with the primary gender gap targeted under the operation related to poor levels of female employment. To ensure representation of civil society at the highest levels, the project Steering Committee (PSC) will also include the National Council of Civil Society (*Conseil National de la Société Civile*).



Figure 2: Theory of Change



64. **The project will help mobilize private capital.** Strengthening flood resilience on a wider scale in the long-term will require larger scale infrastructure development, beyond what can be directly financed by donor projects. This project will provide support on asset management and investment planning to prepare and support infrastructure projects that may be of interest to private developers—projects which will better support the long-term flood resilience of the city of Bamako. This support will also help to enable the city to use public land strategically to attract private sector investments, bolstering the city's overall economic resilience, along with providing capital to support other flood resilient investments. The project will, thus, better prepare the city of Bamako to mobilize private capital for large investments. Currently, the city of Bamako has had limited to no experience in this area, although several potential projects have been



identified. To enable these investments to potentially attract future private investments, the project will support preparatory studies along with overall support on asset management (including potential own-source revenue). This support is required for these projects to later incentivize investors in Mali, especially given the limited history of such investments and the associated risks.

65. **Finally, the project will attempt to leverage digital technologies, wherever possible, to maximize efficiencies in resilient investments.** To maximize the impact of the project investments as well as pave the road for further coordinated investments and planning beyond, the project will invest in creating the digital skills, data, and tools to inform urban management. A foundational digital geospatial database for the District of Bamako (public services and infrastructures, hazard zones) will be developed to support decision making in the solid waste management, WASH, and urban planning sectors to start. Alongside, investments will be made to revamp and update course offerings and develop a sustainable workforce to use digital data and technologies for urban planning and management.

E. Rationale for World Bank Involvement and Role of Partners

66. **The proposed project activities are beyond the financing capacity of the Government.** Project interventions are directly related to the provision of public goods and services that tend not to be attractive to the private sector and could not be viably provided with private sector participation. The fragile economic outlook has stressed Government revenues, and constrained its ability to invest in basic infrastructure and services—and the poor stand to be hit particularly hard. In the prevailing fiscal context, any resources the World Bank can offer are needed to improve key public sector services and priority investments targeted to the poorest and most affected populations support preparatory work to help mobilize private capital and assist to improve capacity within agencies involved in these areas, etc.
67. **The World Bank offers significant value to the proposed project activities through provision of financing, technical assistance and convening services.** The World Bank has significant experience in developing and supporting the implementation of investments in urban service delivery, resilient investments, and critical government capacity building particularly in Sub-Saharan Africa and Fragile, Conflict, and Violence (FCV) countries. Based on this experience in existing and pipeline projects across Sub-Saharan Africa and globally, the World Bank can incorporate lessons learned from these programs into the design of this project. Further, the World Bank can draw upon the results and lessons from past operations in the region and in Mali including the PACUM and the Urban Water Supply Project (*Projet d'Approvisionnement en Eau en Milieu Urbain, PEMU*).
68. **Significant technical assistance resources have been leveraged to support project design and implementation.** An ongoing US\$350,000 World Bank-executed trust fund from the Global Facility for Disaster Risk Reduction and Recovery ACP-EU Trust Fund³⁴ supports ongoing government efforts to enhance the use of spatial data for risk-informed decision making and planning. An additional US\$0.5 million World Bank-executed trust fund from the Korea Green Growth Facility has been used during preparation and will continue through implementation to inform the metropolitan-wide urban planning process and capability building, including through completion of pre-feasibility studies for green infrastructure, technical assistance, and rapid area-based diagnostics and by building domestic capabilities to tackle such challenges on an ongoing basis. Other trust funds will be mobilized to further support

³⁴ The ACP-EU Natural Disaster Risk Reduction Program is a joint initiative of the Organization of African, Caribbean and Pacific States; the European Union; the World Bank, and the Global Facility for Disaster Risk Reduction and Recovery.



resilient urban water and sanitation services in Mali. The World Bank will leverage these complementary, World Bank-executed activities to support implementation, also building on innovative approaches developed to strengthen coordinated urban management in Bamako, including digital mapping of vulnerable areas and monitoring of services.

69. **The project will be implemented in close collaboration with other ongoing WBG and development partner operations, particularly Sahel Alliance members.** The project will develop synergies with other World Bank-financed operations, including inter-alia the Promoting Access to Finance and Income Generating Opportunities in Mali Project (P168812), Mali Fiscal Decentralization for Better Service Delivery (P164561), Mali Urban Water Supply Project (P122826), and the Strengthening Climate Resilience in Mali Project (P161406). The World Bank leads and coordinates closely with a development partner working group focused on activities in the Greater Bamako area. This helps ensure early identification of opportunities for collaboration and cooperation, for instance with KfW on investments in primary drainage infrastructure coordinated to target different areas, with the French Development Agency (*Agence Française de Développement*, AFD) on support for master planning efforts in the region. As the World Bank is the largest supporter of urban development and resilience activities in Mali, the project will bring transformational change through catalyzing these existing sector investments for integrated urban development in the Greater Bamako area.

F. Lessons Learned and Reflected in the Project Design

70. **Implementation of the PACUM Project (P116602) has shown that the better institutional coordination works at local level, the more local governments have potential for improved service delivery.** The PACUM was meant to promote and deploy a performance-based grants approach for the District of Bamako and thirteen secondary cities throughout the country. The project approach was implemented with success in the secondary cities substantially improving institutional capacities in service delivery over the project period. However, the project approach was not implemented in the District of Bamako and attempts to streamlining it for more efficacy didn't materialize. The institutional set up in Bamako was more complex in comparison to the secondary cities, including owing to political challenges linked to the status of Bamako as capital city. The PACUM experience confirms that Bamako needs to be supported under a dedicated project approach which duly integrates its specifics. Preparation of this project learned from the constraints experienced under the PACUM while taking advantage of existence of the Grand Bamako that would foster more effective institutional coordination³⁵ and contribute to targeted capacity strengthening for improved service delivery over the Grand Bamako metropolitan area.
71. **Lessons learned globally from multisector projects and complex interventions in large metropolitan areas in FCV environments have also been reviewed and incorporated, implementation issues standing out as the central aspect.** Metropolitan projects funding infrastructure, capacity building and sector reform (such as Karachi Neighborhood Improvement Project, P161980, and Dhaka City Neighborhood Upgrading Project, P165477) are complex, and require strong project management and technical teams with a large range of expertise, with significant consultant resources, to design projects that will have cumulated positive benefits due to a multisector approach. At the same time, building capacity of the responsible agencies is critical, and external expertise can be perceived as unfair competition and generate tensions, if not well managed. Another generic lesson is the tendency to under-execute technical assistance. The

³⁵ Horizontally between local governments and vertically with the core central government agencies.



planning and timing of project investments will take account of the lessons to allocate adequate consultant resources to support the responsible agencies to build expertise and keep their staff engaged in the project's success. Additionally, FCV environments can have a particularly detrimental impact on women due to a higher risk of GBV; the project will help to address gender gaps by ensuring female participation in the choice of infrastructure investments, along with specific mechanisms to ensure female engagement throughout implementation.

72. **The experience from the Mali Reconstruction and Economic Recovery Project (P144442) demonstrates that combined spatial and multi-sectorial approaches have the potential for undertaking integrated activities in vulnerable zones to produce tangible and sustained results.** This has required, *inter alia*, a systematic approach to local participation as well as to measuring performance and results. In the District of Bamako, such interventions may be the most relevant in floods prone areas with floods occurrence exacerbated by dense informal settlements and erratic disposal of waste and domestic sludge and septage.
73. **As demonstrated by the PEMU, P122826, donor coordination is key to optimize preparation efforts and maximize benefits, and flexible arrangements help adjust donor support during implementation.** The multi-donor financed Kabala project in Bamako has mobilized close to XOF 288 billion from eleven donors (Phase 1 and 2) since 2013, including US\$130 million IDA, most of it in parallel financing. It shows that transformational projects provide a unique opportunity for crowding in resources to address underinvestment in public infrastructure. While no formal platform has been established, 'gentlemen agreements' have been put in place (IDA supports the financial audits, European Union funds the technical audits, etc.) to alleviate some of the Client's burden in managing all financing agreements with specific procedures and requirements. Several donors have provided additional financing, or reallocated investments to emerging priorities, without lengthy revisions of co-financing agreements. There are currently few donor interventions in other subsectors in Bamako, and they lack the required coordination to yield tangible and sustained impacts. This is specifically the case with the rehabilitation of drainage networks where more coordinated interventions, for example through a platform mirroring the Kabala arrangements and possibly co-financing arrangements, would provide opportunities for more intensive and pro-poor investments in targeted areas of the city. Initial dialogue and coordination with GIZ were carried out during project preparation towards this objective.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

74. **This project will build on the successful implementation of the recently closed PACUM under the leadership of the former Ministry of Housing, Urban Planning, and Social Shelter (*Ministère de l'Habitat, de l'Urbanisme et du Logement Social*, MHULS), Ministry of Land Affairs, Urbanism and Housing (*Ministère des Affaires Foncières, de l'Urbanisme et l'Habitat*, MAFUH), and now Ministry of Urban, Housing, Land, Territorial Administration and Population (*Ministère de l'Urbanisme, de l'Habitat, des Domaines, de l'Aménagement du Territoire et de la Population*, MUHDATP).** The relative complexity of the project, its institutional and implementation arrangements will need to ensure the proper involvement of other line ministers, especially MEADD as oversight body of the solid waste and sanitation subsectors, as well as targeted local entities (District, six Bamako communes, 18 neighboring communes, etc.) that are primary institutional beneficiaries of the project. As a result, the institutional framework of the project will rely on (a) a PSC; (b) a Project Monitoring and Technical Committee; (c) a PCU; and (d) a set of specialized



agencies for technical support for the implementation of specific activities.

75. **The PSC will be chaired by the MUHDATP, seconded by the Minister in charge of Sanitation (MEADD) as first vice-chair and the Minister of Territorial Administration and Decentralization (*Ministère de l'Administration Territoriale et de la Décentralisation*, MATD) as second vice-chair.** It will include, among others, the Ministers in charge of Economy and Finance and of Water; the President of the SMI-GB, and the President of the National Council of Civil Society. The PSC will provide overall oversight and strategic leadership of the project, ensure coherence of activities with sector strategies, and ensure intersectoral coordination with other ministerial departments. The PSC will also validate the project annual budgets and work plans.
76. **The Project Monitoring and Technical Committee (PMTC) will be chaired by the Secretary General of MUHDATP and seconded by the Secretary General of MEADD as first vice-chair and the Secretary General of MATD as second vice-chair.** Membership will comprise of, among others, the Heads of the relevant ministerial Directorates – e.g., DNUH, DNACPN, General Directorate of Territorial Governments (*Direction Générale des Collectivités Territoriales*), National Directorate of Public Land (*Direction Nationale des Domaines*), National Directorate of Hydraulics (*Direction Nationale de l'Hydraulique*) – and Heads of beneficiary agencies and local authorities, including the Directors of ANGESEM and SOMAEP, the Mayor of the District of Bamako, Governor of the District of Bamako, Permanent Secretary of the SMI-GB, and Director of ADR for the District of Bamako. The PMTC will be responsible for following up on the implementation of PSC recommendations and decisions, ensuring timely and effective implementation of activities and reporting on project progress at PSC meetings.
77. **A PCU coordinating overall project implementation and involvement of the stakeholders for each subsector will be set up within the MUHDATP and rely on the former PACUM PCU expertise.** The PCU will manage the project, coordinating overall project implementation, ensuring the timely availability of fund transfers, maintaining Project Accounts, and producing financial reports, monitoring and evaluating program implementation and impacts, and reporting results to various stakeholders as detailed in the Project Implementation Manual (PIM). It will be headed by a competitively recruited project coordinator who will lead the day-to-day project management, communicating with the Government, the World Bank, and all stakeholders of the project and overseeing project M&E. The project coordinator will be supported by qualified and experienced staff, with terms of reference acceptable to the World Bank, among others, (a) a procurement specialist (with extensive experience in engineering works and contract management); (b) a financial management (FM) specialist; (c) two senior accountants and two accounting assistants; (d) a procurement assistant; (e) a communications officer; (f) an environmental safeguards specialist; (g) a social safeguards specialist; (h) an M&E expert; and (i) technical specialists in the sectors relevant to the project.
78. **While the PCU will retain the overall administrative, fiduciary, and safeguards responsibilities, it will also rely on support provided by specialized agencies for the implementation of specific activities across sectors.** During preparation, an assessment of the entities involved in the project has been carried out to determine the level of implementation responsibilities they could assume according to their mandates, capacities, and performance in similar activities. On this basis, given the limited capacities of key beneficiary agencies and only a few others with proven experience in equivalent project management, it has been agreed that the PCU will have general coordination, management, and fiduciary responsibilities. Yet, to alleviate the workload of the PCU and enhance collaboration and ownership, a series of agreements



will be signed with relevant agencies, defining their respective roles and level of responsibility, and needed resources to perform adequate implementation support. Three agencies were deemed to have proven experience and sufficient capacity to implement specific parts of the operation and will assume certain levels of responsibilities on behalf of the PCU. The Rural Infrastructure and Equipment Works Execution Agency (*Agence d'Execution des Travaux d'Infrastructures et Equipements Ruraux*, AGETIER) was selected to endorse technical, procurement and safeguards responsibilities to implement parts of sub-component 1.1, that is investments for the solid waste disposal landfills (rehabilitation and expansion of Noumoubougou landfill and development of a new landfill on the right bank). Similarly, AGETIPE has been selected for the drainage investments (entire sub-component 3.1). Both AGETIER and AGETIPE have worked with World Bank-financed projects in previous years under Delegated Contract Management Agreements (*conventions de maîtrises d'ouvrage déléguées*, MOD), and such contracts will be signed for the parts of the project delegated to these agencies. SOMAEEP, the public asset-holding company of the urban water sector is the implementing agency of the Kabala program and the IDA-financed PEMU and was selected to implement the water supply investments (entire sub-component 2.4) under a Subsidiary Agreement. Contracts with these agencies will include provisions to ensure compliance with World Bank fiduciary, safeguards and anti-corruption policies and procedures. Additionally, implementation support contracts will be signed with other agencies and local services that will provide technical support to the PCU, according to their respective mandates, on procurement documents, implementation of activities and/or M&E (see Annex 1 for further details on the distribution of implementation responsibilities across the different agencies involved).

79. **The estimated project disbursement schedule demonstrates overall implementation readiness of the project.** While limited disbursement is expected in the first year of implementation due to the time required for the project to become effective, cumulative disbursement rates are expected to reach 35 percent by year 3. These disbursement projections are in line with large-scale infrastructure projects, which may have extended procurement timelines. The preparatory activities for each of the components are being largely undertaken under the Project Preparation Advance (PPA). For example, the ongoing technical and environmental preparatory studies for the fecal sludge treatment plant investments under Component 2 are expected to allow tendering of works after effectiveness. In a similar vein, important technical studies for investments under Component 1 have been fast tracked. For instance, the audit of current landfill operations in Noumoubougou has been completed. Under Component 3, the study for the selection of priority districts and development of an investment program and maintenance plan for urban infrastructure and equipment was tendered and is starting in November 2022, with expected completion in early 2023. The assessment of flood risk and options for flood mitigation investments for the District of Bamako (also under Component 3), is being finalized and will be completed by end of December 2022. The diagnostic review of ULG expenditures, along with the municipal spatial data infrastructure assessment and the assessment of stakeholder geospatial capacity, data, and systems, all of which are critical steps for activities under Component 4 are underway .

B. Results Monitoring and Evaluation Arrangements

80. Continuous M&E will be an integral part of project implementation under the overall responsibility of the PCU. The PCU will be supported by the various technical agencies, which will help collect data for the sub-components and activities they are involved in. Project monitoring will be based on quarterly progress reports, including updates on the results framework included in the PAD. At mid-term review (MTR) and before project closing, a beneficiary assessment will be undertaken. In addition to the Results Framework



indicators, the project M&E system will also build on the Digital Platform and capacity building carried out under sub-component 4.2 and capture geolocation and status of the financed infrastructure overlayed over the updated infrastructure base map. Beyond M&E, such geospatial work will inform policy development of the District of Bamako, strategies, and further investment planning. The M&E manual will provide further details on the results framework, climate, and gender-specific indicators, assessment of citizen engagement, as well as the methodology, tools, and institutional arrangements for data collection.

C. Sustainability

81. The project design includes measures to help ensure sustainability in its physical, financial, environmental, and operational aspects. First, all physical investments financed under the project will adopt technically sound design specifications that conform with international quality standards, local regulations, site conditions, and climate risks to ensure the durability and resilience of the assets built. Furthermore, the design of all project-supported infrastructure will be accompanied by a clear plan on O&M arrangements that specifies the budgeting, procedures, and human resources for O&M. The project would also support community-based O&M mechanisms. For instance, beneficiaries would be encouraged to form street committees tasked with ensuring that households do not clog drains and clear their respective drainage channels. The WASH investments will also include communication campaigns to promote longer-term behavioral change and improve sustainability of project outcomes. Second, the institutional strengthening and capacity building activities proposed under Component 4 will provide training and technical assistance to the PCU and other concerned stakeholders of the investments so that they could have adequate capacity to manage and sustain the project facilities. In particular, hands-on support for the urban planning process for the Greater Bamako region will allow systemic thinking across project components. This process is already being supported through technical assistance for digital data collection and utilization, in anticipation of the planning needs. The project will also strengthen the institutional framework for the waste and sanitation sectors to improve capacity, management, and operations in this sector. Third, to ease the burden on public financing and to support broad-based economic growth in the long run, the project is designed with to leverage private investments and improve the ability of the local government to better utilize own-source revenues and assets to attract financing. Finally, the project design takes social and environmental aspects into consideration as well. The proposed integrated urban upgrading and regeneration investments under sub-component 3.1 are expected to enhance climate resilience and social inclusion of urban communities; the proposed improvements to waste systems are expected to promote sustainable urban development while also creating systems to respond to natural disaster and health shocks. The project's support for public works improvements and community-based local economic development program under sub-component 3.2 would enhance the social inclusion and economic sustainability of the local areas as well.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

82. **Project support for SWM investments and technical assistance are based on a strong analytic basis.** Proposed activities aim to rehabilitate and expand core infrastructure needed for primary waste management functions which are currently disjointed and do not cover the full value-chain, resulting in massive littering and adverse impacts on urban livability. These investments are designed to provide end-



to-end solutions based on robust technology and experience from past interventions in the Africa region, such as the construction of a landfill served by a network of transfer points. The investments also provide long-term visibility to the Greater Bamako region through the development of a 20-year disposal capacity. Despite this robust approach, local capacity remains fragile and fragmented to ensure investment sustainability. In response to this gap, broad-based technical assistance is proposed to enhance the performance of the actors involved in waste management through the provision of targeted technical assistance and capacity building covering studies, training, provision of performance management tools and policy focusing on overall sustainability, waste minimization and job creation.

83. **Project support for the Water Supply and Sanitation investment program and technical assistance originates from investment programs designed by GoM** through its central services and public agencies (DNACPN and ANGESEM for sanitation, and SOMAEEP and SOMAGEP for urban water supply). Based on sector studies and master plans, they aim to develop water supply and sanitation services in Bamako and improve their sustainability, and ultimately to increase access to these basic services. The proposed rehabilitation and expansion of storage capacity, water networks, pumping facilities and construction of social water connections are designed to improve the quantity of water available to existing customers and expand access to additional, vulnerable customers. Activities related to the fecal sludge treatment plants and latrines for households and institutional establishments aim to mitigate the health, environmental, and social risks associated with illegal sludge dumping within Bamako. No major technical issues are expected from the proposed project activities because technologies considered for water supply systems and for sanitation and fecal and septage treatment facilities are proven, well mastered and adapted to the local environmental, climatic, and social settings.
84. **Investments in flood management and resilient neighborhood upgrading are based on strong existing technical approaches and participatory approach.** Initial technical studies from the Bamako Sanitation Master Plan and ongoing further flood risk assessment and urban audit studies serve as a basis for the selection and design of infrastructure. These investments will use standard flood management approaches with drainage canals as well as more innovative nature-based solutions approach being promoted and developed by a coalition of global partners and bringing further co-benefits on livability. Neighborhood level investments are demand-driven investments elaborated through participatory planning and will be of simple design and technology accessible to local contractors. The fast-disbursing grants to selected local associations to develop micro-projects to support economically inclusive neighborhood improvement initiatives is based on previous World Bank experience in urban community driven development and innovation on participatory, transitory, and agile urban development from Citizen Lab initiatives developed by the AFD.
85. **The support for technical assistance under Component 4 is underpinned by analytics of the administrative mandates and fiscal and technical capabilities of the local government entities.** Activities targeting the operationalization of the Grand Bamako are based on several years of client dialogue with the District of Bamako and the neighboring communes, with the Inter-governance Mixed Syndicate taken a lead on such harmonization over this past period. The creation of the digital platform is linked directly to ongoing technical, trust-funded, activities with the District of Bamako, for instance on collection and collation of digital data for waste, transport, asset inventory, flood risk, among others. The support for the Master Plan will also be underpinned by the extensive data efforts underway, by support provided by PACUM on issues related to land-use in the city and based on the findings of the WBG 2018 Bamako Urban Sector Review. And finally, support for own-source revenues and better financial management systems



provides the basis for strengthening the District's fiscal capabilities to respond better to the development needs.

86. **The Net Present Value (NPV) for the project is estimated at US\$36.6 million at a 15 percent discount rate³⁶ with an Economic Rate of Return (ERR) of 20 percent.** To calculate this rate of return, the monetary benefits of increased incomes to beneficiaries, and the monetary value of jobs (aggregate salaries) that are created because of the project investments have been estimated. For this analysis, these increases in income and the monetary value of the jobs that are created as the income of the project investments have been considered—therein applying the discounted cash flow model for financial analysis of private investments within the context of the project. As noted in our discussion on climate co-benefits (Annex 4), the project is expected to result in a net reduction in GHG emissions. Using shadow price of Carbon analysis, the ERR incorporating this reduction ranges from 25 percent at the low end of price estimates to 30 percent at the high end.
87. For Component 1, it is expected that the SWM investments will result in higher land values and improved health outcomes. Based on these impacts the NPV is estimated at US\$9.8 million with an ERR of 19 percent. Similar impacts are estimated for the WASH investments under Component 2, with an NPV of US\$17.0 million and an ERR of 20 percent. For Component 3, it is estimated that drainage and neighborhood upgrading will result in lower costs associated with flooding, along with increased income for beneficiaries, resulting in an NPV of US\$9.8 million and an ERR of 20 percent.

B. Fiduciary

Financial Management

88. **An FM assessment of the Implementing Entity – the PCU - designated to manage the project was carried out in February 2021 and updated in September 2022.** It showed that the existing PCU has implemented satisfactorily close hands-on support and has an existing complaint handling mechanism. FM and procurement staff are already in place. The PCU coordinating overall implementation and involvement of the stakeholders for each subsector will be set up within the MUHDATP and rely on the closed project PACUM PCU expertise. The objective of the assessment was to determine whether this entity has acceptable FM arrangements in place to ensure that the project funds will be used only for intended purposes, with due attention to considerations of economy and efficiency. The PCU under the oversight of the PSC will have the overall fiduciary responsibility of the Bamako Urban Resilience Project.
89. **Fiduciary controls, including procedures and guidelines, are strong and adapted to the situation in Mali.** The assessment complies with the World Bank Directive Financial Management Manual for World Investment Project Financing Operations effective March 1, 2010 and as last revised on September 7, 2021. The activities implemented will correspond to those within the Annual Work Plan approved by the World Bank. Internal audits will be carried out on a semester basis, and these will be completed with annual external audits carried out by independent private firms. To ensure the safeguard of the financial resources in the Designated Account (DA), the direct payment will be the preferential method. At least two in-depth FM reviews will be carried out over the life of the project, alongside a desk review of the FM arrangements twice a year (which can be adjusted if risks increase). The link between Geo-Enabling Initiative for

³⁶ Discount rate: This is based on the risk-adjusted opportunity cost of capital for donor financing in Mali.



Monitoring and Supervision (GEMS) and financial information will help ensure that activities are well implemented and in line with the expenditure reports.

90. **Although the residual FM risk for the project is deemed Substantial, it is expected that the FM arrangements will satisfy the World Bank's minimum requirements once mitigation measures have been implemented.** As a result of the constraints identified through the assessment, the following actions need to be completed to ensure adequate FM arrangements for all aspects of the project: preparing and adopting of the PIM before effectiveness, including FM procedures such as internal controls, budget process, assets safeguards, fund of flow, and description of roles and responsibilities of all stakeholders. The PCU will also need to recruit/appoint key FM staffs as: (a) one FM Specialist; (b) two senior accountants; (c) one internal auditor; and (d) two accounting assistants as part of the additional conditions of effectiveness. The PCU will acquire, install, and customize a computerized accounting software by three months after effectiveness and recruit the statutory independent auditor to review annually basis Project Financial Statement by six months after effectiveness. A detailed description of the FM assessment and action plan are presented in Annex 1.

Procurement

91. **The Borrower will carry out procurement for the proposed project in accordance with the World Bank's "Procurement Regulations for Investment Project Financing Borrowers"** (Procurement Regulations) dated November 2020, under the "New Procurement Framework". The project will also be subject to the World Bank's "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" (Anticorruption Guidelines), dated October 15, 2006, and revised in January 2011 and as of July 1, 2016, beneficiary disclosure requirements, the Project procurement Strategy for Development (PPSD) and the Procurement Plan (PP) approved by the World Bank.
92. **Systematic Tracking of Exchanges in Procurement (STEP).** The proposed project shall use STEP as a procurement planning and tracking tool to prepare, clear, and update its Procurement Plans (PPs) and conduct all procurement transactions. Use of STEP is mandatory for all procurement transactions subject to World Bank's post and prior review under the project. The contracts will thus be recorded in and processed through STEP. This arrangement will provide data on procurement activities, establish benchmarks, monitor delays and measure procurement performance. This tool will be used to manage the exchange of information (such as bidding documents, bid evaluation reports, no objections, and so on) between the implementing agencies and MODs and the World Bank.
93. **PPSD:** As part of the preparation of the project, the Borrower (with support from the World Bank) has prepared PPSD that was approved by the World Bank prior to negotiations, which describes how fit-for-purpose procurement activities will support project operations for the achievement of project development objectives and deliver Value for Money. The procurement strategy is linked to the project implementation strategy at regional, country, and state level ensuring proper sequencing of the activities. It considers institutional arrangements for procurement, roles and responsibilities, thresholds, procurement methods, prior review, and the requirements for carrying out procurement. It includes a detailed assessment and description of state government capacity for carrying out procurement and managing contract implementation, within an acceptable governance structure and accountability framework. Other issues considered include behaviors, trends, and capabilities of the market (i.e., Market Analysis) to inform the PP. The project's complex activities including high value contracts such as



Noumoubougou landfill, drainage infrastructure and Fecal sludge treatment plants, requires strong technical capacity through the support of experts. At the request of the Government Hands-on Expanded Implementation Support (HEIS) approach will be considered during implementation (subject to the approval from the World Bank) to support this, in particular with respect to contract management, as indicated in the PPSD analysis. Special arrangements like direct contracting, use of Statements of Expenditures, third party monitors, local NGOs, Force Account, or civil servants needs, results-based arrangements, need for prequalification, PPP contracts, if any, will be considered and addressed. The PPSD also sets out the selection methods to be followed in the procurement of Goods, Works, and Non-Consulting and Consulting Services financed under the project. The underlying PP will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

94. **Procurement capacity and risk assessment carried out**, mainly through the PPSD analyses held, noted persistent challenges, among others: (a) most dedicated public officials have little or no knowledge of the rules and procedures governing the award and management of public contracts; and (b) significant delays are recorded, most of which are noted in the contract award and signature. The analysis of key procurement activities planned in this project and of the local and international services offer shows that there are no major difficulties in the implementation of project activities other than those related to the difficulty of mobility because of the pandemic. The overall procurement risk is Substantial, but after the implementation of the proposed mitigation measures, including on adequate staffing, the risk will be Moderate. A detailed procurement description and institutional arrangements can be found in Annex 1, Implementation Arrangements and Support Plan.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

95. The Operational Policy OP7.50 on International Waters is triggered because some project activities will involve the use and potential pollution of the Niger River, an international waterway that is shared by Mali, Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Niger, and Nigeria. An assessment of the nature and scope of these activities has determined that exceptions to the requirement to notify the project to riparian countries, as stated in paragraphs 7(a) and 7(b) of the Policy apply. Investments for the existing landfill, water storage infrastructure and water networks, as well as for the rehabilitation of drainage networks will support minor additions or alterations to the respective ongoing schemes, consistent with the exceptions under paragraph 7(a). While the fecal sludge treatment plants are new constructions, the treatment process is such that there will be no discharge of residual water or dried sludges into the river. Altogether, these activities will have no or negligible impact on the quantity and quality of the Niger River. The exception under paragraph 7(b) of the Policy applies to the feasibility studies planned for the development of future sanitation systems in Bamako, including sewers and wastewater treatment plants. In compliance with the Policy, ToRs for such studies will include an assessment of any potential riparian issues and transboundary impacts. Finally, for the proposed new landfill in Mountougoula, the Borrower will also be required to confirm that the construction will not go ahead in case of risk of water pollution to the Niger river system and connected aquifers – or to comply with the



notification procedures. The exception to the riparian notification requirement according to the Policy has been approved by the World Bank Western and Central Africa Vice-President on April 28, 2021.

D. Environmental and Social

96. The key project activities include the rehabilitation of Noumoubougou landfill, the clearing of existing dumps, primary and secondary drainage network, neighborhood upgrading, construction of the Mountougoula landfill and two fecal sludge treatment plants, public WASH facilities, and water storage infrastructure and distribution networks. Some activities will operate in dense and sensitive urban areas with the potential to generate significant environmental and social impacts. The construction phase for many of these activities will likely cause extensive disruption to traffic and some contamination and environmental and noise pollution. The fecal sludge plant is planned to be built next to the Bamako International Airport, a densely populated urban area that is currently used for vegetable farming so there will be both temporary and permanent loss of livelihoods, including the loss of agricultural lands currently used for vegetable gardening. There will also be likely loss of economic trees due to the planned works. The only road to the airport from the City of Bamako will also be used by construction vehicles during the works which will generate some dust and noise pollution along this strategic route. There is currently no service road to the proposed site for the fecal sludge plant. The construction of access roads in these dense urban areas will also lead to impacts related to involuntary resettlement. There are also solid waste dumps in this area upon which livelihoods depend. The proposed water networks and drainage facilities will be within densely populated, low-income neighborhoods with lots of informal businesses that will be disrupted during the construction works. Electricity and water services could also be disrupted. Some structures are also located within the right of way of the drainage lines, and these will have to be permanently moved or destroyed. The large number of activities in a densely populated setting has the potential for a significant cumulative resettlement and economic displacement and health and safety impacts that will need to be very carefully managed. Based on this, the project environmental and social risk rating assessment is outlined as follow.
97. **The Environmental Risk Rating is High.** The proposed activities are likely to generate a wide range of adverse environmental risks and impacts which will be difficult to fully mitigate. The main environmental issues are related to: (i) negative impacts on the quality and quantity of water and aquatic ecology (including through potential hazards leachate from waste); (ii) soil erosion due to earthworks and run-off; (iii) traffic management during construction phase; (iv) disposal and the temporary management of waste during the construction phase; (v) disposal and management of hazardous waste when the landfill and sludge treatment plants are operational phase; (vi) the health and safety of workers; (vii) nuisances related to atmospheric and noise emissions; and (viii) the health and safety of the urban community. The areas that will be impacted by the project, in addition to being densely populated, are of high value and sensitivity for the local population both because of their economic activities and the fragility of urban ecosystems and natural habitats (urban flora and fauna and aquatic ecosystems are already weakened by urban pressure). As noted above, the Borrower has limited experience or capacity to apply environmental and social measures and address the project's risks and impacts beyond the aspects generally included in the World Bank's Operational Policies. Significant efforts will be required to strengthen the MAFHU and Mali environmental authority (as a regulator) in dealing with the requirements of the ESF.
98. **The Social Risk Rating is High,** given the nature of the activities and their implementation in poor and densely populated areas of Bamako. The project is expected to generate a wide range of significant adverse



impacts on human populations. The planned urban upgrading through the rehabilitation of drainage infrastructure in crowded urban areas, with residential homes located in the middle of the civil works' rights-of-way and risk of damage or destruction of water or electricity supply infrastructure, landfills and fecal sludge plants, water networks and associated infrastructure, could disrupt economic activities such as on vulnerable waste picker groups and lead to land acquisition and economic displacement on a temporary or permanent basis. Other social risks are related to: (i) restrictions on land use and involuntary resettlement; (ii) sexual exploitation abuse and Harassment (SEA/H); (iii) stakeholder engagement; and (iv) community health and safety. The scope of land acquisition and physical displacement and or economic losses will vary according to the different investments. Little or no temporary relocation is anticipated for the existing Noumoubougou landfill. The determination of the siting for the fecal sludge treatment plants was done based on a preliminary evaluation that assessed the scale of temporary relocation. The areas are not densely populated but host small scale economic activities, particularly farming, possibly leading to temporary economic displacement. As the sites are now delineated, the technical studies as well as the environmental and social instruments (ESIA/RAP) are under way. These instruments are planned to be approved and disclosed no later than six months after project effectiveness and before the starting of project works. The proposed WASH facilities in schools and health centers and water networks could lead to some disruption of their activities if not properly planned. This is addressed through the project citizen engagement strategy which foresees engaging citizens in the process of site selection, evaluation and development process for drainage, and other infrastructure investments. The World Bank's due diligence regarding SEA/H risk indicates that the SEA/H risk is Moderate. The PCU will develop and implement an SEA/H action plan to address the risks. The SEA/SI action plan will be developed at within three months of project effectiveness. The PCU will ensure that the project stakeholders, particularly local communities, are informed about the project's activities, in keeping with the measures outlined in the stakeholder engagement plan (SEP).

Overview of the relevance of the Environmental and Social Standard for the Project

99. The following are the Environmental and Social Standards (ESSs) that apply to the project activities considered above:
100. **ESS1 Assessment and Management of Environmental and Social Risks and Impacts.** The proposed project activities are likely to have substantial environmental and social risk and impact on vegetation, biodiversity, and wildlife habitat as well as on the provisioning, regulating, cultural and supporting services provided by the ecosystem. The Environmental and Social Management Framework (ESMF), which has been prepared by the Borrower, consulted upon and disclosed nationally and on the World Bank website on May 10, 2021, sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts of the project. It contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures. It also includes adequate information on the area in which subprojects are expected to be sited, including any potential environmental and social vulnerabilities of the area; and on the potential impacts that may occur and mitigation measures that might be expected to be used. In addition, the ESMF defines the procedures to be used in screening for and addressing the environmental and social risks of subprojects. The ESMF provides guidance on key risks and related mitigation measures, such as the following: water quality, quantity and aquatic ecology; soil erosion by earthworks and run-off; labor and working conditions including SEA/H; traffic management during the construction phase; disposal of waste from construction activities; etc. Given the large number of works in a condensed urban setting, the need for an analysis of



cumulative impacts will be assessed during the development of each ESIA. The Borrower has undertaken an environmental and social audit of the existing Noumougoubou landfill whose construction was financed by the Borrower. The audit has determined that there are several environmental and social non-compliance issues related to the ESMP prepared in 2021 prior to the construction of the existing cell of the landfill. On the environmental side, the audit of the Noumoubougou landfill revealed the following: (i) lack of a waste management plan; (ii) non-compliance with prescribed anti-leaching measures; (iii) non-maintenance of the replacement trees planted as part of the 2001 mitigation measures; (iv) management of liquid wastes and surface run-off; (v) air quality, noise and vibrations. On the social side, the following non-compliance issues were noted regarding: (i) community and workers' health and safety, particularly lack of signage, traffic safety and emergency and security plan; (ii) lack of a grievance mechanism, including a grievance management committee; (iii) lack of any measures against SEA/SI or other gender related issues. The audit concludes with recommendations and an action plan to carry out remedial environmental and social measures required to bring this existing infrastructure into compliance. The audit was disclosed in-country and on the World Bank's website on May 7, 2021. An ESIA will be prepared six months after effectiveness for the two-million-ton capacity on the remaining 40 hectares of the Noumoubougou site.

101. In addition, a scoping-level Environmental and Social Assessment (ESA) (prepared by the Borrower, consulted upon and reviewed by the World Bank and disclosed in-country and then on the World Bank website on September 8, 2021) was carried out to identify the environmental and social risks and impacts likely to be associated for the construction of two fecal sludge treatment plants at Tienfala and Senou. The scoping study has established the hierarchy of ES issues to be considered and helped to delimitate the sites for the 2 fecal sludge treatment plants. Draft TORs for Environmental and Social Assessment Plans (ESIAs/ESMPs) and Resettlement Action Plans (RAPs) have been prepared and cleared by the World Bank. The client has started the preparation of these instruments. The ESIA/RAPs reports will be available, reviewed and disclosed before any withdrawals can be made for component 2.1. Wildlife habitat and ecosystem services that could potentially be affected mainly in Tienfala forest will be assessed during the preparation of ESIA. The scoping study established the hierarchy of ES issues to be considered in the selection of the specific sites, which will inform the Environmental and Social Assessment Plans (ESIAs/ESMPs) and Resettlement Action Plans (RAPs) that are ongoing. The Borrower will ensure that the consultancies, studies, capacity building, training and any other technical assistance activities under the Project, as well as any other environmental and social assessments (including the ESIAs and RAPs for the feasibility studies, and the Strategic environmental and social assessment, SESA for the Master Plan), and related environmental and social instruments to be supported under the TA are carried out in accordance with terms of reference acceptable to the Association and incorporate the relevant requirements of the ESSs. As the proposed site for the new Mountougoula landfill will not be selected prior to project approval, the required environmental and social instruments, ESIA and RAP, will be prepared during project implementation and implemented prior to starting civil works.
102. **ESS2 Labor and Working Conditions.** This standard is relevant because project activities are expected to have some environmental / social risks and impacts related to labor and working conditions. Following an assessment of the labor requirements and types of employees engaged in the project, the Borrower has prepared and disclosed³⁷ Labor Management Procedures (LMP) to comply with ESS2 requirements regarding the three categories of project workers: (i) direct workers, (ii) contracted workers, and (iii) primary supply workers. The LMP addresses issues related to workers Occupational Health and Safety (OHS), such as protection against toxic fumes from waste and fecal matter or road safety conditions to

³⁷ LMP was disclosed in-country on May 10, 2021 and on the World Bank website on August 31, 2021.



enable them to reach the construction sites. It also addresses the working conditions, management of worker relationships, protection from workplace hazards, issues on non-discrimination, minimum work age, and the prohibition of forced labor. The LMP include relevant guidance for employment in keeping with national labor regulations and applicable international regulations which Mali has adopted through the International Labour Organization's (ILO's) core conventions. During implementation, the Borrower will need to constantly assess risks related to child labor in these urban contexts, forced labor and safety issues and take appropriate measures to address them, including changing any service provider or supplier that is non-compliant with the requirements of ESS2, as indicated in the LMP. The project will establish a labor GM, based on national law and regulations and the principles of ESS2.

103. **ESS3 Resource Efficiency and Pollution Prevention and Management.** This standard is relevant because the project may generate waste and air, water, and land pollution and consume finite resources that may threaten people, ecosystem services and the environment at the local level. The ESMF has assessed all these risks/impacts and identified mitigation measures. The cumulative impact will be identified as part of the screening process for the sub-projects. The civil works (i.e., the construction of the transfer facilities, rehabilitation of Noumoubougou landfill, construction of Moutougoula landfill, clearing of existing dumps, construction of two fecal sludge treatment plants, water networks, rehabilitation, or improvement of the primary drainage network), will generate a significant amount of pollution that will affect water, vegetation, air, and land. There is a high risk that air and water pollution could result from inadequate waste management procedures, especially during the construction phase. The potential risks and impacts will need to be assessed and managed in a manner consistent with this Standard. The project ESAs will assess these risks and impacts, and the waste management plan will include mitigation measures to minimize and manage these risks and impacts during the construction of landfill and transfer facilities. The exact locations for the two fecal sludge treatment plants have been delimited, and site-specific ESAs are under elaboration. A scoping level ESIA, which was designed to determine related risks and impacts in the general areas was prepared by the Borrower and was disclosed prior to approval in May 2021. The dedicated measures will be implemented during the operational phase. During the construction phase, heavy vehicles and machinery will generate dust, greenhouse gas emissions, traffic disturbances, dust, and noise. The people most likely to be affected are people living near construction sites landfill, waste transfer, fecal sludge treatment plants, etc. The implementation of mitigation measures, such as dust suppression and vehicle maintenance, will be applied to minimize the impact of emissions during construction, and residual impacts should be limited in scope and duration. However, the emissions of gaseous pollutants from the transfer facilities and landfill will have to be evaluated for their potential greenhouse gas emissions, and adequate measures will be identified to mitigate their associated potential negative impacts. The site-specific ESMPs will include mitigation measures to minimize and manage the risks and impacts of construction work on the various sites. Construction activities will generate solid waste, which will mainly include excavated soils and hazardous wastes such as leachate from the clearing of existing dumps. The hazardous risks assessment should be included in the related environmental and social impact assessment. The waste generated by the construction work will be largely disposed of on approved sites in accordance with national laws and regulations.
104. **ESS4 Community Health and Safety.** The ESMF prepared by the Borrower has assessed all these risks/impacts of the project on the health and safety of the affected communities (particularly their most vulnerable members) during the project life cycle and has proposed different mitigation solutions. The ESMF has also described SEA/SH-related risks (mainly because of laborers working on infrastructure refurbishment and having close contact with female beneficiaries). There are significant health and safety



concerns, particularly during the civil works, as several of the project intervention sites are located in dense urban areas in Bamako city and its surrounding areas. Each of the delegated implementation agencies, AGETIER, AGETIPE and SOMAEEP, and the UCP, will be responsible for ensuring that all the mitigation measures regarding community health and safety as described in the environmental and social risk management instruments. Each site-specific environmental and social management plan (ESMP) for all the planned construction works, will require contractors to secure the work site by installing fences and engaging security guards to safeguard property and protect local communities from risks associated with construction. All COVID-19 requirements will be shared with contractors and monitored at local level to ensure workers and communities safety. The Borrower will be required to assess the risks posed by such security arrangements and incorporate the relevant measures outlined in the good practice note (GPN) on the use of security personnel. Security guards will be required to undergo training on the use of force and appropriate conduct towards workers and affected communities. The initial screening for risks for projects containing civil works has determined the SEAH risk to be moderate. This initial risk screening will be revisited and re-evaluated as the project is implemented. A project SEAH Action Plan will be developed three months after effectiveness and will indicate that SEAH risks be continually re-assessed and adequate mitigation and response measures be put in place before work starts at different sites. To address community risks linked with project implementation in dense urban areas, the Borrower will prepare, as part of the environmental and social assessment:

- Emergency response plan, included in site-specific ESMPs;
- Sexual exploitation and abuse and sexual harassments (SEA/SH) mitigation plan;
- Traffic Management and Road Safety Plan;
- Staff training plan on project risks and impacts on urban communities, The ESMPs will make use of the General and Industry-specific Environmental Health and Safety Guidelines in defining specific measures to protect communities. The trenches that will be dug for the new water lines could constitute risks for the people living in the areas of project activities. Given the high density in some of the project areas, it is likely that the access to homes could be affected by the works. The site-specific ESMPs will include measures to address traffic and safety issues related to the community, including the erection of signposts to signal danger.

105. **ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement.** For the Noumoubougou landfill, no resettlement is expected as the proposed works will expand existing facilities at a secured, fenced, site. The Borrower's audit of the implementation of the original RAP in 2016, when the complex was first built through national financing, has determined that there were cases of non-payment of compensation to project affected people (PAPs). This current project will implement the recommendations of the audit action plan prior to the implementation of any works to address any gaps, and in line with the requirements of national law and ESS5. The project will be required to implement any remedial action plan resulting from the audit. For the fecal sludge treatment plants, the Borrower hired a qualified firm to carry out a scoping study of social risks and impacts in the selected areas. The recommendations of the study helped to determine the selection of specific sites and site-specific RAPs are on-going to address the impacts and provide mitigation measures. The Borrower has not yet secured the proposed site for the new landfill to be built in Mountougoula, and the land titling process remains to be completed. Moreover, it appears that at least ten houses have been built on the site since the field visit undertaken by the Bank team during the project identification mission in October 2019. Other sites are also being considered. For both landfills, an estimated 50 transfer stations will be required – the sites for these are not yet known. The exact locations of the proposed water networks and rehabilitation of primary drainage lines are yet to be determined, but they will be in very densely populated areas as well as informal settlements; they are



likely to require small amounts of land. They will also be built in waterways stream bed. This is mainly the case for the Daouadabougou / Niamakoro areas in Commune 6 which experienced a lot of damage from the May 2019 floods, as documented in the Post-Disaster Needs Assessment (PDNA) that was carried out with Bank support after this event. The amount of land required for the works will be determined by design. A first option will be the avoidance of any type of resettlement in application of the mitigation hierarchy. Construction of drainage in urban areas could also lead to temporary loss of access to businesses. This is addressed in the Resettlement Policy Framework (RPF) the Borrower prepared, consulted upon, and disclosed nationally and on the World Bank website on May 10, 2021, that establishes procedures for the site-specific RAPs for the proposed subprojects, including the waste transfer stations and drainage lines and WASH activities, whose locations are not yet known. The livelihoods of waste pickers at the temporary transfer sites or other landfills could be affected. The RAPs will propose livelihood alternatives to address any likely loss of livelihood for waste pickers. The RPF provides guidance on the determination of livelihood alternatives to address any possible losses by this category of vulnerable people. Several focal points will be designated in the neighborhoods to assist with implementation. They will work with the focal point at City Hall level to support the GM and will help on resettlement issues including assistance to vulnerable groups.

106. **ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources.** This standard, which aims, among others, to protect and conserve biodiversity and habitats, is relevant. The ESMF has identified some ecosystem services, such as provisioning, regulation and cultural specially in Tienfala forest which will be affected during the construction of fecal sludge treatment plants. Clearing at project sites (landfill, sludge treatment plants) may result in a loss of vegetation, wildlife habitat and ecosystem services mainly in Tienfala forest. Vegetation is characterized by trees and shrubs whose tops are more or less contiguous; the whole canopy remains clear. The grass layer is sometimes sparse or mixed with other herbaceous and suffrutescent vegetation. Forest degradation and desertification are in a vicious cycle, exacerbated by a combination of several factors, the main ones of which are climatic and anthropogenic pressure. This plant formation serves as a habitat for wild fauna made up of birds of various species, small rodents, reptiles, etc. Although the impacts on the vegetation and soil cover are expected to be moderate as they are site-specific and largely on existing facilities in peri-urban areas, negative impacts on existing ecological habitats can be expected if drainage networks are built in the stream bed of waterways. Site-specific ESIsAs will assess the potential impact on these ecosystems and, where needed, adequate mitigation measures will be developed. Under the project, ESIsAs will assess the impact on vegetation, the wildlife habitat and ecosystem services and mitigation measures will be planned to ensure that project activities do not alter or cause the destruction of critical or sensitive natural habitats, particularly in Tienfala forest. The audit of the Noumoubougou landfill has determined that the poor disposal of plastic waste poses a threat to the biodiversity in the area and has made recommendations to properly treat the waste. These include noise control, waste sorting, erosion and soil degradation control, and compensatory planting of vegetation along the surrounding corridors.
107. **ESS8 Cultural Heritage.** The standard, which aims to protect cultural heritage from the adverse impacts of project activities and support its preservation, is relevant. While the ESMF includes already find chances procedures, ESIsAs (to be prepared during implementation) will assess potential risks and negative impacts of project activities on cultural heritage. The proposed project activities pose the possibility of encountering both known and unknown cultural heritage. Though the possibility is not considered significant, the Borrower will avoid impacts on known cultural heritage sites and, where such avoidance is not possible, will identify and implement measures to address these impacts in accordance with the



mitigation hierarchy. As the project will involve extensive civil works, excavation of earth and earth movement and impounding are to be expected, especially at the Noumoubougou landfill. For the fecal sludge plants, the risks to cultural heritage will be addressed in the ESAs, chance finds procedures included in the bidding documents, and will be further developed in the site-specific ESMPs. The Ministry of Culture will be contacted in the event of any disturbance of cultural heritage.

108. **ESS10 Stakeholder Engagement and Information Disclosure.** A Stakeholder Engagement Plan (SEP), which has been prepared by the Borrower, consulted upon and disclosed nationally and on the World Bank website on May 10, 2021, is consistent with the requirements of ESS10 and proportional to the nature and scale of the project and associated risks and impacts. The primary stakeholders in project activities are small waste management businesses (groupements d'intérêt économique, GIE) and sanitation operators (most of whom are members of the national Association des Vidangeurs), including waste collectors, waste pickers at existing temporary waste transfer points, wastewater carriers, manual and mechanized latrine emptiers. These will be negatively impacted by the project activities, particularly through economic displacement, which could be of a temporary or permanent nature. Other stakeholders include members of civil society such as women and youth-based organizations and the affected communities of Noumoubougou, Tienfala and Mountougoula. These stakeholders have different interests, economic or cultural, regarding project objectives and activities. The National Civil Aviation Agency (Agence nationale de l'aviation civile, ANAC) is an interested stakeholder as the site of one of the proposed fecal sludge treatment plants is within the general zone of the Senou airport in Bamako. The stakeholders consulted as part of project preparation include, among others, the Grand Bamako City Council, representatives of the rural communes of Tienfala and Mountogoula, the solid waste pre-collection collective (COGIAM), waste pickers of Lafiabougou, the Ministry of Environment, Association of Malian Architects and the Malian Association for environmental and social impacts assessments. In preliminary consultations, stakeholders have expressed the following concerns: the need for effective project communication; involvement in all stages of the project; consideration of vulnerable groups such as the waste pickers, women and young girls in the project intervention areas; and capacity building. The SEP considers the inclusion of the voices of vulnerable groups (women, female household heads, persons living with handicap) through focus group discussions. It also proposes engagement with female civil society groups in project communities as a strategy to give voice to women and also as a means of communicating about project-related SEA/H risks and the mitigation measures in place. A project level Grievance Mechanism (GM) is included in the SEP. The PCU will be responsible for the implementation of the grievance mechanism, in collaboration with traditional authorities, local councils (Mairies) and affected communities in all project areas. In addition to stakeholder engagement under ESS10—and to strengthen social sustainability and accountability - the Borrower will design citizen engagement measures in collaboration with civil society and the local population, who will be trained and equipped to follow up on construction activities and the management of infrastructure after the project is completed. The citizen engagement plan will be prepared within three months of effectiveness. To this end, the PIM will include a communication and citizen engagement strategy aimed at facilitating coordination between different stakeholders as without adequate and meaningful consultation, project-affected people could take a "NIMBY" (Not In My Backyard) stance.
109. **Environmental and Social Engagement Plan (ESCP).** The Borrower prepared, with the support of the World Bank, an *Environmental and Social Commitment Plan* (ESCP), which was disclosed in-country on November 4, 2022 and on the World Bank website on November 6, 2022 setting out the necessary actions to ensure that the project complies with the ESSs. The ESCP has identified the material measures and actions that are required as well as their timeframe and dates of completion and defines the responsibilities of different



institutional partners. In addition, the ESCP has identified a number of safeguards instruments which have to be prepared during project implementation in accordance with the relevant requirements of the ESSs. The PCU will also ensure that the consultancies, studies, capacity building, training and any other technical assistance activities under the project, as well as any other environmental and social assessments (including the ESAs and RAPs for the feasibility studies) and related instruments to be supported under the technical assistance will be carried out in accordance with the ESSs. Safeguards instruments will also be prepared and adopted before the carrying out of the relevant project activities under the CERC component, should it be activated.

110. **The GBV/SEA/Sexual Harassment risk level for this project is rated as Moderate.** Drivers of risk include context-specific risks, such as high rates of child marriage and female circumcision, general social acceptability of GBV, conflict, high risks of human trafficking, and lack of legislation on domestic violence and sexual harassment. In response to these realities and aligned with the requirements outlined in the SEA/Sexual Harassment Good Practice Note, the ESF requirements, and a survivor-centered approach, the project will further assess risks of GBV/SEA/Sexual Harassment as part of the social assessment and reflect them in key safeguard instruments, contractual obligations and other key documents regulating project implementation. As part of the social assessment, the Borrower will map GBV services in areas of implementation using a mapping tool developed by the World Bank on Kobo Toolbox and will develop a response protocols for the timely, safe, and ethical referral of all survivors that may disclose GBV/SEA/Sexual Harassment incidents to the project. In addition, the Borrower will design and implement a GBV-sensitive grievance redress mechanism (GRM) to the safe and confidential documentation, response and management of GBV/SEA/Sexual Harassment complaints and will include targeted and regular involvement of women and other groups at-risk in stakeholder engagement. Awareness raising activities on project-related risks of GBV/SEA/Sexual Harassment and mitigation strategies will be included in the SEP and will target communities and project workers, while contractual obligations in terms of GBV/SEA/Sexual Harassment mitigation will be enforced through the integration of specific provisions on codes of conduct addressing GBV/SEA/Sexual Harassment and training of workers. Clarity regarding responsibility for the management of GBV/SEA/Sexual Harassment risks is outlined in the ESCP. As part of project preparation, The Borrower has prepared of a SEA/Sexual Harassment assessment and outline of a Mitigation and Response Action Plan that is included in the disclosed ESMF. The Action Plan will be consulted upon, adopted and disclosed no later than three months after the Effective Date and implemented throughout the project implementation – a budget has been planned in the ESMF. It will outline the project's prevention strategies, response protocol and accountability mechanisms. The Borrower's supervision capacity will be strengthened throughout implementation by including GBV skills and tasks as part of key responsibilities and background requirements for the social safeguard experts of the implementing agency and supervision consultant.

Cross-Cutting Considerations

111. **Climate Co-Benefits:** A climate screening exercise was conducted to determine the climate implications of the project activities and investments. Based on this assessment, the project will result in a net emissions reduction of 4,985,906 t_{eq}CO₂ equivalent to a reduction of 29.3 percent of the SWM and WASH sectors emissions over the project lifetime. The emissions reduction is primarily driven by the development of modern disposal facilities including landfill gas capture and improved management of fecal sludge. Details of this analysis are documented in Annex 4. The resilient infrastructure improvements supported under the project will address climate change adaptation needs and vulnerability. As a Sahelian country, Mali is especially vulnerable to current and future impacts of climate change including erratic rainfall and climate



variability resulting in drought and flooding. To address these climate-related risks and build resilience, works design under the project will incorporate relevant technologies and standards to be climate resilient; operation and management options, as well as community participation and sensitization, will help minimize atmospheric and bacteriological pollution; and support to local governments will lead to improved disaster preparedness and response. The project will address climate vulnerability through active participation of stakeholders, particularly the poor and vulnerable in as well identification and building of resilient infrastructure as its O&M. Specifically, the project activities will seek improvements in sanitation and solid waste collection and treatment, thus reducing the prevalence of vector borne diseases and risks of soil and groundwater contamination, while further improving access to safe water and sanitation services and upgrading poor settlements will help build the resilience of communities. The project will also contribute to reducing open waste burning, which releases significant amounts of GHG into the atmosphere, and which has been identified as the second largest cause of atmospheric contamination in Bamako after vehicular emissions. Eventually, impacts on cleaner and safer living conditions will be multiplied through the combined and simultaneous interventions under other project activities, including investments to restore and protect the capacity of the primary drainage network in critical areas while providing opportunity to develop public and green spaces to benefit poor and vulnerable neighborhoods.

112. **FCV:** The project interventions take place within Mali's FCV context, and directly targets this fragility. The project complements the Mali Emergency and Resilience Project (P173389), in its targeting of fragility through investments in public infrastructure and service delivery through a spatial approach. Bamako is the world's sixth fastest growing city, with large migration from other parts of Mali. Migrants look for better urban and social services, and access to employment. Project components aim to improve solid waste management, water supply, sanitation and hygiene, and drainage infrastructure throughout the city of Bamako. These improvements to key public services directly address citizen needs, as such reducing fragility in the city. In addition, the project provides direct employment to youth and those in vulnerable communities, through opportunities for cash-for-digital-work, and investments in public spaces and community infrastructure.
113. **Citizen Engagement.** The project also fosters citizen engagement and inclusion. While the focus of the project's citizen engagement is on residents in the Greater Bamako area that benefit from project activities and investments, citizens are being engaged in the process of site selection, evaluation and development process for drainage, and other infrastructure investments. Some of experiences of the PACUM's project will be from high value in the project citizen engagement conception and implementation.
114. **Gender:** While the project incorporates several different activities to address women-specific challenges in Bamako, the primary gender gap targeted by the operation is related to low levels of female employment and will support the objectives of Component 1: Improved Solid Waste Management. Only 22 percent of permanent full-time workers in Bamako are female, clearly demonstrating a gap in female employment in the city, and across the country, 95 percent of women are in vulnerable employment versus 86 percent of men. By targeting female participation in solid waste management and urban development, the project seeks to address this gap. Under sub-component 1.2, the project will support specific job creation initiatives, with calls for proposals specifically targeted at women, in areas such as communications, sorting, recycling, and upcycling within solid waste management. Under sub-component 3.3, the project will support grants for micro-projects at the community level for inclusive neighborhood improvement initiatives, creating income-generating activities in areas such as maintenance of local infrastructure, enhancement of the neighborhood image, and programming for use of public and green spaces. Activities



under both sub-components will create job opportunities lasting beyond the life of the project and are aimed toward reducing the gap visible in female employment, with a target of 40 percent female for the jobs created (considerably higher than the current portion of full-time jobs in Bamako held by women at 22 percent). This indicator (Number of jobs created in solid waste management and urban micro-projects) has been incorporated into the Results Framework. Other activities under the project aimed at ensuring impact on women include promoting female involvement in digital and geospatial technologies, with participatory data collection that emphasizes female participation, along with capturing gender specific needs related to urban planning and flood resilience. Specific neighborhood upgrading investments under sub-component 3.2 will ensure that the selection process incorporates a range of consultations, community engagement, and information, education and communication campaigns targeted at women. Component 2 will include activities to address WASH-related burdens that traditionally fall on women, such as targeted initiatives on educating children about sanitation and hygiene practices. This includes activities related to providing gender-sensitive facilities with latrines separated for boys and girls and men and women, and information and trainings for menstrual hygiene management and handwashing. Finally, activities under component 4.2 will promote women's involvement in digital and geospatial technologies. These activities will specifically target female staff for short training as well as long training as a career path. Participatory data collection under this sub-component will also put an emphasis on supporting female participation as well as capturing gender specific needs for urban planning and flood resilience.

115. **Jobs:** All project components have an important potential for job creation. This is particularly the case for Components 1 (SWM), 2 (WASH) and 3 (Resilient infrastructure) which have a large potential to create jobs during project implementation. It is worth signaling the relatively important number of SMEs in delivery of both solid waste and sanitation services. In addition, the project will consider labor-intensive works as an approach to creating jobs wherever possible. While construction / rehabilitation of diverse infrastructures during project implementation will create short term jobs, support to SMEs to improve their organization and professionalization will provide them with increased opportunities for creating longer-term jobs.

V. GRIEVANCE REDRESS SERVICES

116. The project will establish a two-pronged grievance GRM at the local and national levels to allow affected stakeholders to raise grievances and seek redress if and when they perceive that a negative impact has arisen from the project interventions. The GRM will be designed in consultation with relevant government and non-government stakeholders. It will establish accessible processes including an IT platform to submit complaints as well as clear procedures from investigation to resolution and feedback. The GRM will include the provision for appeal if aggrieved parties are dissatisfied with the outcome. A communication campaign will be implemented to inform beneficiaries and stakeholders on how to use the GRM and stipulating the investigation and resolution sequential process, timeline, and procedures.
117. Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level GRM or the World Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project affected communities and individuals may submit their complaint to the Word Bank's independent Inspection Panel which determines whether harm occurred, or could occur, because 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 World Bank Management has been



given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate 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.

VI. KEY RISKS

118. The overall Project risk is rated as High, derived from the following key risks:

- a. **Political and Governance: High.** Mali's political and security situation remains extremely volatile. Territorial disputes and ethnic tension are magnified by climatic shocks, especially in the North, leading to recurrent conflicts since independence in 1960. Political stability represents a challenge as Mali experienced two back-to-back coups in 2020 and 2021, which resulted in the appointment of a transitional government. Disputes over the duration of the transitional period led to ECOWAS imposing economic and financial sanctions between January and July 2022. Despite the lifting of sanctions, further delays in the electoral timetable could trigger additional round(s) of economic sanctions and impede the project's implementation through disrupted trade and financial flows. Social unrest represents another source of risks which could result in disruptions of the implementation of project activities or affect contractors, PCU staff and public stakeholders. Intensified insecurity which is increasingly expanding to the Southern regions could hinder or halt project implementation if it reaches the Bamako area. There also remains a risk of limited progress on key policies and reforms due to an overly fragile political consensus and the prioritization of competing needs. As preparations for the election ramp up, the risk of limited progress on key policies and reforms is likely to increase, especially if social tensions rise, amplifying difficulties in reaching political consensus and the risk associated with the transition.
- b. **Macroeconomic: Substantial.** Macroeconomic risks are substantial due to political uncertainty and competing urgent needs in a fiscally constrained environment. Intensification of conflicts could lead to further violence, thus posing a major threat to macroeconomic conditions and incomes. Mali is also experiencing severe fiscal pressures and faces the risk of not having sufficient fiscal space for non-essential investments. The six-month ECOWAS sanctions damped the growth and macro-fiscal outlook over the medium-term, while growing security and social pressures have narrowed the fiscal space for prospective interventions. This is compounded by the Ukraine war, and additional monetary tightening in the eurozone through elevated inflation and debt refinancing costs on the regional market. The under-diversified economy remains vulnerable to external shocks including commodity price volatilities and adverse weather. Yet, project activities and expected results are designed to contribute to GoM's medium-term development strategy, which will help buy-in support from relevant ministries and agencies to commit to the project. The project is also focused on the Greater Bamako area, where risks for firms and consultants are lower than in other regions. This is underscored by the fact that over 80 percent of Mali's economic activity occurs in the Southern regions of the country, which has been more resilient to conflict risks. The residual risk is therefore Substantial.
- c. **Sector Strategies and Policies: Moderate.** The cross-cutting nature of the project means that it relates closely to several sector strategies and policies, which are outdated or unevenly implemented owing to limited resources and capacities. All of them may be subject to change as government priorities



shift. To mitigate this, the project will closely collaborate with the ministries involved in the project, implementing agencies and the PCU and support capacity strengthening and reform actions pertaining to policies and strategies' bottlenecks in the different subsectors.

- d. **Technical Design of Project: Substantial.** The project design is complex given the range of activities and investments across the city and ambitious objectives of this transformational project. The World Bank has a wealth of expertise on the different approaches and technologies proposed in the different subsectors and the project team has mobilized resources to work closely with implementing agencies during project preparation and implementation to mitigate the risk.
- e. **Institutional Capacity for Implementation and Sustainability: Substantial.** Current institutional capacity is limited, both in terms of implementation requirements – fiduciary (procurement and financial management), safeguards and reporting – and technical capacity. These capacity constraints may also impact the institutional and financial sustainability of project interventions. Additionally, the project will require challenging coordination between the national, district, and municipal levels of government. To mitigate these risks, the project will focus on strengthening capacity through a series of institutional enhancement activities and technical assistance and ensure that the PCU will include a strong team of skilled staff to comply with World Bank policies and procedures and technical quality standards, within a robust and agreed upon institutional and implementation framework. The project also builds upon learning from the preceding PACUM project to ensure targeted capacity improvements and support and appropriate involvement of relevant stakeholders, including at decentralized level.
- f. **Fiduciary: Substantial.** Based on the experience from other IDA-funded projects executed in Mali and the complexity of this project and the context, the fiduciary risk is rated as Substantial. To mitigate the fiduciary risk, the PCU, a dedicated Unit, is established and is strong with much experience. It consists of FM and procurement specialists and will be reinforced by the recruitment of additional experienced fiduciary experts as needed. The additional mitigation measures will include: (i) all the activities will be implemented through Annual Work Plan (AWP) previously approved by the World Bank; (ii) the Direct payment method, from the World Bank account to beneficiary account will be setup as a preferential method of payment; (iii) the activities will be monitored at the local level using GEMS tools and the data collected will be compared with the financial information and disbursement report; (iv) the procurement activities will be managed through STEP. All FM arrangements including disbursement, will be based on the PIM approved by the World Bank (effectiveness condition), considering the current Mali Public Financial Management situation. The PIM will strengthen ex-ante and ex-post control of funds allocated. Multiple internal and external audits, and the use of specialized and trusted agencies for implementation, along with other factors, will help ensure tight fiduciary controls.
- g. **Environmental and social: High.** The environmental and social risk rating is high, given the nature and scope of the proposed project investments. Activities are likely to generate a wide range of adverse environmental and social risks and impacts on the infrastructure sites as the project will be operating in fragile and densely populated areas Bamako. Conflict and insecurity also increase the risk of Gender Based Violence, specifically among IDPs, who often live in low-security areas. In addition, the Borrower has limited capacity and experience with the requirements of the ESF. To mitigate these risks and



impacts, the capacity of the PCU and relevant institutions will be reinforced to ensure adequate implementation of the ESF instruments.

- h. **Stakeholders: Moderate.** Successful implementation of the project involves several implementing agencies and ministries, as well as institutions at local government level. Along with many stakeholders, if not well-coordinated, information asymmetry may emerge and hinder the achievement of the PDO. To mitigate this risk, a consultative process with key stakeholders took place during preparation to discuss the framework for implementation arrangements, along with the necessary collaborative agreements between implementing agencies and citizen engagement activities to keep stakeholders engaged throughout project implementation.
- i. **Others: Moderate.** Increasing insecurity risks could expand to the District of Bamako and neighboring communes, either directly or owing to the movement of people to the region, which could hinder or add pressures on project implementation. Project investments, especially those focusing on improving the sanitary environment for urban dwellers with poor access to basic waste and WASH services, as well as those supporting youth and community involvement and job creation, will contribute to mitigate the risks by building trust between the state and the urban population. Additionally, the ongoing impact of climate change makes the city of Bamako particularly vulnerable to flooding risks. Project investments attempt to mitigate these risks.

**VII. RESULTS FRAMEWORK AND MONITORING****Results Framework****COUNTRY:** Mali

Bamako Urban Resilience Project

Project Development Objectives(s)

Improve access to urban waste, sanitation and water services, increase resilience to floods in selected vulnerable areas of the District of Bamako and targeted neighboring communes, and strengthen urban management capacity.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
Improve access to urban waste, sanitation and water services				
People provided with improved urban living conditions (CRI, Number)		0.00	20,000.00	80,000.00
People provided with improved urban living conditions - Female (RMS requirement) (CRI, Number)		0.00	20,000.00	40,000.00
People provided with improved access to Solid Waste Management services (Number)		0.00	400,000.00	1,500,000.00
those who are female (Number)		0.00	200,000.00	750,000.00
People provided with access to improved sanitation services (CRI, Number)		0.00	40,000.00	250,000.00
People provided with access to improved sanitation services - Female (RMS requirement) (CRI, Number)		0.00	20,000.00	125,000.00



Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
People provided with access to improved water sources (CRI, Number)	0.00		40,000.00	175,000.00
People provided with access to improved water sources - Female (RMS requirement) (CRI, Number)	0.00		20,000.00	88,000.00
Beneficiaries that feel project investments reflected their needs (Percentage)	0.00		40.00	80.00
Percentage of female beneficiaries (Percentage)	0.00		50.00	80.00
Increase resilience to floods in selected vulnerable areas				
Area protected from a flooding event with a 10-year return period (Hectare(Ha))	0.00		100.00	350.00
Strengthen urban management capacity				
A digital platform (skills, data and tools) is used to inform critical urban planning activities and investment studies in the project areas (Yes/No)	No		No	Yes

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
Improved Solid Waste Management				
Transfer points built and functional (Number)	0.00		10.00	25.00
Solid waste recycled or disposed at sanitary landfills in the project area (Metric tons/year)	0.00		50,000.00	250,000.00



Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
People benefiting from capacity building and training (Number)	0.00		500.00	1,500.00
of which women (Number)	0.00		250.00	750.00
Improved Water Supply, Sanitation and Hygiene				
Improved household latrines constructed under the project (Number)	0.00		6,000.00	20,000.00
Improved latrines in public institutions constructed or rehabilitated under the project (Number)	0.00		300.00	800.00
Number of students provided with access to appropriate sanitation facilities in their schools under the project (Number)	0.00		20,000.00	50,000.00
New Fecal Sludge Treatment Plants constructed under the project (Number)	0.00		1.00	2.00
New piped household water connections that are resulting from the project intervention (Number)	0.00		4,000.00	15,000.00
Water storage capacity constructed under the project (Cubic Meter(m3))	0.00		6,000.00	16,000.00
Length of water networks constructed under the project (Kilometers)	0.00		50.00	300.00
Investments in Resilient Infrastructure				
Length of primary/secondary drainage network rehabilitated (Kilometers)	0.00		3.00	10.00
Settlement area upgraded (Hectare(Ha))	0.00		100.00	500.00
Operational drainage O&M strategy (Yes/No)	No		No	Yes
Local initiatives supported by the project (Number)	0.00		40.00	80.00
of which led by women (Percentage)	0.00		20.00	40.00
Jobs created in solid waste management and urban micro-projects (Number)	0.00		250.00	570.00



Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
of which women (Number)	0.00		90.00	228.00
Strengthening Institutional Capacity				
Elected representatives and key staff of the Grand Bamako having followed a minimum package of training according to the training plan to be prepared by the Grand Bamako Authority (Number)	0.00		48.00	100.00
Urban planning and investment studies completed with the use of a digital information system (Number)	0.00		1.00	3.00
Local development plans / investment programs in place as a result of the project (Number)	0.00		10.00	20.00
Increase in local governments' own revenues (Percentage)	0.00		10.00	15.00
Share of local governments' budgets allocated and spent on routine maintenance (Percentage)	10.00		12.00	15.00
Number of people trained in digital and geospatial technologies (Number)	0.00		50.00	100.00
of which women (Number)	0.00		25.00	50.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
People provided with improved urban living conditions		Annual	Surveys, M&E Reports,	GIS Analysis based on the report from PCU and the construction	PCU



			reports from technical studies	supervision forms The cumulative number of people living in urban areas that have been provided with access to improved infrastructures, roads (within a 500-meter range, equivalent to 10 minutes walking time), services, neighborhoods upgrading, public spaces, resilience, and/or urban environmental conditions through the direct interventions supported under the project. To be counted under this indicator a person needs to have been provided with at least one of the above, but, in most cases, will benefit from several improvements. Measures will be taken to avoid double-counting.	
People provided with improved urban living conditions - Female (RMS)		Annual	Surveys, M&E	GIS Analysis based on the report from PCU	PCU



requirement)			Reports, reports from technical studies	and the construction supervision forms The cumulative number of people living in urban areas that have been provided with access to improved infrastructures, roads (within a 500-meter range, equivalent to 10 minutes walking time), services, neighborhoods upgrading, public spaces, resilience, and/or urban environmental conditions through the direct interventions supported under the project. To be counted under this indicator a person needs to have been provided with at least one of the above, but, in most cases, will benefit from several improvements. Measures will be taken to avoid double-counting.	
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People provided with improved access to Solid Waste Management services	The cumulative number of people living in an area where household waste is collected, transported and disposed in a landfill or recycled	Annual	M&E Reports and Technical Reports	Project implementation reports (number of transfer points constructed) and GIS analysis of areas serviced by SWM system	PCU and the Technical Support Unit to Local Governments
those who are female	The cumulative number of people living in an area where household waste is collected, transported and disposed in a landfill or recycled	Annual	M&E Reports and Technical Reports	Project implementation reports (number of transfer points constructed) and GIS analysis of areas serviced by SWM system	PCU and the Technical Support Unit to Local Governments
People provided with access to improved sanitation services	The indicator measures the cumulative number of people who benefited from improved sanitation facilities that have been constructed through operations supported by the World Bank.	Bi-annual	Project reports based on data from supervision of construction of household latrines and latrines in schools	The number of beneficiaries represents (i) the number of domestic latrines constructed by the project (20,000) x 10 people using a latrine, and (ii) the number of students provided with access to appropriate sanitation facilities in their schools under the project (70 students per school latrine). The number of latrines constructed will be verified by	PCU and DNACPN



				DNACPN/supervision engineer. The number of latrines constructed in schools will be based on reports from DNP (Direction Nationale de la Pédagogie, under the Ministry of Education) which is in charge of WASH in schools and Communes/SMI-GB involved in works supervision	
People provided with access to improved sanitation services - Female (RMS requirement)	The indicator measures the cumulative number of people who benefited from improved sanitation facilities that have been constructed through operations supported by the World Bank.	Bi-annual	Project reports based on data from supervision of construction of household latrines and latrines in schools	The number of beneficiaries represents (i) the number of domestic latrines constructed by the project (20,000) x 10 people using a latrine, and (ii) the number of students provided with access to appropriate sanitation facilities in their schools under the project The number of latrines constructed will be verified by DNACPN/supervision engineer. The number of latrines constructed	PCU and DNACPN



				in schools will be based on reports from DNP (Direction Nationale de la Pédagogie, under the Ministry of Education) which is in charge of WASH in schools and Communes/SMI-GB involved in works supervision	
People provided with access to improved water sources	This indicator measures the cumulative number of people who benefited from improved water supply services that have been constructed through operations supported by the World Bank.	Bi-annual	SOMAEP reports	Households provided with a new social household connection [17,500 social connections x 10 people]. The number of new, operational connections will be verified by SOMAEP/supervision engineers.	SOMAEP
People provided with access to improved water sources - Female (RMS requirement)	This indicator measures the cumulative number of people who benefited from improved water supply services that have been constructed through operations supported by the World Bank.	Bi-Annual	SOMAEP Reports	Households provided with a new social household connection [17,500 social connections x 10 people]. The number of new, operational connections will be verified by SOMAEP/supervision	SOMAEP



				engineers.	
Beneficiaries that feel project investments reflected their needs	The percentage of beneficiary population that feel that the project activities have reflected their needs. This will be measured through a beneficiary survey, occurring first at mid-term, and then annually until project close.	MTR, end of project	Social sample survey and focus groups, including by gender	Beneficiary Satisfaction Surveys	PCU
Percentage of female beneficiaries	The percentage of beneficiary population that feel that the project activities have reflected their needs. This will be measured through a beneficiary survey, occurring first at mid-term, and then annually until project close.	MTR and end of project	Social sample survey and focus groups, including by gender	Beneficiary Satisfaction Surveys	PCU
Area protected from a flooding event with a 10-year return period	The cumulative urban area that has been protected from a flooding event with a 10- year return period owing to the construction and rehabilitation of storm water drainage	Annual	M&E Reports, Reports from technical studies	GIS analysis based on the report from the construction supervision firms	PCU and AGETIPE
A digital platform (skills, data and tools) is used to inform critical urban planning activities and investment studies in the project areas	Assess the progress in implementing the digital platform	Annual	Implementation Reports	Project Implementation Reports	PCU



Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Transfer points built and functional	The number of new transfer points constructed and operational within the project area	Annual	Technical reports, Project implementation reports	Ground based evidence	PCU and the Technical Support Unit to Local Governments
Solid waste recycled or disposed at sanitary landfills in the project area	Tonnage of municipal solid waste being disposed at the landfill and originated from the project area and tonnages recycled through facilities supported by the project	Annual	Activity Reports from Landfill Operators, Audits	Weighbridge at landfill	PCU and AGETIER
People benefiting from capacity building and training	Total number of people attending specific events and activities designed to enhance capacity in SWM-related activities	Annual	M&E Reports	Project Implementation Reports	PCU
of which women	Total number of people attending specific events and activities designed to enhance capacity in SWM-related activities	Annual	M&E Reports	Project Implementation Reports	PCU
Improved household latrines constructed under the project	Number of household latrines constructed or rehabilitated under the project	Bi-annual	Project progress report based on	Reports from supervision firms including number of latrines under	PCU



			supervision firms' reports	construction / constructed / used by beneficiary, field visits from local authorities/SMI-Grand Bamako [and social intermediary NGO]. Based on national agreed ratios, and for the purpose of measuring the additional number of people benefiting from latrines constructed or rehabilitated under the project, it is considered that a household latrine will be used by 10 people.	
Improved latrines in public institutions constructed or rehabilitated under the project	Number of latrines constructed or rehabilitated in selected public schools, health centers and markets.	Bi-annual	Reports of supervision firms, PCU progress report	Reports of supervision firms are verified, including through field visits, and consolidated by [DNACPN/SMI Grand Bamako] with support of relevant national health and education agencies	PCU
Number of students provided with access to appropriate sanitation facilities in their schools under the project	Number of students provided with access to appropriate sanitation	Annual	Reports from DNP (Direction	Compilation of data received from schools and supervision	PCU



	facilities in their schools under the project. Appropriate facilities refer to functional latrines and handwashing stations. Based on UNICEF ratios applied in Mali, one (1) latrine will be used by 70 students on average [depending on the number of students in said school]. It is anticipated that about 90% of the proposed 800 institutional latrines will be for schools [selection of target public institutions will only happen after Board approval]. On this basis, the end-target of 50,400. It is rounded up to 50,000 to account for remaining uncertainties at this stage of preparation.		Nationale de la Pédagogie, under the Ministry of Education) which is in charge of WASH in schools and Communes/S MI-GB involved in works supervision	entities, field visits	
New Fecal Sludge Treatment Plants constructed under the project	Number of new fecal sludge treatment plants constructed under the project	Annual	Technical reports, Annual project report	Plants constructed as certified by supervision firm, and delivered to project owner as confirmed through official document	PCU with ANGESEM support
New piped household water connections that are resulting from the project intervention	Number of household connections constructed under the project	Bi-annual	SOMAEP progress reports	SOMAEP and supervision firms confirm # connections	SOMAEP



				realized and operational, in coordination with the operator SOMAGEP	
Water storage capacity constructed under the project	Cumulated capacity of water storage constructed under the project (watertight concrete towers and tanks)	Annual	SOMAPEP reports	Watertight concrete towers and tanks constructed and operational, as verified by SOMAPEP/Supervision firms	SOMAPEP
Length of water networks constructed under the project	Cumulated length of water networks constructed under the project (primary, secondary and tertiary distribution networks)	Annual	SOMAPEP reports	Length of water networks constructed and operational, as verified by SOMAPEP/Supervision firms	SOMAPEP
Length of primary/secondary drainage network rehabilitated	The cumulative length of the storm water drainage systems built or rehabilitated under the project, thereby contributing to improvements in flood control.	Annual	Supervision consultants, M&E reports and technical audits	Declared length of networks constructed or rehabilitated in the reports from the construction supervision firms	PCU and AGETIPE
Settlement area upgraded	The total area covered by neighborhood upgrading activities in the participating cities	Annual	M&E reports, technical audits	GIS analysis based on the report from the construction supervision firms	PCU



Operational drainage O&M strategy	Assess the progress in implementing an O&M strategy	Annual	Implementation Reports	Project Implementation reports	PCU
Local initiatives supported by the project of which led by women	The number of local initiatives implemented using grants allocated by the project contributing to the urban living condition and economic inclusion of young people and women	Annual	M&E Reports	Analysis of the reports of the implementing organization	PCU
Jobs created in solid waste management and urban micro-projects	The number of local initiatives implemented using grants allocated by the project contributing to the urban living condition and economic inclusion of young people and women Number of people hired to realize the public equipment + Number of people employed to build or operate SWM facilities	Annual	M&E Reports	Analysis of the reports of the implementing organization	PCU
		annual	Report from the NGO(s) selected to implement the sub-component (#3b) + Activity reports from NGOs implementing construction and communication activities	Micro-project reports, including procurement and expenses details + Enumeration of personnel employed in activity reports for each project activity	PCU



			+ Reports from PIU on construction and operation of SWM facilities		
of which women	Number of people hired to realize the public equipment + Number of people employed to build or operate SWM facilities	Annual	Report from the NGO(s) selected to implement the sub-component (#3b) + Activity reports from NGOs implementing construction and communication activities + Reports from PIU on construction and operation of SWM facilities	Micro-project reports, including procurement and expenses details + Enumeration of personnel employed in activity reports for each project activity	PCU



Elected representatives and key staff of the Grand Bamako having followed a minimum package of training according to the training plan to be prepared by the Grand Bamako Authority	Assess the number of elected representatives and key staff having capacity/performance reinforced as result of a training package related to their works. Assessment in their office according to the tools and knowledge shared during trainings	Annual	M&E Reports	Project Implementation Reports	PCU
Urban planning and investment studies completed with the use of a digital information system	Number of urban planning tools or investment studies completed with the use of a digital information system	Annual	Local Government urban planning reports, studies by consultants, M&E Reports	Project Implementation Reports	PCU
Local development plans / investment programs in place as a result of the project	Number of Local development plans / investment programs in place as a result of the project and used once (or more) to lead local development or investment decisions	Annual	M&E Reports	Project Implementation Reports, Reports from Audits	PCU
Increase in local governments' own revenues	Year-on-year increase in total of own-source revenues (OSRs) collected for all LGs (District + 6 Communes]	Annual	<i>from assessment of implementation of Revenue</i>	Estimate total annual OSRs collected by each LG (District and 6 Communes) on basis of annual management account (<i>compte de</i>	PCU, municipal finance team



			<i>Improvement Action Plans – RIAPs to be put in place and adopted by LGs</i> <i>LG annual administrative accounts</i>	<i>gestion} kept by Treasury.</i> Combine all individual LG OSRs. Compare with previous year's combined LG OSR total.	
Share of local governments' budgets allocated and spent on routine maintenance	Share of LGs' total expenditure spent on routine maintenance (District)	Annual	<i>from assessment of implementation of the Asset Management Plans – AMPS to be put in place and adopted by LGs</i> <i>LG annual administrative accounts</i>	District and Communes to be treated <u>separately</u> . Estimate total annual spending on maintenance by each LG (District and 6 Communes) on basis of annual management account (<i>compte de gestion}</i>) kept by Treasury. Combine all individual Commune annual maintenance spending. Estimate total annual expenditure by each LG (District and 6 Communes) on basis of annual management account (<i>compte de gestion}</i>) kept by Treasury.	PCU, municipal finance team



				Combine all individual Commune total annual spending. Calculate: (a) share of total Commune maintenance spending as % of Commune total annual expenditure, (b) share of total District maintenance spending as % of District total annual expenditure	
Number of people trained in digital and geospatial technologies	Number of people who are trained in the use of digital and geospatial technologies under component 4b. Includes both short and long trainings.	Annual	M&E Reports and Technical Reports	Project Implementation Reports	PCU
of which women	Number of people who are trained in the use of digital and geospatial technologies under component 4b. Includes both short and long trainings.	Annual	M&E Reports and Technical Reports	Project Implementation Reports	PCU

**ANNEX 1: Implementation Arrangements and Support Plan**

COUNTRY: Mali
Bamako Urban Resilience Project

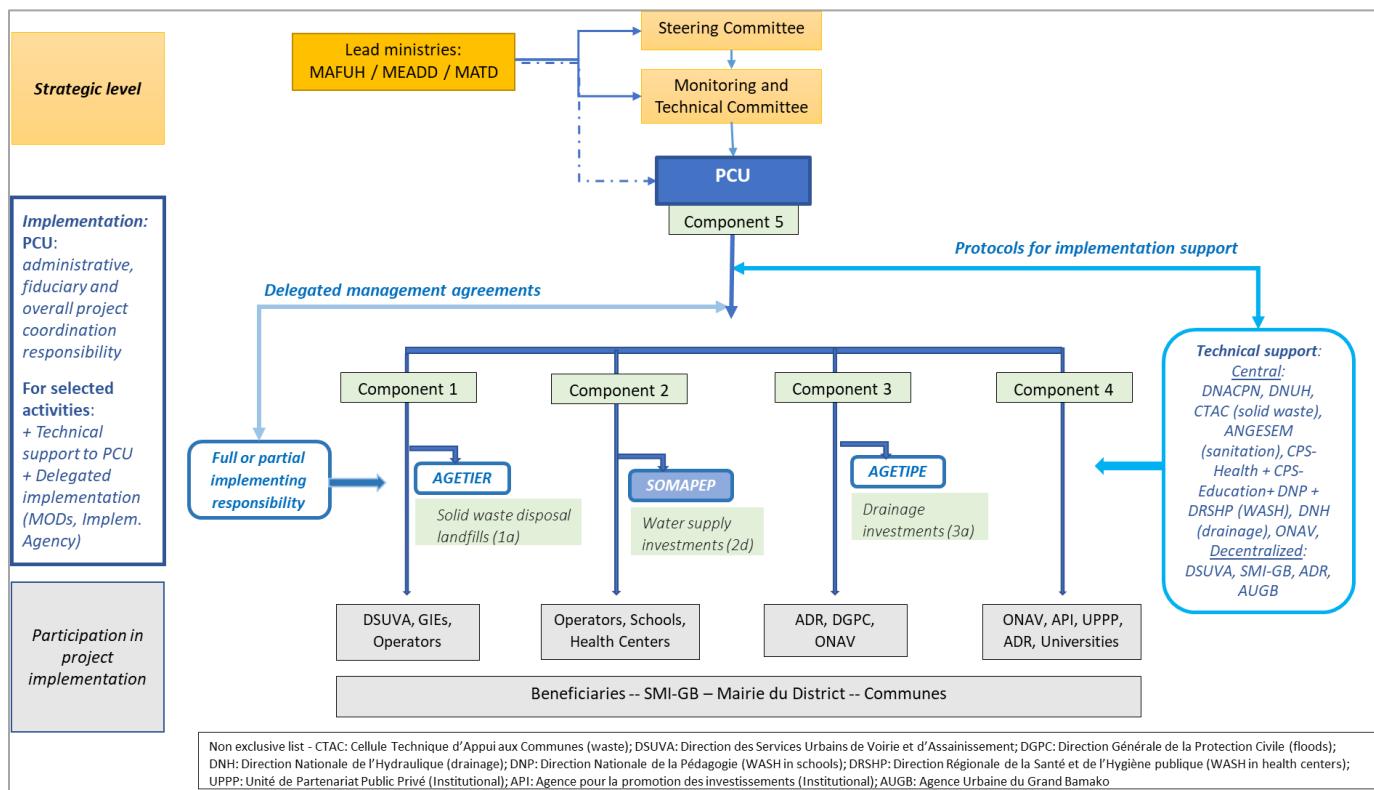
A. Project institutional and implementation arrangements

1. **This project will build on the successful implementation of the recently closed PACUM under the leadership of the former MAFUH, now MUHDATP.** The relative complexity of the project will require a strong inter-ministerial coordination, careful composition of the project's oversight and monitoring bodies to regularly monitor implementation and propose corrective action as needed. Hence, its institutional and implementation arrangements will need to ensure the proper involvement of other line ministers, especially MEADD as oversight body of the solid waste and sanitation subsectors, as well as targeted local entities (District, six Bamako communes, 18 neighboring communes, etc.) that are primary institutional beneficiaries of the project. As a result, the institutional framework of the project will rely on (a) a PSC; (b) a PMTC; (c) a PCU; and (d) a set of specialized agencies for technical support for the implementation of specific activities.
2. **The PSC will be chaired by MUHDATP, seconded by the Minister in charge of Sanitation (MEADD) as first vice-chair and the Minister of Territorial Administration and Decentralization (MATD) as second vice-chair.** It will include, among others, the Ministers in charge of Economy and Finance and of Water; the President of the SMI-GB, and the President of the National Council of Civil Society. The PSC will provide overall oversight and strategic leadership of the project, ensure coherence of activities with sector strategies, and ensure intersectoral coordination with other ministerial departments. The PSC will also validate the project annual budgets and work plans.
3. **The PMTC will be chaired by the Secretary General of MUHDATP and seconded by the Secretary General of MEADD as first vice-chair and the Secretary General of MATD as second vice-chair.** Membership will comprise of, among others, the Heads of the relevant ministerial Directorates -- e.g., DNUH, DNACPN, General Directorate of Territorial Governments (*Direction Générale des Collectivités Territoriales*), National Directorate of Public Land (*Direction Nationale des Domaines*), National Directorate of Hydraulics (*Direction Nationale de l'Hydraulique*) – and Heads of beneficiary agencies and local authorities, including the Directors of ANGESEM and SOMAEP, Mayor of the District of Bamako, Governor of the District of Bamako, Permanent Secretary of the SMI-GB, and Director of ADR for the District of Bamako. The PMTC will be responsible for following up on the implementation of PSC recommendations and decisions, ensuring timely and effective implementation of activities and reporting on project progress at PSC meetings.
4. **A PCU coordinating overall project implementation and involvement of the stakeholders for each subsector will be set up within the MUHDATP and rely on the former PACUM PCU expertise,** which has been tasked to lead the project preparation. The PCU will manage the project, coordinating overall project implementation, ensuring the timely availability of fund transfers, maintaining PAs, and producing financial reports, monitoring and evaluating program implementation and impacts, and reporting results to various stakeholders as detailed in the PIM. It will be headed by a competitively recruited project coordinator who



will lead the day-to-day project management, communicating with the Government, the World Bank, and all stakeholders of the project and overseeing project M&E. The project coordinator will be supported by qualified and experienced staff, with terms of reference acceptable to the World Bank, among others, (a) a procurement specialist (with extensive experience in engineering works and contract management); (b) an FM specialist; (c) two senior accountants and two accounting assistants; (d) a procurement assistant; (e) a communications officer; (f) an environmental safeguards specialist; (g) a social safeguards specialist; (h) an M&E expert; and (i) two technical specialists in the sectors relevant to the project.

Figure 1.1: Institutional and Implementation Arrangements



5. **While the PCU will retain the overall administrative, fiduciary and safeguards responsibilities, it will also rely on support provided by specialized agencies for the implementation of specific activities across sectors.** During preparation, an assessment of the entities involved in the project has been carried out to determine the level of implementation responsibilities they could assume according to their mandates, capacities and performance in similar activities. It also aimed at identifying third parties potentially able to manage part of the activities given the very important workload expected from the PCU for this multisector project. The objective was to define implementation arrangements that would mitigate risks pertaining to institutional capacity for implementation while bringing in adequate expertise for quality outcomes. To ensure coordination between the PCU and multiple entities at different levels, enhance collaboration and foster ownership, a series of agreements or implementation support contracts will be signed between the PCU, on behalf of MUHDATP as implementing agency, and relevant agencies, commensurate to their capacity and level of involvement and responsibility in project implementation (contribution, technical support, or broader responsibility in managing project funds) for selected activities.



6. Three agencies were deemed to have sufficient proven experience and capacity to implement specific parts of the operation and will assume certain levels of responsibilities on behalf of the PCU. AGETIER was selected to endorse technical, procurement and safeguards responsibilities to implement parts of sub-component 1.1, that is investments for the solid waste disposal landfills (rehabilitation and expansion of Noumouboougou landfill and development of a new landfill on the right bank). Similarly, AGETIPE was selected for the drainage investments (entire sub-component 3.1). Both AGETIER and AGETIPE have worked with World Bank-financed projects in previous years under MOD, and such contracts will be signed for the parts of the project delegated to these agencies. SOMAPEP is the implementing agency of the Kabala program and the World Bank-financed PEMU and was selected to implement the water supply investments (entire sub-component 2.4). Contracts with these agencies, in the form of subsidiary agreements or delegated management contracts as already existing in other World Bank-financed projects, will include provisions to ensure compliance with World Bank fiduciary, safeguards and anti-corruption policies and procedures to ensure project proceeds will be used for the purpose intended for the best interest of the GoM.
7. Most of the other technical agencies, municipal services and local authorities involved in the project still lack, to various degrees, sufficient administrative, fiduciary and/or safeguards capacity to endorse direct responsibilities in project management. Some also need technical assistance to build their technical expertise currently inadequate to fulfill their mandates – and will also benefit directly from the project in building such capacity and expertise. Therefore, implementation support contracts (*protocoles, conventions d'appui à la mise en œuvre*) will be signed, as appropriate, between the PCU and each of these agencies. These contracts will define the respective agencies' roles and responsibilities, in line with their respective mandates (contribution to procurement documents and evaluations, implementation of activities and/or monitoring and evaluation) and needed resources to perform adequate implementation support (e.g., in-kind contributions through temporary or full-time secondment of staff, working stations, equipment, etc.).
8. The table below provides an overview of the division of labor between the PCU and cross-cutting or specialized, national or local entities involved in the project:

Table 1.1: Distribution of implementation responsibilities per Project Component

Project Components / Activities	Responsibilities
Component 1: Improved Solid Waste Management (SWM)	
Sub-Component 1.1: Development of solid waste management infrastructure	
<i>Redevelopment of the existing landfill of Noumouboougou and construction of new landfill on the right bank of Niger near</i>	AGETIER (MOD)
<i>Construction of a network of solid waste transfer stations</i>	PCU
Sub-Component 1.2: Performance improvement of solid waste	PCU
Component 2: Improved Water Supply, Sanitation and Hygiene (WASH)	
Sub-Component 2.1: Fecal sludge treatment plants	PCU + support ANGESEM



Sub-Component 2.2: WASH in schools and health centers, domestic latrines and behavior change	PCU + primary support DNACPN
Sub-Component 2.3: Strengthening institutional framework of the sanitation sector and capacity building for DNACPN and ANGESEM	PCU + support DNACPN/ANGESEM
Sub-Component 2.4: Urban Water supply	SOMAPEP (Implementing agency)
Component 3: Investments in Resilient Infrastructure	
Sub-Component 3.1: Investments in drainage	AGETIPE (MOD)
Sub-Component 3.2: Neighborhood Upgrading	PCU + support DNUH
Sub-Component 3.3: Support to local initiatives focusing on urban services and economic inclusion	PCU + support ADR DB
Component 4: Strengthening Institutional Capacity	
Sub-Component 4.1: Support for operationalization of the Grand Bamako	PCU + support SMI-GB
Sub-Component 4.2: Digital platform for resilience	PCU + support ADR DB
Sub-Component 4.3: Support the urban master plan	PCU + support AUGB
Sub-Component 4.4: Municipal finance and asset management for service delivery	PCU + support ADR DB
Component 5: Project Coordination Unit (PCU)	PCU
Component 6: Contingent Emergency Response Component (CERC)	PCU

B. Financial management and disbursement

9. An FM assessment of the Implementing Entity – the PCU - established to manage the Bamako Urban Resilience Project was carried out in February 2021 and updated in September 2022. The PCU coordinating overall implementation and involvement of the stakeholders for each subsector will be set up within the MUHDATP and rely on the closed project PACUM PCU expertise. The objective of the assessment was to determine whether this entity has acceptable FM arrangements in place to ensure that the project funds will be used only for intended purposes, with due attention to considerations of economy and efficiency. The PCU under the oversight of a PSC will have the overall fiduciary responsibility of the Bamako Urban Resilience Project.
10. The assessment complies with the World Bank Directive Financial Management Manual for World Investment Project Financing Operations effective March 1, 2010, and as last revised on February 10, 2017.
11. Although the residual FM risk for the project is deemed Substantial, it is expected that the FM arrangements will satisfy the World Bank's minimum requirements once mitigation measures have been implemented. As a result of the identified FM capacity constraints, the following actions need to be completed to ensure adequate FM arrangements for all aspects of the project: preparing and adopting f the PIM before effectiveness, including FM procedures such as internal controls, budget process, disbursement, assets safeguards, and description of roles and responsibilities of all stakeholders. The PCU will also need to recruit/appoint key FM staffs as: (a) one FM Specialist; (b) at least two senior accountants; (c) one internal auditor; (d) two accounting assistants and (e) purchase accounting software to reflect the



specificities of the project three after effectiveness.

12. The overall fiduciary risk rating is assessed as Substantial and mitigation measures proposed (see FM Action Plan) will strengthen the internal control environment and maintain the continuous timeliness and reliability of information produced by the PCU and an adequate segregation of duties.

Table 1.2: FM Risk Assessment and Mitigation

Risk	Risk Rating	Risk-Mitigating Measures Incorporated in Project Design	Residual Risk
Inherent risk	H		S
Country level: The Public Expenditure and Financial Accountability II, undertaken in 2019, has highlighted several areas of strengths.	H	The Government is committed to a reform program to improve and modernize Public Finance Management and budget program was set up since January 2018. However, it will take time for these reforms to substantially improve the management of public funds.	S
Entity level: The FM capacity assessment of Directorate for Financial Management (DFM) within MUHDATP during project preparation revealed internal control weaknesses and weak fiduciary environment, due mainly to weak compliance with the rules and policies in place. Implementation of this project will translate into an increase of activity for the DFM. This increase, in turn, will require more sophisticated control systems and adequate staff, an effective internal audit function, developing the procedures manual, an integrated information system, and multi-project software.	S	MUHDATP's DFM is not familiar with the World Bank FM procedures. The FM procedures manual will be prepared; additional FM staff very familiar with the World Bank FM procedures will be recruited to form the FM team of the PCU; the internal audit function will be strengthened; and an accounting software will be installed. Recruitment of a FM Specialist and the adoption of an FM procedures manual will mitigate internal control weaknesses.	S
project level: project resources may not be used for the intended purposes. Delays in the reporting system and auditing due to the additional workload for, and the weak capacity of the FM team, are expected. The numerous stakeholders could negatively impact implementation of the project. Other concerns are the weakness of the M&E system to support the payment of cash grants and the weak capacity of regional and rural entities.	S	Current FM arrangements are not adequate to manage the project. For efficiency, the Administrative and Financial Specialist will strengthen ex-ante and ex-post control of funds allocated to Partner implementing organizations. The scope of audit will include review of expenditures incurred by implementing entities. Additional FM staff (FM Specialist, accountant) will be recruited based on ToRs acceptable to the World Bank to train and advise FM staff. Specific measures are incorporated in the project design to ensure smooth implementation and mitigate related risks including	S



Risk	Risk Rating	Risk-Mitigating Measures Incorporated in Project Design	Residual Risk
		governance actions.	
Control Risk	S		S
Budgeting: (a) Weak capacity to prepare and submit accurate work program and budget; (b) weak consolidation of budgets; (c) weak budgetary execution and control; (d) delays in preparing the budget; (e) unreliable lack of comprehensiveness of budget; and (f) cost overrun or underrun and reasons not detected in timely manner.	S	Annual work plan and budget (AWPB) required each year and proclaimed. This is reviewed and approved by PSC. The Project Financial Procedures Manual will define the arrangements for budgeting, budgetary control, and requirements for budgeting revisions. Interim Financial Report (IFR) will provide information on budgetary execution and analysis of variances between actual and budget.	M
Accounting: Poor policies and procedures, lack of qualified accountant staff (staff capacity); and no familiarity with SYSCOAHADA system.	S	FM aspects handled by the FM team of the PCU (a) The Project will adopt the SYSCOAHADA accounting system. Accounting procedures will be documented in the procedures manual; (b) The FM team headed by an Administrative and Financial Specialist will be strengthened by individual consultants recruited competitively; (c) Training on the World Bank FM procedures will be provided to the staff as needed.	M
Internal Control: Internal control system may be weak due to weak FM capacity of the project team; or the current FM procedures may not be enough for this project. The lack of a procedure's manual may lead to inappropriate use of the funds and delays in financial reporting. The PSC may not be effective.	H	(a) Prepare the FM procedures manual and training on the use of the manual; (b) Outsource the internal audit function to a consultant who will scrutinize the proclaimed accounting, financial, and operational procedures. The Internal Auditor will report to the coordinator and share the report with the PSC.	S
Funds Flow: (a) Risk of misused of funds and delays in disbursements of funds to the implementing agency and beneficiaries; (b) inefficient use of the funds; (c) risks of delay in the utilization of advances; and (d) and risks of delays in the justification of the use of advance made to the implementing agency.	S	(a) In line with the FM manual, payment requests are to be prepared prior to disbursement of funds to contractors or consultants and implementing entities; (b) The ToRs of the internal auditor as well as the external auditors include regular field visits (physical verifications of works, goods, and services acquired); (c) A ceiling for expenditures that can be handled/paid in cash will be set up in the FM procedures manual; and (d) Replenishment of bank accounts will be made via a simplified IFR (summary report). Supporting documents will be kept on their premises.	M
Financial Reporting:	S	(a) A computerized accounting system will	M



Risk	Risk Rating	Risk-Mitigating Measures Incorporated in Project Design	Residual Risk
(a) Inaccurate and delayed submission of IFR; (b) Workload leading to some delays in recording of expenditures as well as preparation of periodic financial reports; and (c) Lack of motivation of staff working on the World Bank-financed project impacting the internal control and quality of the oversight of the World Bank funds by implementing entities.		be used (for example, multi-projects and multi-sites); (b) IFR and financial statement formats were agreed at Project negotiations; and, (c) One finance manager will lead the FM team of the PCU, and one accountant will be recruited for project.	
Auditing: Delays in submission of audit report; Scope of the mission may not cover expenditures incurred at decentralized level and other internal auditors; and auditors selected may not be acceptable to the World Bank or may not conduct their assignments professionally.	S	(a) Project's institutional arrangements allow the appointment of adequate external auditors. ToRs (to be discussed before the Expression of Interest are advertised) will include field visits and specific reports on finding physical controls of goods, services, and works acquired by implementing agencies and beneficiaries; and, (b) Annual auditing arrangements will be carried out during Project implementation period; (c) Audit due dates will be closely monitored by World Bank FM team.	M
Fraud and Corruption: Possibility of circumventing the internal control system with colluding practices such as bribes, abuse of administrative positions. Misprocurement is a critical issue.	S	(a) ToR of external auditor will comprise a specific chapter on corruption auditing; (b) Internal auditor will report to the PSC; (c) Copies of the Internal Auditor reports will be submitted to the World Bank; and (d) Measures to improve transparency, such as providing information on Project status to the public; and to encourage participation of civil society, beneficiaries, and other stakeholders, are built into Project design (ref. section below on Guidelines on Anti-Corruption).	S
OVERALL FM RISK			Substantial

H — High, S — Substantial, M — Moderate, and L — Low.

13. It is expected that the FM arrangements will satisfy the World Bank's minimum requirements once mitigation measures have been implemented. An FM Action Plan to enhance the FM arrangements for the project is below.

Table 1.3: FM action plan

Action	Responsible party	Deadline and conditionality
Elaborate and adopt PIM including fiduciary procedures	PCU	Before Effectiveness
Recruit a FM Specialist with qualifications and experience satisfactory for the World Bank		Before Effectiveness



Recruit two accounting assistants with qualifications and experience satisfactory for the World Bank		Before Effectiveness
Recruit internal auditor		Before Effectiveness
Recruit two senior accountants with qualifications and experience satisfactory for the World Bank		Three months after effectiveness
Purchase and customize accounting software taking account new project component		Three months after effectiveness
Recruit an external (statutory independent) auditor		Six months after effectiveness

14. **Internal control system.** The internal control system comprises (a) a PSC to oversee the project activities, and (b) a PIM including Administrative, Financial, Procurement and Accounting Procedures to reflect project requirements by effectiveness, and an internal audit function to carry out ex-post reviews on quarterly basis (and as needed), and physical verifications to evaluate the performance of the overall internal control system.
15. **Planning and budgeting.** The PCU will prepare a detailed annual work plan and budget (AWPB), which need to be approved by the PSC. The PCU will submit the approved AWPB to the World Bank, no later than November 30, before the year when the work plan should be implemented.
16. **Accounting.** The SYSCOHADA, assigned accounting system in West African Francophone countries, will be applicable. The project accounting software will be customized to host the book-keeping of this project.
17. **Financial reporting.** Every quarter, the PCU will submit an IFR to the World Bank within 45 days after the end of the calendar quarter period. The IFRs should provide sufficient pertinent information for a reader to establish whether (a) funds disbursed to the project are being used for the purpose intended, (b) project implementation is on track, and (c) budgeted costs will not be exceeded. The PCU will use the IFR format of the ongoing World Bank-funded projects.
18. The report may include:
 - An introductory narrative discussion of project developments and progress during the period, to provide context to (or other explanations of) the financial information reported;
 - A Sources and Uses of Funds Statement, both cumulatively and for the period covered by the report, showing separately funds, provided under the project (the World Bank, Borrower, and Recipients);
 - A Uses of Funds by Components Statement, cumulatively and for the period covered by the report;
 - The DA reconciliation, including bank statements and general ledger of the bank account;
 - Explanation of variances between the actual and planned activities and budget.
19. Annually, the PCU will prepare Project Annual Financial Statements, which will comply with SYSCOHADA and World Bank requirements. Annual Financial Statements may comprise:
 - Project presentation and project developments and progress during the year, to provide context to (or other explanations of) the financial information reported;
 - A Statement of Sources and Uses of Funds which recognizes all cash receipts, cash payments and cash balances;
 - A Statement of Commitments;
 - Accounting policies adopted and explanatory notes, and
 - A Management Assertion that project funds have been expended for the intended purposes as specified



in the relevant financing agreements.

20. **Auditing.** The PCU will submit Audited Project Financial Statements satisfactory to the World Bank every year within six months after closure of the fiscal year. A single opinion on the Audited Project Financial Statements in compliance with International Federation of Accountant will be required. In addition, a Management Letter will be required, containing auditor observations and comments, and recommendations for improvement in accounting records, systems, controls, and compliance with financial covenants in the Financial Agreement.
21. The PCU will recruit a technical competent and independent auditor acceptable to the World Bank within six months after the project effective date. The recruitment for the external audit of the financial statements of the project should be done through terms of reference agreed by the World Bank.

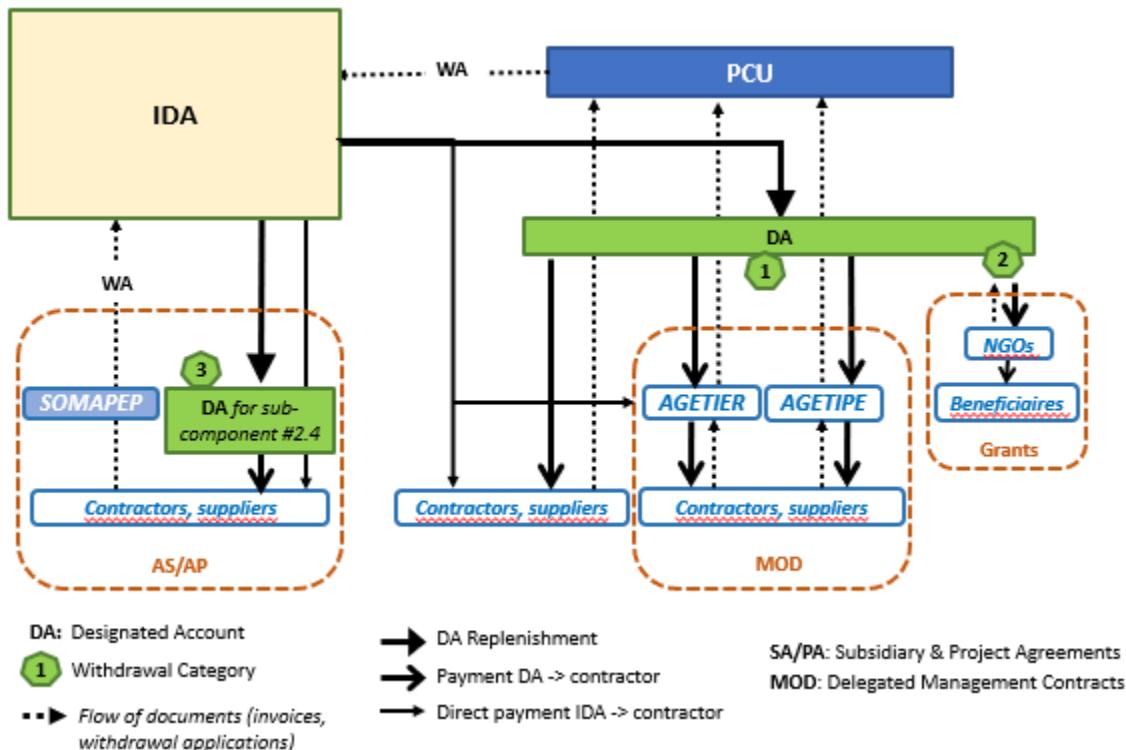
Table 1.4: Audit Reports

Audit Report	Due Date
The project audit reports (audit report and management letter)	<ul style="list-style-type: none">Not later than June 30 (Year N) if effectiveness has occurred before June 30 (Year N-1).Not later than June 30 (N+1) if effectiveness has occurred after June 30, (N-1)

22. **Disclosure of the audited financial statements.** In line with the access to information policy, the project will comply with the World Bank disclosure policy of audit reports (e.g., make publicly available in a manner acceptable to the World Bank; promptly after receipt of all final financial audit reports, the World Bank will also make available the reports to the public).
23. **Disbursement arrangements.** Disbursements under this project will be carried out in accordance with the provisions of the Disbursement Guidelines for Investment Project Financing dated February 2017, the Disbursement and Financial Information Letter, and the Financing Agreement. The project will finance 100 percent of eligible expenditures inclusive of taxes. Disbursement will be transaction-based. A DA will be opened in a commercial bank under terms and conditions acceptable to the World Bank by each of the two implementation entities (PCU and SOMAEP). The disbursement procedures and the fund flow will be described in the PIM approved by the World Bank before the project's is effective. The minimum value of applications for these methods will be specified in the Disbursement and Financial Information Letter. The PCU and SOMAEP will sign and submit Withdrawal Applications electronically using the [eDisbursement] module accessible from the World Bank's Client Connection website.



Figure 1.2: Funds Flow Chart



24. The following table specify categories of eligible expenditures.

Table 1.5. Categories of Eligible Expenditures

Category	Amount of Portion A Credit Allocated (expressed in EUR)	Amount of Portion B Credit Allocated (expressed in EUR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Training, and Operating Costs for the Project except for Parts 2.1; 2.4 and 3.3 (i) of the project	64,062,500	132,105,150	33% from Portion A Credit 67% from Portion B Credit



(2) (a) Goods, works, non-consulting services, consulting services, Training, and Operating Costs under Part 2.1 of the project for the Tienfala Site	9,225,000		
(2) (b) Goods, works, non-consulting services, consulting services, Training, and Operating Costs under Part 2.1 of the project for the International Airport Site	9,225,000	-	100%
(3) Goods, works, non-consulting services, consulting services, Training, and SOMAPEP Operating Costs for Part 2.4 of the project	12,300,000	21,210,600	37% from Portion A Credit 63% from Portion B Credit
(4) Grants under Part 3.3 (i) of the Project	4,100,000		100%
(5) Refund of Preparation Advance	3,587,500		100%
(6) Emergency Expenditures	0	-	100%
(7) Front-end Fee	-	384,250	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 3.08(b) of the General Conditions
(8) Interest Rate Cap or Interest Rate Collar premium	-	0	Amount due pursuant to Section 4.06(c) of the General Conditions
TOTAL AMOUNT	102,500,000	153,700,000	

25. **Use of UN agencies.** Should the need emerge due to changing implementation environment, the project could make use of UN agencies. When a UN agency is used as the implementing agency or a supplier, upon signing of the Memorandum of Understanding between the Government and UN agency, application for withdrawal of proceeds will be prepared by the PCU and submitted to the World Bank. The special World



Bank disbursement procedures will be used to establish a ‘Blanket Commitment’ to allow the amount to be advanced. Funds withdrawn from the World Bank credit account will be deposited directly into the UN bank account provided by the UN agency for the project activities to be implemented by that UN agency. The amount advanced will be documented through the quarterly utilization report to be provided by the UN agency. To mitigate any risks of inappropriate use of the project funds, some alternative mechanisms should be established, including (a) at least two field-based visits being conducted during the project implementation period; and (b) the Government having the entire responsibility of ensuring that works, goods, and services are delivered effectively to the intended beneficiaries during project implementation.

26. **Implementation Support Plan.** Based on the outcome of the FM risk assessment, the following implementation support plan is proposed. The objective of the implementation support plan is to ensure the project maintains a satisfactory FM system throughout its life.

Table 1.6: FM Implementation Support Plan

FM Activity	Frequency
Desk reviews	
Interim financial reports review	Quarterly
Audit report review of the program	Annually
Review of other relevant information such as interim internal control systems reports	Continuous as they become available
On-site visits	
Review of overall operation of the FM system (Implementation Support Mission)	Twice in the year
Monitoring of actions taken on issues highlighted in audit reports, auditors' management letters, internal audits, and other reports	As needed
Transaction reviews	As needed
Capacity-building support	
FM training sessions	During implementation and as and when needed

27. **Governance.** The risk of irregularities and corruption within the project activities is substantial given the country context and stakeholders involved in this project. In addition, the lack of appropriate or effective oversight mechanisms could jeopardize Project implementation. A strong fiduciary arrangement has been designed and put in place to mitigate these risks; some measures to improve transparency such as providing information on the project status (publication of the project audit reports and project audited financial statements on its website); GRM available and recruitment of a dedicated FM specialist familiar to World Bank FM procedures and internal auditor.

C. Procurement

28. The Borrower will carry out procurement under the proposed project in accordance with the World Bank's "Procurement Regulations for Investment project Financing Borrowers" (Procurement Regulations), dated November 2020 under the "New Procurement Framework, and the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and revised in January 2011 and as of July 1, 2016, and other provisions stipulated in the



Financing Agreements.

29. All procuring entities as well as bidders, and service providers, i.e., suppliers, contractors and consultants shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraph 3.32 and Annex IV of the Procurement Regulations.
30. The Borrower shall prepare and submit to the World Bank a General Procurement Notice and the World Bank will arrange for its publication in the United Nations Development Business online and on the World Bank's external website. The Borrower may also publish it in at least one national newspaper with a large circulation.
31. The Borrower shall publish the Specific Procurement Notices (SPN) for all goods, works, non-consulting services and consulting services, and the Requests for Expressions of Interest on their free-access websites, if available, and in at least one newspaper of national circulation in the Borrower's country. For open international procurement selection of consultants using an international shortlist, the Borrower shall also publish the SPN in the United Nations Development Business online and, if possible, in an international newspaper of wide circulation; and the World Bank arranges for the simultaneous publication of the SPN on its external website.
32. The PCU of the closed PACUM, P116602, shall be maintained and responsible for the coordination and day-to-day management of the proposed project. The PCU will be responsible for the project planning and procurement management. The Coordinator will be responsible for decision making during the procurement process. The PCU will update the PIM (including the section on procurement procedures) that will describe in detail the processes and procedures related to the implementation of the proposed activities.
33. **The key procurement risks are:** (a) most of the dedicated public officials have little or no knowledge of the rules and procedures governing the award and management of public contracts; (b) the low quality of the expression of needs and Technical specifications not precise or not adapted; (c) failure to take into account the requirements of safety, respect for the environment or end-of-life recycling; (d) low quality of services and on execution times; (e) implementation delays due to time taking compensation scheme and expropriation and resettlement of project affected community; (f) the lack of interactivity between the beneficiary and the project management unit in the phases of expression of the need, of the evaluation of the offers and especially during the execution (e.g., the delay in the provision of the sites works and the release of rights-of-way); (g) low implementation capacity; (h) late payment due to the lack of experience of the Project team; and (i) lack of a dedicated archiving room with a trained staff for its management.
34. **The proposed mitigation measures for the identified risks are:** (a) Borrower in coordination with World Bank Procurement Specialist to provide procurement training on the use of World Bank Procurement Regulation and STEP before the project becomes effective; (b) Borrower to establish adequate staffing for the PCU (recruitment or appointment of Procurement Specialist and Procurement Assistant) and MOD Agencies prior to effectiveness; (c) Awareness workshops and conference prior to the preparation of bids / proposals for tenderers will be organized and arrangements will set up for wide publication of calls for tenders. The publication should include guidance on how to submit their bids/proposals; and (d) World Bank to enhance the Borrower procurement capacity possibly through HEIS if requested by the Government (to be considered during implementation; subject to the approval by the World Bank) and



provision of support for ongoing procurement and contract management to all executing agencies. This includes advisory support at the procurement and contract management stage.

Table 1.7: Action plan for strengthening procurement capacity

No.	Key Risks	Mitigation actions	By whom	By when
1	The procurement team and technical staff involved in procurement processes have not mastered the World Bank's new Procurement Framework and its tools	Train the procurement team (the Procurement Specialist and at least one Procurement Assistant), the technical experts, DFM staff, and the tender committee members in the World Bank's new Procurement Framework	PCU /World Bank	No later than six months after Credit & Grant effectiveness
2	Timeouts in the implementation of some activities, mainly evaluation committee management and awarding of contracts	- Closely monitor and exercise quality/control on all aspects of the procurement process, - Establishment of a procedure for appointing members of tender evaluation committees based primarily on qualification;	PCU	Throughout project implementation
3	Low quality of the expression of needs and Technical specifications, Failure to take into account the requirements of safety, respect for the environment or end-of-life recycling	Hold workshops and conference prior to the preparation of bids / proposals and set up for wide publication of calls for tenders	PCU	Throughout project implementation
4	Weak capacity of PCU staff in award and management of public contracts; Low quality of the expression and Technical specifications	Mobilize expertise to provide HEIS if requested by the Government (to be considered during implementation; subject to the approval by the World Bank) for ongoing procurement and contract management to all executing agencies	PCU/World Bank	Relatively early throughout project implementation
5	Lack of a dedicated archiving room with a trained staff for its management	Provide adequate space and equipment for the procurement archive and set up an adequate filing system for project records; Designate or recruit an officer to be responsible for data management	PCU	No later than six months after the beginning of project implementation

35. **A PPSD has been prepared by the Borrower** describing the project implementation context, capacity assessment, market situation and associated potential risks and mitigation measures to achieve value for money in pursuit of the project's development objectives. The PPSD sets out the selection methods to be followed in the procurement of goods, works, and non-consulting and consulting services financed under the project. Following the market analysis, based on information obtained from the industry and the implementing agencies' prior experience, the PPSD will also advise whether there is risk of market supply. The underlying PP will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The activities that will be carried out under this project are not definitively determined. The strategy was drafted based on the needs known at this stage of the preparation of the project. The PP for the first 18-month period will provide a list of procurable items, descriptions, cost estimates, review types, selection methods and market approach as



presented in the PPSD.

36. **Procurement Plan.** The Borrower prepared a detailed 18-month PP which was agreed by the Government and the World Bank. The PP specifies for each contract: (a) a brief description of the activities/contracts; (b) the selection methods to be applied; (c) the estimated costs; (d) time schedules; (e) the World Bank's review requirements; and (f) any other relevant procurement information. Through the course of project implementation, it will be updated annually or as required to reflect implementation needs and improvements in institutional capacity. The Borrower shall submit to the World Bank, for its review and approval, any updates of the PP. The scope of procurement will be described in the PPSD and the PP agreed by the World Bank and summarized below.
37. **STEP.** The use of STEP is mandatory. The Borrower shall use it to prepare, clear, and update its PP and conduct all procurement transactions. It will provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance.
38. **Filing and record keeping.** All records pertaining to award of tenders, including bid notification, register pertaining to sale and receipt of bids, bid opening minutes, bid evaluation reports and all correspondence pertaining to bid evaluation, communication sent to/with the World Bank in the process, bid securities, and approval of invitation/evaluation of bids will be retained by respective agencies and in electronic or hard copy and uploaded in STEP. The Procurement Procedures Manual will set out detailed procedures for maintaining and providing readily available access to project procurement records, in compliance with the Financing Agreement.
39. **Training, Workshops, Study Tours, and Conferences.** These activities would comprise workshops and training, based on individual needs, as well as group requirements, on-the-job training, and hiring consultants for developing training materials and conducting training. Selection of consultants for training services follows the requirements for selection of consultants above. All training and workshop activities (other than consulting services) would be carried out on the basis of approved Annual Work Plans/Training Plans that would identify the general framework of training activities for the year, including: (a) the type of training or workshop; (b) the personnel to be trained; (c) the institutions which would conduct the training and reason for selection of this particular institution; (d) the justification for the training, how it would lead to effective performance and implementation of the project and or sector; (e) the duration of the proposed training; and (f) the cost estimate of the training. Report by the trainee(s), including completion certificate/diploma upon completion of training, shall be provided to the Project Coordinator and will be kept as parts of the records, and will be shared with the World Bank if required.
40. A detailed training and workshops' plan giving nature of training/workshop, number of trainees/participants, duration, staff months, timing and estimated cost will be submitted to the World Bank for review and approval prior to initiating the process. The selection methods will derive from the activity requirement, schedule and circumstance. After the training, the beneficiaries will be requested to submit a brief report indicating what skill have been acquired and how these skills will contribute to enhance their performance and contribute to the attainment of the project objective.
41. **Operational Costs.** Operational costs financed by the project would be incremental expenses incurred by the PCU on account of the project implementation, including in-country travel, office materials and supplies (stationary and other consumables, but not limited to the purchase of equipment), office rentals



and maintenance, utilities (including electricity and water), communication costs (including telephone and internet charges), equipment rental, operation maintenance and repair, transport cost of the staff related to supervision activities in the field (including per diem). Such services' needs will be procured using the procurement procedures specified in the PIM accepted and approved by the World Bank.

42. **Procurement Manual.** Procurement arrangements, roles and responsibilities, methods and requirements for carrying out procurement shall be elaborated in detail in the Procurement Manual which may be a section of the PIM. The manual shall be prepared by the Borrower and agreed with the World Bank by effective date of the financing agreement.
43. **Procurement methods.** The Borrower will use the procurement methods and market approach in accordance with the Procurement Regulations. Procurement will therefore follow (a) Direct Selection; (b) use of framework agreements including existing ones; (c) procurement from UN Agencies; and (d) increased thresholds for Requests for Quotations and national procurement. Open National Market Approach is a competitive bidding procedure normally used for public procurement in the country of the Borrower and may be used to procure goods, works, or non-consultant services provided it meets the requirements of paragraphs 5.3 to 5.6 of the Procurement Regulations.
44. **Requirements for the Use of National Procedures.** The World Bank has assessed the country procurement regulation and found that the principles and most of the procedures are in compliance with World Bank standards for procurement. In general, the country's new procurement procedures do not conflict with the World Bank Guidelines, but in cases of conflict, the provisions of the World Bank prevail. However, for National Competitive Bidding procedures for goods and works to become acceptable to the World Bank, some special provisions will be required regarding advertisement, access for foreign bidders to participate, limitation of domestic preference, deadlines for submission of bids, the evaluation and contract award process, standard bidding documents, fraud and corruption clauses in bidding documents, inspection by the World Bank, and obstructive practices and debarment under the national system.
45. The thresholds for particular market approaches and procurement methods and the World Bank's prior review requirements are indicated in the table below.

Table 1.8: Thresholds for Procurement Methods, and Prior Review

No	Expenditure Category	Contract (C) Value Threshold [US\$ equivalent]	Procurement Method	Contracts Subject to Prior Review / [US\$ equivalent]
1	Works	C ≥ 15,000,000	Open Competition International Market Approach and Direct Contracting	≥ 10,000,000
		200,000 < C < 15,000,000	Open Competition National Market Approach	
		C ≤ 200,000	Request for Quotation	None



No	Expenditure Category	Contract (C) Value Threshold [US\$ equivalent]	Procurement Method	Contracts Subject to Prior Review / [US\$ equivalent]
2	Goods, IT and non-consulting services	C ≥ 3,000,000	Open Competition International Market Approach and Direct Contracting	≥ 2,000,000
		100,000 < C < 3,000,000	Open Competition National Market Approach	
		C ≤ 100,000	Request for Quotation	
3	National shortlist for selection of consultant firms	C < 200,000	For Consulting Services	≥ 1,000,000
		C < 400,000	For Engineering and Construction Supervision	
4	International shortlist for selection of consultant firms	C ≥ 200,000	For Consulting Services	≥ 1,000,000
		C ≥ 400,000	For Engineering and Construction Supervision	
5	Selection of Individual consultants	All Values	All Approaches	≥ 300,000
6	Direct contracting	All Values		As agreed in the PP
7	Training, Workshops, Study Tours	All Values	Based on approved AWPBs	AWPB

46. **Procurement implementation support.** In addition to the prior review and implementation support mission carried out by the World Bank, it is recommended that at least two missions be carried out each year, with one visit to the field to carry out post review of procurement actions.
47. **Oversight and monitoring arrangements for procurement.** Fiduciary oversight by the World Bank. The World Bank shall prior review contracts according to prior review thresholds set in the PPSD and PP. All contracts not covered under prior review by World Bank shall be subject to post review during implementation support missions and/or special post review missions, including missions by consultants hired by World Bank or third-party independent auditor delegated by World Bank. To avoid doubts, the World Bank may conduct, at any time, independent procurement reviews of all the contracts financed under the loan. In addition, the World Bank should ensure that all procurement documents, including those for post and prior review, are reviewed by the E&S specialists of the implementing agencies to ensure the inclusion of relevant E&S clauses as required. A PIM will be prepared and submitted to the World Bank review. It will define the project's internal organization and its implementation procedures. It will include, among other things, all relevant procedures for calling for bids, selecting consultants, and awarding contracts. The project monitoring arrangements for procurement will be specified. The detailed 18-month PP, once agreed with the Borrower, will be uploaded on the World Bank website.
48. **Contract Management and Expenditure Reports.** As part of the Procurement Management Reports, PCU



will submit contract management and expenditure information in quarterly reports to the World Bank for the project. The procurement management report will consist of information on procurement of goods, works and consultants' services and compliance with agreed procurement methods. The report will compare procurement's performance against the plan agreed at negotiations and as appropriately updated at the end of each quarter. The report will also provide any information on complaints by bidders, unsatisfactory performance by contractors and any information on contractual disputes if any. These contract management reports will also provide details on payments under each contract and will use these to ensure no contract over-payments are made or no payments are made to sanctioned entities.

D. Project Implementation Support Plan (ISP)

49. **Implementation support will consist of formal implementation support missions, additional technical missions, regular technical meetings (including remotely), and field visits by the World Bank between missions.** This will be supported with reporting and monitoring of FM, procurement, and environmental and social safeguards. Formal missions will be carried out at least three times a year, with ongoing and continued on-demand implementation support provided as needed. Staff and consultants based in Mali will also provide additional coordination and support to implementing agencies during the first year of implementation. The volume of support is expected to be particularly high in the first three years of implementation. The table below provides an approximate indication of the implementation support required. A mid-term review of the project will be conducted by the 36th months after project effectiveness, to carry out an in-depth review of the project performance, and if necessary, adjust the project to ensure that the PDO is on track.
50. **Specific elements of the ISP will include the following:**
- Provide technical assistance and project management advisory service to the PCU to ensure that the delivery of the consultancies, works, and other project activities will be of good quality and in a timely manner.
 - Facilitate project coordination between different stakeholders, including follow-ups on public participation and citizen engagement.
 - Providing implementation support on fiduciary issues through regular checks on the PCU performance in managing contracts, procurement, and financial matters, as well as on completing the agreed implementation plans.
 - Monitoring adherence of safeguards instruments by including the Safeguards Specialists in semiannual missions. These specialists will also assure knowledge transfer to the project Safeguards Specialists.
 - Development of a comprehensive communications strategy and implementation of responsive feedback mechanisms (spot checks, dedicated safeguards compliance support, and so on) for quality assurance and M&E.
51. Early in the project, dedicated support will be provided to the PCU and all implementing agencies for the technological tools and equipment required to facilitate effective M&E, and coordination from the PCU, and the project stakeholders and to implement effective remote implementation support by the World Bank. Laptops for key project staff in the PCU, data for internet connectivity, tablet or mobile phone for data collectors as well as relevant software, video conferencing and internet connectivity equipment, along with associated trainings may be provided based on a technical capacity needs assessment (which will be conducted during preparation). This will be useful for the PCU to coordinate with the entities involved in the project as implementing agency, MODs and for technical support, as well as the World Bank task team.



This support also aligns with the objectives of the fourth component of the project, to build the capacity of city councils in the area of urban planning and development, which often requires computer literacy and spatial data and geospatial skills.

52. The schedule of the ISP and resource requirements are listed in the two tables below.

Table 1.9: Schedule of Project Implementation Support Plan

Time	Focus	Skills Needed	Resource Estimate (US\$)
Years 1 & 2	<p>Start-up phase:</p> <ul style="list-style-type: none"> - Setting up PSC, Project Monitoring and Technical Committee, staffing of the PCU and technical teams - Developing the PIM, including a communication and citizen engagement strategy - Setting up M&E and grievance mechanisms - Quality assurance of feasibility studies and detailed designs of pre-identified infrastructure investments - Implementation support on the construction of pre-identified infrastructure investments - Guidance on preparing feasibility studies for investments - Guidance on preparing district-wide master plans, mobility plans, and the Local Area Development Plans - Technical, fiduciary and safeguards training, capacity building activities - Project management, supervision, and coordination - Other Implementation support and routine M&E tasks 	Task Team Leader Co-Task Team Leaders Operations Officer Procurement Specialist FM Specialist Environmental and Social Safeguards Specialists Technical specialists Technical consultants Economist Administrative support	250,000/year
Year 3	<p>Mid-term review:</p> <ul style="list-style-type: none"> - Project performance review, compliance to legal agreement and safeguards, audits, and assessments, etc. 	Task Team Leader Co-Task Team Leaders Procurement Specialist FM Specialist Environmental and Social Safeguards Specialists Technical specialists Technical consultants Economist Administrative support	250,000
Years 4-6	<p>Implementation Support</p> <ul style="list-style-type: none"> - Construction of infrastructure works - Completion of technical assistance and capacity building activities - Project management, supervision, and coordination - Implementation support and monitoring 	Task Team Leader Co-Task Team Leaders Procurement Specialist FM Specialist Environmental and Social Safeguards Specialists Technical specialists	200,000/year



		Technical consultants Economist Administrative support	
Closing	Project Evaluation and Implementation Completion report	Task Team Leader Implementation Completion and Results Report author Economist M&E specialist	150,000

Table 1.10: Skills Mix Required

Skills Needed	Number of Staff Weeks/year	Total Number of Trips	Comments
Task Team Leader	12 weeks	12	Based in South Africa
Co-Task Team Leader (Urban)	8 weeks	10	Based in Bamako
Co-Task Team Leader (Water)	8 weeks	10	Based in Bamako
Senior WASH Specialist	6 weeks	6	Based in Bamako
Procurement Specialist	6 weeks	12	Based in Bamako
FM Specialist	4 weeks	12	Based in Bamako
Senior Environmental Safeguards Specialist	8 weeks	12	Based in Bamako
Senior Social Safeguards Specialist	8 Weeks	12	Based in Bamako
Urban Specialist	6 weeks	10	Based in Headquarters
WASH Specialist	6 weeks	6 - 8	Based in Bamako
Transport Specialist	4 weeks	6 - 8	Based in Bamako
SWM Specialist	6 weeks	6 - 8	Based in France
Civil Engineer Consultant	6 weeks	6 - 8	Based in Bamako
Municipal Finance Consultant	4 weeks	4 - 6	Based in Thailand
Private Sector Consultant	6 weeks	10	Based in Headquarters
Administrative assistants (2)	6 weeks	0	Based in Headquarters and Bamako
Legal Counsel	2 weeks	1	Based in Headquarters

**ANNEX 2: Project Description**

COUNTRY: Mali
Bamako Urban Resilience Project

Component 1: Improved Solid Waste Management (US\$60 million equivalent)

1. The component is designed to specifically address the constraints identified in the management of solid waste collection and treatment in the Grand Bamako area, as evidenced by the 2016 Bamako Sanitation Master Plan and confirmed by the 2019 audit of the SWM public service delegation contract. According to these reports, key elements are still missing to achieve environmental and financial sustainability of the waste management operation. The main gaps consist of an effective system for monitoring and enforcing legislation and contracts, as well as sustainable means of funding. At present, only 0.4 percent of operating costs are recovered from users,³⁸ leading to a complete dependency of central transfers.
2. Activities under this component aim to (a) rehabilitate and expand infrastructure needed to restore primary functions i.e., collection, transfer and treatment, and (b) improve the sector's performance by strengthening the institutional and organizational framework as well as sector financing, which is a requirement to further enhance PSP, and support the transition toward more advanced solutions including circular economy. To that end, the following institutions and agencies will be provided with targeted support to strengthen their capacities to fulfilling their respective mandates in a context where the operational activities are mostly undertaken under PPP arrangements. These include the SMI-GB groups across 25 communes, the Division of Urban Services, Roads and Sanitation (*Direction des Services Urbains de Voirie et d'Assainissement*) of the District of Bamako and DNACPN.³⁹
3. Proposed investment will address climate vulnerability by introducing stronger regulations to prevent open burning of waste, which releases significant amounts of GHG into the atmosphere, and which has been identified as the second largest cause of atmospheric contamination in Bamako after vehicular emissions.⁴⁰ The project will also support advanced landfilling technology including methane capture as well as collection route optimization, further reducing GHG emissions. In 2017, a report⁴¹ identified abandoned waste as the second cause of breeding sites in Bamako, and removal of waste as the number-one prevention measure for vector control in urban areas. Activities will improve waste collection thus reducing the prevalence of vector borne diseases. Impacts on cleaner and safer living conditions will be multiplied through the combined and simultaneous interventions under the other components.
4. **Sub-component 1.1: Development of backbone infrastructure for the Solid Waste Sector.** The proposed

³⁸ According to the Audit of the public service delegation, municipal entities were only able to mobilize 0.4 percent of operational expenses between 2015 and 2019.

³⁹ The communes will be associated in the contracting out of GIEs and in charge of monitoring waste collection by them. (ii) The Division of Urban Services, Roads and Sanitation will be the main agency supporting the PCU to monitor street sweeping, stormwater systems cleaning, waste transfer to landfill and landfill management. (iii) DNACPN will be the main agency supporting the PCU for the supervision of landfill management and compliance with the overall solid waste management standards.

⁴⁰ Particulate Matter Air Pollution in Mali – A literature review and basic risk assessment, Taube and Waliej, Göteborg University, 2018; 2019

⁴¹ Regional Project for the Strengthening of Disease Surveillance Systems (REPSDISS III) – World Bank and WHO - 2017



investments would consist of: (a) redeveloping the Noumoubougou landfill to provide the District with 10-year treatment capacity and (b) developing transfer capacity through a network of modern and safe transfer facilities able to accommodate the waste collected in the District of Bamako.

- a. Redevelopment of Noumoubougou landfill. The GoM commissioned and developed a modern landfill in 2011 worth of XOF 7 billion, in Noumoubougou, near Tienfala, 35 km North-East from Bamako's city center. The facility was initially equipped with a large cell of 400,000 cubic meter capacity, a leachate collection system and ancillary facilities, but is currently used at only 1/10th of its capacity and merely 10-20 tons of waste are delivered to the site each day. Three alternate sites were considered in the Solid Waste Management Strategy of Bamako in 2015, for the development of treatment capacity (Mountougoula, Kourale and Mande). None of these facilities has yet materialized. Retrofitting the existing facility would therefore quickly restore sanitary disposal capacity to allow for the implementation of other priority activities, while providing a 10-year visibility in terms of treatment. This disposal capacity would be developed by retrofitting the existing cell which would cover the city's disposal needs for at least 3 years. The remaining 40 hectares will be used to build an additional 2,000,000 cubic meter capacity, as well space for adjacent activities such as sorting and recycling.
- b. Construction of a network of transfer points. At present, transfer points within the District of Bamako are insufficient for effective transfer of waste collected door-to-door by the 200 SMEs. When disposal capacity is restored at Noumoubougou, efficient transfer of waste will become imperative to avoid illegal dumping, accumulation of waste within the city and reduce transportation costs. These points will be optimally distributed to match primary collection routes. Each location will be selected in coordination with the Collectors' association (COGIAM) and relevant stakeholders to prevent conflicts. The project will finance the construction of a network of about 50 transfer points and equipment (bins) to transfer an average of 20 to 30 tons per day at each point. The PCU will be assisted by the Technical Support Unit to Local Governments (*Cellule d'Appui aux Collectivités*, CTAC) in implementing this activity.
- c. Clearing of existing dumps. Once adequate transfer and disposal capacity is in place, illegal dumpsites will be cleaned by removing the waste and contaminated soil, which will be transported to the landfill, prefiguring full reclamation of these areas. Identification of dumps to be cleaned will be informed by a mapping campaign covering the entire territory of Bamako, in cooperation with Humanitarian Open Street Map, employing digital workers from local communities. According to recent visits, the project could lead to the reclamation of up to 250 hectares of land.
- d. Development of a new landfill on the right bank of Niger river. The construction of a new landfill near Mountougoula municipality, will significantly reduce transportation costs and turn-around time for communes III and IV located south of the Niger river. Several locations were proposed as part of the Solid Waste Strategy of Bamako in 2016, including Mountougoula municipality. In compliance with the requirements of the OP7.50 policy on international waters, GoM would have to ensure that the new landfill site construction would only proceed if there is no risk of water pollution to the Niger river system and connected aquifers, which would otherwise require to notify the riparians. When preferred site is selected, prefeasibility will begin, to create a disposal capacity of 10 years, in addition to the capacity already in place at Noumoubougou landfill.

5. **Sub-component 1.2: Performance Improvement of waste management services.** This sub-component seeks to help improve the overall performance of the waste management sector and contribute to the formulation of a comprehensive investment strategy, through activities along four thematic areas:

- Establishing an effective framework for PSP. In the light of the audit conducted by the Ministry of



Finance in 2019, the private contract for SWM services in Bamako is performing poorly, requiring significant adjustments. This activity aims to establish a framework for effective PSP, including the current contract as well as the construction and operation of investments foreseen under sub-component 1.1. It will be informed by a comprehensive audit of the SWM sector focusing of financial sustainability reviewing allocation of central government financing, subsidies, payment mechanisms and tariffs. Training will be provided for institutional strengthening to properly manage complex structures and processes involved in procuring, managing, and auditing PPP contracts.

- Enhancing efficiency and effectiveness of the solid waste sector, including (a) mapping of current collection system, transit point and dumpsites; (b) designing and implementing a performance management system for tracking operational and financial performance including data management and improved M&E for project indicators; and (c) comprehensive training, and acquisition of tools and technology for enhanced management of services.
- Upstream policy development. The Niger river is the 9th worldwide and 2nd African river contributing to worldwide ocean plastic pollution and a population of 92 million directly and indirectly depends on the river for their livelihood. This activity aims to catalyze interventions to eliminate or drastically minimize non-recyclable products and packaging to reduce plastic waste leakage and better manage hazardous waste streams. It would include an overall review of policies and regulations targeting manufacturing and delivery systems, enhanced institutional collaboration, as well as regulatory reform.
- Community level and job creation activities, focusing on community engagement and women's inclusion. Youth from the different communities are already involved in mapping the city's dumpsites, and more than 50 digital workers have already been contracted for this task. Although female participation is spread across the waste value chain, from consumption to recycling and disposal, support will also be specifically tailored to seize gender-specific opportunities throughout the project. Such opportunities will build on the prevalent role of women in household consumption and thus, in behavior change towards safer choices, usage and disposal of plastic products and domestic waste management at large. In this regard, project activities involving community outreach, value recovery, and job creation will include specific calls for female participation.

Table 2.1: Breakdown of costs for Component 1

Activities	Total (US\$ million)
Sub-component 1.1: Development of SWM infrastructure	
Redevelopment of Noumoubougou landfill; Retrofit of existing cell; Construction of new cell; New landfill on right bank of Niger river, near Mountougoula	35.0
Sorting and recycling facilities, landfill gas use in Noumoubougou	5.0
Construction of transfer points	13.0
Cleaning of dumpsites	2.0
Sub-Total	55.0
Sub-component 1.1: Performance Improvement of waste management services	
Framework for effective PSP	0.7



Enhancing efficiency and effectiveness of the solid waste sector	0.5
Upstream policy development	0.3
Community level and job creation activities	3.5
Sub-Total	5.0
Total	60.0

Component 2: Improved Water Supply, Sanitation and Hygiene (US\$70 million equivalent)

6. This component is designed to support both infrastructure and institutional measures to improve access to quality sanitation and hygiene services while access to safe water is increased steadily. The lack of infrastructure and the disorganization of the sector are at the origin of many pollutions and nuisances. In the absence of collective wastewater system, the reliance on onsite sanitation and lack of authorized or controlled discharge and treatment facility for domestic fecal sludge and septage is a huge challenge for the authorities, communities and private providers emptying domestic pits, cesspools or septic tanks. Large quantities of domestic fecal sludge and septage are dumped in the fields, discharged into marigots and uncovered – and often dilapidated stormwater drains, and possibly directly into the river without prior treatment, at the risk of polluting the soil and exposing the population to a major health risk. Industrial and commercial wastewater, including from specific activities such as dyeing, is also poorly managed with only a few, small-scale and inefficient treatment plants. Many schools and health care facilities also lack adequate WASH facilities – water connections, latrines and handwashing posts. In addition, the Kabala program will deliver an additional 288,000 cubic meters per day and 116,000 social household connections to improve the access to quality water services for over one million beneficiaries. Consequently, the discharge of septage and wastewater will increase proportionally.
7. In the early stage of the Kabala program, a priority sanitation program was identified as part of the 2016 SDAB to mitigate the related health, environmental and social risks to ensure that water and sanitation were addressed jointly. However, the expected financing from the AfDB for the sanitation component of the Kabala project did not materialize due to land tenure issues for the proposed septage treatment facilities. Preparatory studies for the construction of two fecal sludge treatment plant under this project provide a solid ground for selection and prioritization of sanitation activities for the present project, with additional focus on improved access to WASH in public establishments and at domestic level. Proposed investments will focus on priority infrastructure, and accompanying measures will help strengthen the sector's institutional, organizational and financial framework and efficient management.
8. This component will address current and future climate vulnerability. Addressing constraints to the supply of clean water is an important aspect of climate change adaptation and resilience to floods and droughts. Reducing water losses and improving sanitation services will also support GHG emission reductions estimated at 595,648 t_{eq}CO₂ (further detail in Annex 4).

Sub-component 2.1: Fecal sludge treatment plants.

9. This sub-component aims at increasing access to improved sanitation through the construction of two fecal sludge treatment plants to address the current absence of any appropriate wastewater system in



Bamako and improve sanitation for an estimated 700,000 inhabitants. Preparatory feasibility studies were conducted during the preparation of the sanitation project, planned as a component of the Kabala water program, under AfDB financing, yet for different sites that are no more available. These studies will be updated and adapted to adjust to the potential technical and environmental constraints of the new locations. The two FSTPs will have a total daily capacity of 600 cubic meters, equivalent to 42 tons of dry matter. The Senou Airport area on the right bank (Commune VI) and in Tienfala on the left bank (commune of Tienfala) have been identified by GoM to host the FSTPs. To mitigate risks, an environmental and social impact pre-assessment of the plants was prepared and disclosed in May 2021, which then informed the selection of the sites. The Senou area already is hosting an informal discharge site where mechanized emptiers have been using in the last decade. These FSTPs will provide an environmentally-sound disposal solution to septic haulers. The proposed treatment process lagoon system, which will help minimize GHG emissions, hence contributing to climate change mitigation, and protect riverine communities from wild dumps of untreated sludge while providing farmers with opportunities for valorization of treated sludges. Residual water will be used for gardening and treated dried sludges will be reused, therefore providing economic opportunities for local farmers, emptiers and neighboring communities. The sub-component will also support the construction of access roads for each FSTP and includes a provision for consultant services for the preparation of bidding documents and supervision of works. The sub-component will be implemented by the PCU, with ANGESEM support.

Sub-component 2.2: WASH in schools and health centers, domestic latrines and behavior change

10. **This sub-component aims at increasing access to improved sanitation and hygiene and promote behavior change toward better sanitary practices protecting both people's health and the environment.** Improving WASH facilities in public establishments (schools, health centers and possibly markets) is at the heart of the priorities of populations and municipalities, especially in the COVID-19 pandemic and path to recovery. Additionally, one of the flagship measures to protect WASH facilities in these establishments is to provide neighboring households with latrines to prevent the overuse, and subsequent early degradation of sanitary blocks in those structures.
11. This sub-component will be implemented by the PCU with DNACPN support, which has coordinated a preliminary inventory of schools and health centers in the District of Bamako alongside existing data on the status of WASH package in these establishments.⁴² It will finance the following sanitation activities:
 - a. **Construction of 800 latrines and handwashing facilities in selected public schools, health centers and markets.** A digital mapping of public schools and health centers in the six communes of the District of Bamako has been initiated during preparation. It will provide a comprehensive picture of the status of WASH facilities in the District (latrines, water points, handwashing posts, financing and management arrangements) and inform the selection of beneficiary schools and health centers, based on needs and, to the extent possible, in synergy with other investments under the project under Components 1 and 3. Such interventions have a strong potential for human capital benefits.
Following national standards, selected schools will be equipped with sanitary blocks with one to

⁴² Data collection has been conducted along with the 'Education Academies' and Community Health Centers of Bamako, in close coordination with the Directorate of Pedagogy, in charge of WASH in school within the Ministry of Education, and Directorate of Public Health and Hygiene, in charge of WASH in health centers within the Ministry of Health.



five cabins, depending on the number of students,⁴³ Ventilated Improved Pit latrines and will be geographically separated for girls and boys. Based on United Nations Children's Fund (UNICEF) ratios applied in Mali, the number of blocks per school will be determined based on 70 students per cabin. Latrines dedicated to girls will be equipped for menstrual hygiene management and handwashing posts will be installed. A mixed cabin will be realized for teachers or health workers, separate from the student blocks. Strengthened arrangements for management and O&M will be mainstreamed with the communes / Grand Bamako as owners of these facilities, in collaboration with UNICEF, which is the lead agency on institutional WASH.

- b. **Rehabilitation and/or construction of 20,000 domestic latrines** along with sumps for grey water, targeted at the poorest households in the vicinity of those establishments. A geographic targeting will be used to select beneficiaries of domestic latrines to prevent the neighboring population, over a radius of 200 meters, from using the schools' or health centers' sanitary blocks as public latrines. Selected households will be limited to those without latrines or with only dilapidated ones, who are typically the very poor and cannot afford to invest in their own latrine. In the absence of a specific policy on financing and subsidy mechanisms for household latrines, and the complexity of micro-financing arrangements that have been tested in other contexts but have not proved successful in Mali, this approach ensures that subsidies will target the poor and very poor households.
- c. **Behavior change and communication and awareness raising campaigns**, particularly focused on students and health workers to promote better hygiene practices, and on adequate management and O&M of the facilities in schools and health centers. In line with the overall project's communication strategy aimed to accompany the development of new infrastructure and promote behavior change toward better sanitary practices, it will also include activities targeted specifically at women and girls in schools and health centers, including providing gender-sensitive facilities, information and trainings for menstrual hygiene management and handwashing.

Sub-component 2.3: Strengthening institutional framework of the sanitation sector and capacity building for DNACPN and ANGESEM

- 12. **The institutional framework of the sanitation sector is fragmented, with overlapping roles and responsibilities, and weak policies and strategies and regulations, preventing the development of an efficient sanitation chain.** First, the 2009 National Sanitation Policy has been updated and is pending endorsement by the national authorities – the National Water Policy was endorsed in 2020. Updates of the related strategies, including one dedicated to wastewater and excreta, are currently being developed. Second, diagnostic studies carried out as part of the Bamako Sanitation Master Plan in 2016 have pointed out the weaknesses in the responsibilities in the sector's responsibilities planning, financing, regulation, management and operations, especially between DNACPN and ANGESEM. DNACPN's primary mandate is regulation, which it lacks capacity to fulfill. DNACPN has also been directly involved in project management in either solid waste or sanitation. ANGESEM, a public agency that was initially created for the management of wastewater treatment plants, de facto manages only a few, small-scape treatment plants (Mopti, Tombouctou) and in Bamako, in hospitals and the industrial area, with poor results both in terms of quality of service and overall management. Third, the distribution of roles has become more complex with the decentralization law of 2014, and in Bamako, the setup of the decentralized, intercommunal body Grand Bamako with local authorities being entrusted, through the Grand Bamako, with the role of *maître*

⁴³ Based on UNICEF design and ratios applied in Mali: the number of blocks per school will be determined based on a 70 students per latrine, latrines dedicated to girls will be equipped for menstrual hygiene management and handwashing posts will be installed.



d'ouvrage. ANGESEM's mission was revised in November 2020 to expand its scope to both collective and onsite sanitation infrastructure, especially through delegated project management (*maîtrise d'ouvrage déléguée*) on behalf of decentralized authorities (communes) and technical assistance to sanitation operators. Overall, there is no sanitation utility and a lack of regulation and financing mechanisms to ensure sustainable fecal sludge management services, from household containment structures and emptying, to transportation of fecal sludge and septage to the treatment facilities and reuse of residual products.

13. The following activities will be financed:

- **Support to sector agencies.** The sub-component will provide support to DNACPN and ANGESEM to help further clarify roles and responsibilities and operationalize the institutional framework of the sanitation sector. Within the framework of decentralization, the communes / SMI-GB have the ultimate responsibility for sanitation services delivery but are deprived of the technical and financial means necessary for their mission. Therefore, technical assistance will support the establishment of financial mechanisms to cover O&M costs of sanitation and ensure the viability of the FSTPs while keeping sanitation services affordable. For that purpose, a study will be carried out to better assess (a) existing tariffs for septage collection; (b) the option of a sanitation fee based on water bills; (c) household capacity and willingness to pay for higher tariffs; and (d) acceptable level of fees charged to mechanized emptiers to discharge at the new FSTPs. To overcome the lack of capacity of existing entities and to minimize public subsidies, this activity will also aim to help establish a framework for effective PSP for the operation of the FSTPs, based on lessons learned from other PSP experiences in the region. Finally, the project will also help develop more resilient design and O&M standards, including contingency planning, to address climate risks and avoid service disruption and contamination in the event of floods.
- **Support to service providers.** Relatedly, to ensure a comprehensive approach of the sanitation chain, the sub-component will support manual and mechanical service providers, currently mostly informal, to enable them to perform more professional and efficient services. The Malian Association of Emptiers (*Association des Vidangeurs du Mali*) has been very active in recent years and is recognized by GoM and already has a large number of members among both manual and mechanical emptiers. The association has been vocal in recent years to promote a better organization of the sanitation chain benefiting both the emptying business and the populations of Bamako and elsewhere in Mali, through partnerships with NGOs and initiatives to upgrade the informal dumping site used for years by emptiers in the Senou Airport area.
The sub-component will support the association through the following activities: (a) an accreditation program of qualified emptiers incentivizing proper discharge at official sites, sound business development plans, improved working conditions for sanitation workers and the development of a less-polluting fleet of trucks; and (b) the scaling up of the existing 'Uber-type' app ("Allo Vidange") piloted by NGOs to connect households with emptiers, which has proved a performant tool to increase competition and improve services in other cities in the region where such system is operational. In synergy with the setup of the digital platform developed under sub-component 4.2, this app will also inform the development of a digital monitoring system of sanitation services to help Grand Bamako and ANGESEM control and plan sanitation service delivery. Technical assistance and twinning with a sanitation utility with proven track records in the subregion will support capacity development for both ANGESEM and private operators.
- **Support to longer term upgrading of sanitation and wastewater.** While improving onsite sanitation with the construction of two FSTPs is a priority, preparing for the future is critical given the strong population growth in Bamako and the development of the Kabala program and



increased access to piped water at the horizon 2032. The Bamako Sanitation Master Plan has proposed a second phase after the priority sanitation program, including the potential development of sewers and wastewater treatment plants, based on the Kabala program unfolding and related increase in volumes of wastewater. The sub-component will therefore finance feasibility studies for the development of sewers and wastewater treatment plants, as envisioned in the Sanitation Master Plan to be progressively implemented after the priority phase. In compliance with OP7.50 requirements, ToRs for these feasibility studies will assess any potential riparian issues and transboundary impacts before any decision to go forward with the wastewater treatment plants. Such studies will help mobilize financing to upgrade the urban sanitation systems and quality standards in the capital city. The elaboration of needed safeguards instruments for the various investments related to WASH activities has been planned for.

Sub-component 2.4: Urban water supply

14. This sub-component will help increase access to safe water and improve the quality of service delivery through the densification of distribution networks and household connections in underserved, peri-urban areas that would not yet be covered by the Kabala program, as well as new storage infrastructure in communes in the periphery of the District where settlements and water demand are growing. In the cross-sector and 'hot spot' approach proposed by the project, the provision of solid waste and sanitation services along with water supply would dramatically improve living conditions of the beneficiaries, especially in the poorest and flood-prone areas most at risk. Given its proven experience and performance in managing the existing Kabala program (11 financing agreements with seven donors, commitments of US\$550 million), the sub-component will be implemented by the national asset-holding company SOMAPEP on behalf of the PCU.
15. Phase 1 of the Kabala program has been implemented since 2014, with impressive results already achieved, yet challenges remain to fully implement Phase 2 of the program. The new Kabala water treatment plant (financed by AFD, EU EIB) became operational by 2019, providing an additional capacity of 280,000 m³/day, along with (WB financing) 20,000 m³ of additional storage capacity, leading to boost water pressure and ensure continuous supply to over 660,000 customers on the right bank. Additionally, over 1,600 km of new distribution networks, 1,100 standpipes and 59,000 new social household connections, out of the 105,144 that are planned to be provided by 2022 (40,000 of which under the World Bank financing), providing access to safe water at home to 600,000 people. Yet, the current capacity cannot be absorbed, despite strong demand. Critical parts of the water system are needed to supply the left bank and outskirts of the District on the right bank, further densify the distribution network and provide additional connections to achieve the objective of serving 90 percent of the population with piped water at home by 2032 (Bamako Water Supply Master Plan) but remain unfunded. Additionally, the two public water utilities (the asset holding company SOMAPEP and the operator SOMAGEP) work hand in hand in line with provisions of the lease contract that clearly defines the roles and responsibilities of sector stakeholders, including the regulator. A recent evaluation has underlined their good performance since the reform, and non-revenue-water reduction efforts supported by the current and proposed projects are key factors supporting the sustainability of water services in Bamako.
16. This sub-component will therefore finance investments planned in the second phase of the Kabala program, including: (a) additional water storage capacity (watertight concrete towers and tanks) to further improve and regulate the distribution of the current and proposed water system and



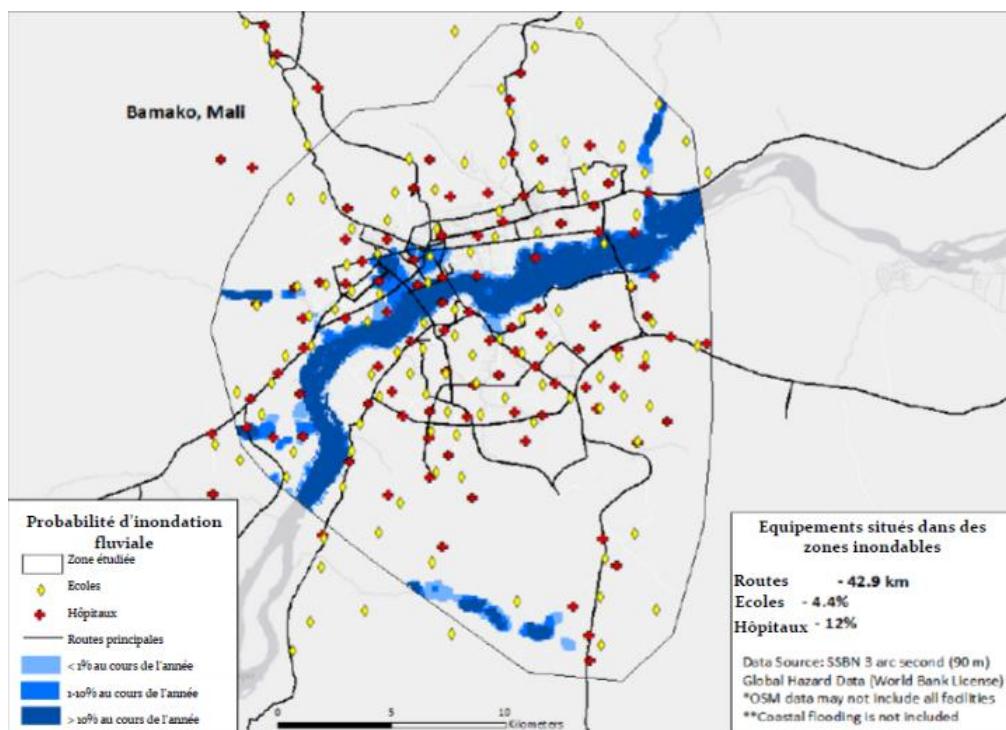
service delivery in Bamako and neighboring communes (such as Lassa and Doumanzana on the left bank and Dialakorobougou on the right bank); (b) the extension of water distribution networks in unserved areas by about 300 km and the rehabilitation of some sections of the existing networks to help reduce water losses; and (c) increased access to piped water through the provision of 17,500 social household connections. (d) It will also finance consulting services (including safeguards studies) and supervision service, monitoring, evaluation, and audits as well as technical assistance to strengthen SOMAEP's management capacity. This will help SOMAEP and the public water operator SOMAGEP to develop more climate resilient, less-carbonized solutions, including reducing water losses, hence reducing operational costs, and building resilience of the sector. The two public water utilities work hand in hand in line with provisions of the lease contract that clearly defines the roles and responsibilities of sector stakeholders, including the regulator. The proposed project will support activities to reduce the non-revenue-water that is key factor supporting the sustainability of water services in Bamako.

Table 2.2: Breakdown of costs for Component 2

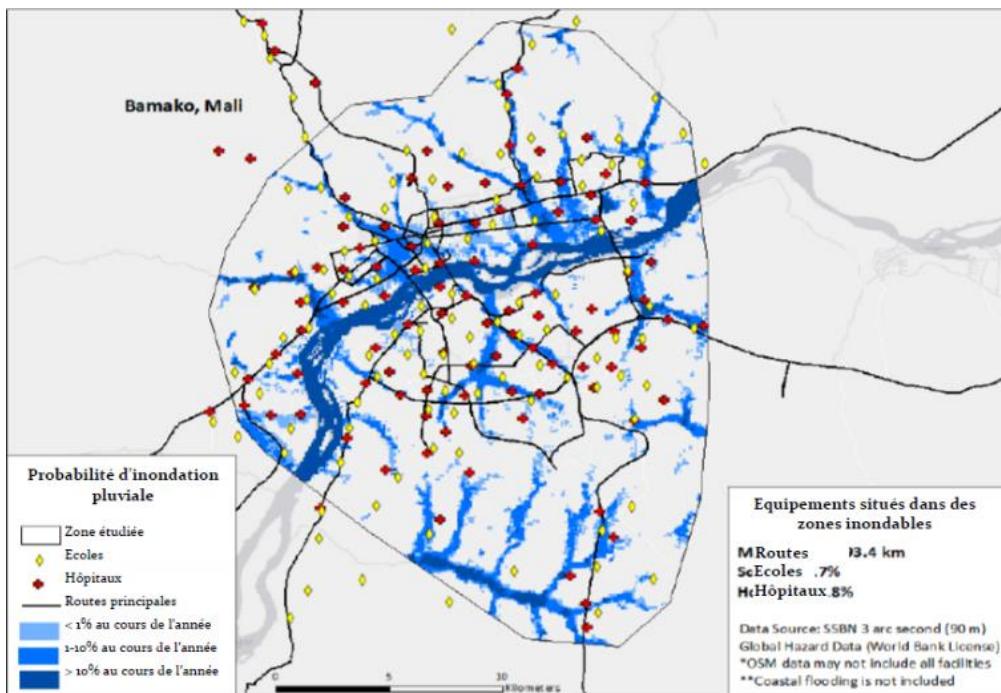
Activities	Total (US\$ million)
Sub-component 2.1: Fecal sludge treatment plants	
Construction and supervision of two Fecal sludge treatment plants	18.0
Sub-Total	18.0
Sub-component 2.2: WASH in schools and health centers, domestic latrines and behavior change	
Construction of WASH facilities in school	1.7
Construction of WASH facilities in health centers	0.8
Provision of domestic latrines	12.0
Behavior change communication campaigns	0.5
Sub-Total	15.0
Sub-component 2.3: Strengthening institutional framework of the sanitation sector and capacity building for DNACPN and ANGESEM	
Support to sector agencies	1.8
Support to service providers	1.3
Studies for the development of Bamako sanitation systems	1.2
Sub-Total	4.3
Sub-component 2.4: Urban water supply	
Construction of water storage infrastructure	11.0
Construction of water distribution networks	15.7
Provision of social household connections	4.0
Consultant services and support to SOMAEP	2.0
Sub-Total	32.7

**Component 3: Investments in Resilient Infrastructure (US\$90 million equivalent)****Background and current knowledge through Post-Disaster Needs Assessment and Drainage Masterplan**

17. Bamako is surrounded by hills that creates several river basins with multiple riverbeds (marigots), some developed and secured and some still in their natural state. Dry most of the year, they can see encroachment but can suddenly flood during the rainy season. The city is also cut in two by the Niger River from west to east, and the capacity for the rivers to discharge during a rain event is impacted by the level of the Niger river at the time. This geomorphological and hydrodynamic situation creates a complex system prone to pluvial and fluvial flood which is worsened by the increasing climate variability and increasing occurrence of extreme events⁴⁴, as well as uncontrolled rapid urbanization, demographic pressure du internal and external migration, lack of enforcement of planning tools, drainage system failures, and clogging cause by mismanaged solid waste.

Figure 2.1: Fluvial and Pluvial Flooding Probabilities

⁴⁴ Based on the WBG Climate Change Knowledge Portal: <https://climateknowledgeportal.worldbank.org/country/mali/impacts-water>



Source: City Scan with flood data from SSBN global model (Note: given the scale of the model, the data should be interpreted cautiously at the city level.)

18. From 2007 to 2020 Mali was impacted by six large flooding events (two in 2007, 2013, 2016, 2017, and 2019) impacting more than 4.2 million people. On May 16, 2019, flooding in Bamako killed 16 people and 2,576 people were affected in one night. The PDNA for May 2019 floods conducted by GoM with support from the development partners found a total damage and loss of US\$9 million and needs for recovery and flood risk reduction were estimated at US\$33.5 million.

Table 2.3: Summary of damages and losses, and recovery needs

Sector	Sub-sector	Total Impact (damages and losses) US\$	Recovery Needs US\$
SOCIAL	Housing	1,972,670	2,830,000
	Health	7,580	1,700,000
	Education	145,500	985,000
INFRASTRUCTURE	Water and Sanitation	3,677,195	15,044,180
	Transport	1,867,350	10,513,509
	Environnement and Disaster Risk Management	---	2,427,000
TOTAL		8,979,795	33,499,689

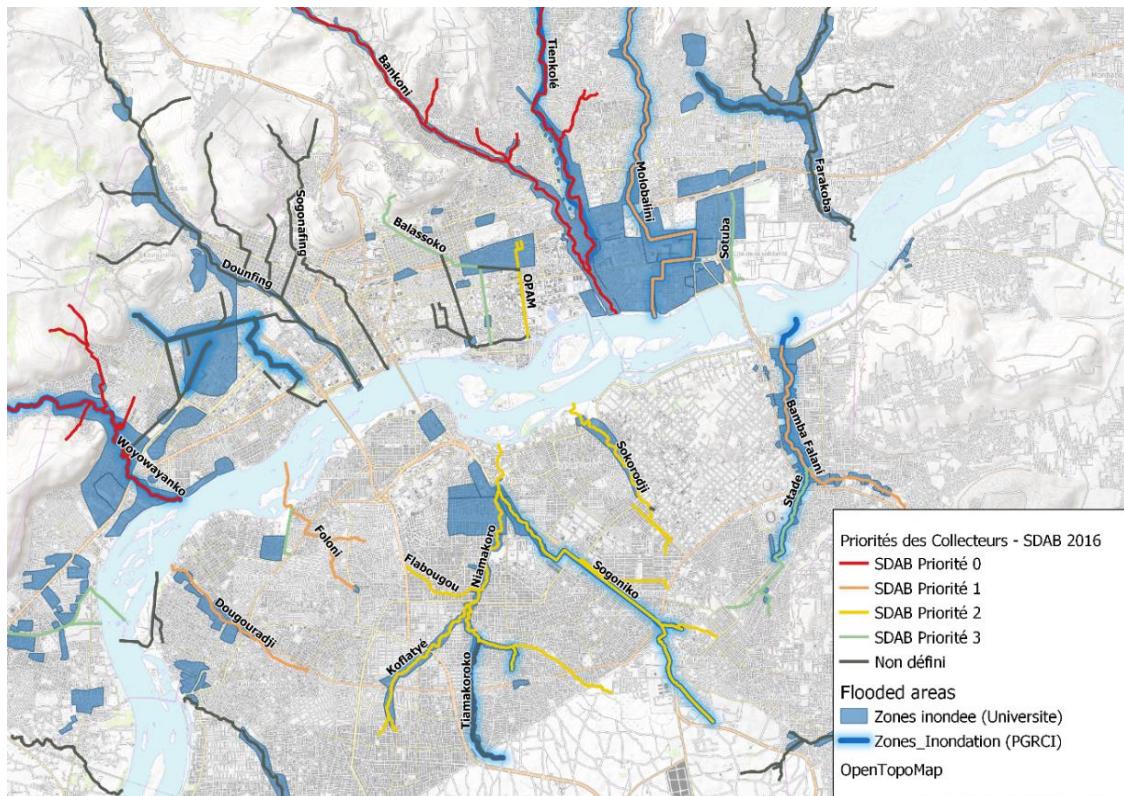


19. Following the 2013 floods, and before the last floods, the 2016 pluvial drainage masterplan identified an investment program of US\$60 million of works on primary drainage across the city and provides preliminary design for recalibration and rehabilitation of hydraulic structure. Three initial phases for US\$44 million are suggested for a 2025 objective:

The identified investments were broken in three phases

- US\$17.5 million equivalent for the phase of priority 1;
- US\$19 million equivalent for the phase of priority 2; and
- US\$7.2 million equivalent for the phase of priority 3.

Figure 2.2: Map of the main rivers with their priority in masterplan and flooded areas



Source: Participatory survey from University, and PGRCI survey in three communes.

20. Flood risk management including sites and investments for urban upgrading are not guided by a comprehensive understanding of disaster risks despite high-profile events in the past. Efforts have been mainly focused on emergency management, lacking integrated risk management. Therefore, as outlined in the PDNA recommendations, effective flood risk management in Bamako will require:

- Improving knowledge and governance of flood risks throughout the district of Bamako as institutional fragmentation has hampered data coordination and efforts to properly map existing infrastructure and planned investments
- The fight against the root causes of floods, including the occupation of rights-of-way or easements of watercourses, natural collectors and gutters through planning and enforcement; and
- Promoting the participation and inclusion of all relevant actors in flood risk management (central and local governments, civil society, private sector, grassroots community-based



organizations) as the situation is worsened by the lack of consultation of the neighborhood leaders and local mayors.

- The mobilization of the financing necessary for the implementation of recovery, through national and local budgets. Informal settlements are also in areas prone to environmental risks and have been unable to capture the returns due to land improvements, such as infrastructure investments and regularized lay-outs, and low investments have been associated with very low land prices.⁴⁵
21. At the institutional level, Mali has set up a disaster management system monitored by the Directorate General of Civil Protection (*Direction Générale de la Protection Civile*), a national platform for disaster risk reduction (in 2005), a national multi-risk plan for disaster preparedness and response (in 2012), a National Strategy for Disaster Risk Reduction or SNRRC (in 2013) and an action plan (in 2015) implementing at regional and local scales, there are monitoring or crisis committees. The investments in this project are complementary to the soft measures such as early warning systems and outreach campaign being implemented by the Strengthening Climate Resilience in Mali project (P161406).
22. The objective of this component is to enhance flood resilience and urban living conditions in selected vulnerable neighborhoods, in turn increasing resilience to COVID19 compound risks. This component will finance a range of complementary and integrated investments in drainage infrastructure, nature-based solutions, neighborhood upgrading, driven by a participatory approach for the selection, design, and realization of the infrastructures. This participatory approach will maximize local livelihood opportunities through grants for micro-projects led by local organizations as well as labor-intensive works for larger infrastructure fostering job creation and economic recovery in the wake of COVID19.
- Site Selection**
23. The investments will target flood vulnerable hotspots and associated catchment areas that have been identified throughout the District of Bamako using the drainage masterplan, participatory flood mapping, and socio-economic indicators. The hotspots to be addressed will be selected according to the following criteria: (a) level of exposure to flood risk hazard; (b) priority in the drainage masterplan; (c) vulnerability and poverty of the affected population; (d) opportunities to secure and enhance public spaces, and complementary neighborhood upgrade; (e) number of beneficiaries from upgraded neighborhood; (f) complementarity with ongoing or future interventions from development partners; and (g) limit demolition and resettlement. The intervention will be combined with investments from Components 1 and 2 on solid waste and sanitation management in the same geographic areas targeted for a larger integrated impact.
24. To complement the information from the PDNA and Bamako Sanitation Master Plan, a detailed flood risk assessment including pre-feasibility for flood protection and nature base solution will be conducted for the river basins of the Bamako District, mobilizing trust fund resources in collaboration and coordination the Strengthening Climate Resilience in Mali project (P161406). For the selected, catchment areas, and vulnerable neighborhood within those catchment areas, a participatory urban audit will be conducted, financed by the PPA, to be completed within 18 months of implementation to further define the needs and the investment programs.

45 Lall, S. V., Henderson, J. V., and Venables, A. J. (2017). *Africa's Cities: Opening Doors to the World*. World Bank.



25. Works in the critical sections of the Tienkole, Banconi and Woyowanko canals, high priority areas that were severely impacted during 2013 floods are about to start work financed by the KfW. To complement those existing planned investments, a multi-criteria analysis using the considerations outlined above and the District of Bamako development priorities was used to select priority catchment areas and vulnerable neighborhoods. The Niamakoro catchment area and the Daoudabougou and Niamakoro neighborhood that were hit during the 2019 flood are to be confirmed as the first area of intervention. Three to four areas of intervention are being confirmed through a study and consultations to be concluded within the first six months of project implementation.

Table 2.4: Excerpt from the multi-criteria analysis

Storm Drains	Neighbourhoods	Surface[k m ²]	Population	Access to Water	Access to Solid Waste Services	Informal Housing	Population Density	% Housing 'clay floor'	% Housing 'banco wall'
Niamakoro Storm Drain	Niamakoro	6.55	118,968	0.59	0.81	0.03	18,157	8%	56%
	Kalaban-Coura	11.06	129,244	0.52	0.82	0.08	11,684	16%	15%
	Daoudabougou	5.21	78,728	0.52	0.72	0.15	15,097	9%	16%
	Sogoniko	4.95	16,796	0.53	0.81	0.04	3,390	12%	10%

Source: Information from census and remote sensing highlight the high population density population and vulnerable construction in banco in Niamakoro (95 percent of destroyed houses were in Banco) and high density and unstructured nature of Daoudabougou.

Sub-Component 3.1: Investments in Primary Drainage Infrastructure (US\$56 million equivalent)

26. This component will finance urban drainage, and nature-based solution infrastructures to restore, increase and protect the capacity of the primary drainage network and reduce the negative impacts of recurrent flooding. With the primary drainage network, integrated storm water management will be adopted where possible, developing public and green spaces along canals and securing and enhancing the public spaces that are in poor condition and being threatened by encroachment to retain water during storm events. The technical solutions described in detail in the SDAB included the widening of existing or creation of new drainage channels, evaluation and rehabilitation of existing bridges, culverts, and other crossing structures, improvements to flood-prone areas to minimize flood risk from under-performing downstream structures and reduce flooding upstream due to improper maintenance but did not consider basin wide measurement and nature base solution options. This will be complemented by a flood risk assessment and urban audit that will also consider green solutions and the development of public spaces in the flood management strategy. The final details of such infrastructure will be available during the first 18 months of project implementation. In the first area considered, the Niamakoro river basins, recalibration and rehabilitation works on hydraulic structure (without considering public and green spaces) amounts to US\$14 million. Studies on occupation of natural canals elaborated by the National Directorate of Urbanism and Housing inventoried around 1,000 buildings encroaching drainage easements over the six communes of the District of Bamako.
27. There are multiple institutional players involved in stormwater management with lack of clear organizational and sustainable mechanisms for construction and O&M. Tackling sub-optimal drainage system O&M such as sporadic maintenance with inadequate or obsolete equipment has proven to be one of the main drivers for drainage infrastructures sustainability. Institutional mapping and the development



of recommended O&M arrangements will be developed to be adopted as soon as drainage infrastructures are in place.

Sub-component 3.2: Investments in Neighborhood Upgrading (US\$30 million equivalent)

28. In selected neighborhood within those catchment areas, this sub-component will finance construction and rehabilitation of demand-driven neighborhood improvement infrastructure, including inter alia, local roads, pedestrian paths, small bridges, street lighting, secondary storm water drainage systems, community facilities (notably small health centers, schools, youth or community centers) and other public spaces (including public squares, leisure/social sports spaces, parks and green areas, streetscapes). Specific investments are driven by the needs of each beneficiary community.
29. The detailed investment program will be determined within the first 18 months of project implementation using participatory urban audits resulting in neighborhood improvement plans and considering the study on public spaces and public space management experiences developed under PACUM. Daoudabougou and Niamakoro neighborhoods are being the first neighborhood where citizen driven urban audit would start to define and prioritize detailed neighborhood improvement plan within the first 18 months of project implementation. These interventions will include gender-informed design by engaging women in the planning and design process, through participatory planning workshops and consultations conducted by the firms in charge of the urban audit and pre-feasibility studies. During implementation, the public works firms will be required to suggest approaches to foster hiring of local workforce where possible in rehabilitation and maintenance works, including specific strategies to recruit women. It will also be informed by the activities developed under sub-component 3.3.

Sub-component 3.3: Support to local initiatives focusing on urban services and economic inclusion (US\$4 Million equivalent)

30. Building on the successful pilots from AFD in Burkina Faso and Tunisia on Pépinière Urbaine – citizen driven urban innovation initiative – this sub-component is aimed at obtained early results while studies for larger works are being carried out. The micro-project supported through this sub-component will also facilitate the emergence of new ideas, new space uses, local initiatives and actors that can be considered in the investment program and support the preparation, ownership, use and sustainability of the infrastructure to be financed under components 3.1 and 3.2.
31. This sub-component will finance (a) fast-disbursing grants to local associations to develop temporary micro-projects to support economically inclusive neighborhood improvement initiatives with a priority on the inclusion of young people, particularly young women; and (b) the provision of technical assistance and training to beneficiary communities. Eligible local initiatives could include: improvement of facades, public spaces and green spaces, sport and cultural equipment and events, labor-intensive work approaches to enhance the urban image of the neighborhood and maintain local infrastructure and services, improvement of local services, environmental care, maintenance of local infrastructure, as well as skills development, ICT activities and other income generating activities.
32. A review of the social fabric and non-profit sector of the selected neighborhoods will identify key issues and opportunities particularly for youth employment as well as key local actors and capacity. Those social findings will be combined with the urban development needs from the studies on public spaces financed



by PACUM and the urban audit to define priorities and orientations to issue call for proposals to support micro-projects. The type of microproject that could be supported include:

- Light sport equipment using spaces dedicated to future sports facilities and organization of sporting events;
- Organization of cultural and artistic events in public spaces and on dedicated areas to future cultural facilities;
- Transitional arrangements of a public space or green space (prefiguration of a fitness trail, etc.) with the local residents, temporary arrangement of the recreational garden with materials recycled for example);
- Development of ephemeral or mobile citizen facilities (in the form of a kiosk by example); and
- Citizen digital communication tools for neighborhood management.

33. The grant management and capacity building will be managed by an NGO or consortium of NGOs recruited through a selection procedure. A grant management operational manual will outline the implementation arrangements of this subcomponent including the details of the selection criteria and process, fiduciary, procurement, and M&E processes and responsibilities. It is estimated that the grants would finance at least 80 activities over the course of its implementation.

Table 2.5: Breakdown of costs for Component 3

Activities	Total (US\$ million)
Component 3.1: Investments in Resilient Infrastructure	
Investments in Niamakoro catchment area	18.0
Investments in catchment areas to be determined	37.0
Institutional Mapping and strengthening of O&M	1.0
Component 3.2: Neighborhood Upgrading	
Neighborhood Upgrading	30.0
Component 3.3: Support to local initiatives focusing on urban services	
Grants to be awarded to local initiative in Four neighborhoods	4.0
Total	90.0

Component 4: Strengthening Institutional Capacity (US\$17 million equivalent)

34. **Sub-component 4.4: Municipal finance and asset management for service delivery (US\$5 million equivalent).** Sound financial and asset management are essential underpinnings to effective and efficient municipal governance. For the District of Bamako and the six urban communes making up the city, the capacity to manage the urban agglomeration properly and to deliver infrastructure and services depends on how effectively they can raise revenues, spend resources, and manage public assets. This project sub-component is intended to strengthen the financial and asset management capabilities of Bamako's urban



local governments (ULGs)⁴⁶, improve the use of financial resources and assets to enhance service delivery and thus contribute towards achieving the wider project development objective. The sub-component will include three activity areas: expenditures, revenues, and assets.

35. **Expenditure Management.** Bamako's ULGs deliver very little in the way of infrastructure services to urban residents. Over the four-year period FY 2016 to FY 2019, Bamako's six communes and District (together) have never spent more than 5.5 percent of their total annual budget on capital expenditure items; for the same period, ULG annual capital expenditure per capita has never exceeded XOF 1,400. Increasing the level of capital spending will be important in the medium/long term to meet the rapidly growing needs of Bamako. In the absence of borrowing or alternative financing sources, this can only be achieved by either increasing revenues (see below) or reducing (and then re-allocating) the budgets allocated for recurrent expenditures.
36. Payroll and related expenditures account for most recurrent spending among Bamako's local governments. The six communes typically spend 80 percent or more of their annual budgets on personnel related costs, while the District spends between 50-60 percent of its budget on personnel related items). Other types (administrative, operations) of spending account for only a small proportion of expenditure. As far as can be understood, Bamako's ULGs spend only a very small proportion of their total budgets on maintenance of existing assets; this implies that infrastructure assets are not being maintained and are thus of limited use to citizens.
37. Increasing allocations for capital expenditure and for maintenance of existing assets will require that other spending is rationalized and made more efficient. Through sub-component 4.4, the project will assist each ULG to assess/review/analyse its expenditure, undertake a diagnostic, and identify ways of rationalizing or reducing spending items. In the case of salary/emoluments spending this will require a thorough assessment of human resource management and payroll systems. Other areas will also require analysis and assessment. The aim here would be to identify opportunities for reducing waste, duplication or unnecessary spending, establishing a regular expenditure review process, introducing procedures for controlling expenditure, and then ensuring that budget resources are freed up for increased spending on either maintenance or on capital. All of this will be facilitated by building upon the program- or results-based budget management reforms that are currently being rolled out to sub-national governments. Activities for this process will be sequenced as shown in the table example below.

Table 2.6: Showing the sequencing of activities aimed at improved expenditure management

Activity	Year				
	1	2	3	4	5
Assessment, review, analysis, and diagnostic of ULG expenditure	X	X			
Establishing improved processes and systems (e.g., human resource management, payroll management, expenditure controls, budgeting methods)		X	X		
Application of improved processes and systems (to include training, on-the-job mentoring, peer learning)			X	X	X

⁴⁶ While this sub-component will primarily focus on the District and its six Urban Communes, some activities may eventually include the 18 rural communes which are also part of "Grand Bamako".



38. **Revenue Management.** For the period 2016-2019, own-source revenues (OSRs) accounted for less than 25 percent of total annual ULG revenues in Bamako, indicating the high degree to which ULGs are dependent on fiscal transfers from the central government. Under this sub-component, the project will assist Bamako's ULGs to: (a) review their revenue performance with respect to their most important own source revenues; (b) identify ways of increasing these revenues (through improvements in revenue administration/collection, higher rates, greater transparency and communication, etc.); and (c) draw up and implement revenue improvement action plans (RIAPs).
39. The various fiscal pressures on the Government have added impetus to the need for strengthening ULG revenue management. As in most countries, local governments in Bamako currently face significant challenges in collecting revenues due to partial lockdowns, and because local businesses and livelihoods have been squeezed by the economic downturn, reducing their ability to pay taxes. Consequently, own-source revenue collection has declined dramatically.
40. Given the nature of local government revenue administration in Mali, these activities will be undertaken in conjunction with ULG revenue authorities (at the local level) and national tax/revenue authorities. Where needed, other national institutions will also be included (e.g., land tenure authorities for property taxation purposes). Wherever appropriate, OSR assessments/reviews and RIAPs will draw on digital information management systems to strengthen revenue administration. Property tax collection, for example, will be strengthened using GIS-based data, computer-assisted mass assessments, and other digital tools. Revenue improvements will also include the need to enter transparent and open dialogue with local citizens and taxpayers. Dialogue will ensure that citizens and taxpayers are fully aware of new procedures and methods, as well as providing an opportunity for ULGs to underline the linkages between revenue collection and service delivery. RIAPs will also identify appropriate capacity-strengthening activities (such as training, peer learning, etc). Activities under revenue management will be sequenced as shown in the table example below.

Table 2.7: Showing the sequencing of activities aimed at improved revenue management

Activity	Year				
	1	2	3	4	5
Assessment, review, analysis, and diagnostic of ULG OSRs and revenue administration	X	X			
Establishment of RIAPs		X	X		
Implementation of RIAPs			X	X	X

41. **Asset Management.** Although Bamako's ULGs are the owners of a wide range of fixed assets (buildings, public spaces, infrastructure), they do not appear to be actively managing these assets. Asset inventories – to the extent that they exist – are incomplete, out-of-date, and not used as the basis for active management. No ULG develops and uses asset management plans to schedule maintenance activities or provide estimates of maintenance budgets. Finally, assets are not used as leverage for mobilizing private sector investments. In short, there is much that can be done to improve ULG asset management.
42. Through this sub-component, the project will work with all ULGs to: (a) establish GIS-based asset inventories, which will be regularly updated and provide information on asset condition; (b) develop asset management plans, largely focused on identifying maintenance needs and establishing maintenance



schedules for assets; and (c) identify public assets that can potentially provide leverage for the mobilization of private sector investments. This sub-component will also finance preparatory studies (e.g., feasibility and traffic studies) for a limited number (one or two at maximum) of these high potential public assets. Improving ULG asset management systems will require working in close collaboration with national level authorities (such as the General Directorate for State Asset Management) and with the project's GIS sub-component. This activity will be able to draw on international experience in sub-national or municipal asset management (Ethiopia, Egypt, and Kenya), as well as building on the support provided for asset management and maintenance by PACUM. Activities for asset management will be sequenced as shown in the table example below.

Table 2.8: Showing the sequencing of activities aimed at improved asset management

Activity	Year				
	1	2	3	4	5
Assessment, review, analysis and diagnostic of ULG asset management	X	X			
Establishment of GIS-based asset inventories and asset management plans		X	X		
Implementation of asset management systems			X	X	X

43. **Sub-component implementation arrangements and inputs.** Sub-component 4.4 activities will be coordinated by a sub-team in the PCU. The sub-team will include full-time national technical assistance, with experience in municipal finance and asset management. For each activity area (expenditure, revenues, and assets), the project will mobilize specialist technical assistance to provide technical inputs. The implementation of this sub-component will require close coordination and regular engagement with a set of national stakeholders (including the Ministry of Finance, Treasury, the National Tax Directorate, and the Ministry of Local Government), as well as with all sub-national stakeholders (Grand Bamako, District, and Communes). This Sub-component will finance a range of inputs: technical assistance, capacity development (training and systems development), and limited upgrading of ULG offices and ICT equipment.

Table 2.9: Breakdown of costs for Component 4

Activities	Total (US\$ million)
Sub-component 4.1: Support for Operationalization of Grand Bamako	3.0
Sub-component 4.2: Digital Platform for Resilience <i>Resilience Academy</i>	4.5
Sub-component 4.3: Support the Urban Master Plan <i>Support for Local Plans in targeted communes</i>	5.5
Sub-component 4.4: Municipal finance and asset management for service	5.0
Total	18.0

**ANNEX 3: Economic and Financial Analysis**

COUNTRY: Mali
Bamako Urban Resilience Project

1. As part of preparation, the NPV and ERR for the activities and investments financed under this project has been estimated. Based on this analysis, the NPV is estimated at US\$36.6 million at a 15 percent discount rate⁴⁷ with an ERR of 20 percent. As noted in our discussion on climate co-benefits, the project is expected to result in a net reduction in GHG emissions. Using shadow price of Carbon analysis, the ERR incorporating this reduction ranges from 25 percent at the low end of price estimates to 30 percent at the high end.
2. **Impact of COVID-19:** To account for the impact of COVID-19, we have adjusted baseline estimates of beneficiary income downward by approximately 20 percent. These assumptions (detailed below) have been applied to estimates both including and excluding the project activities and investments.
3. This section details valuation estimates for the different components of the project on their own, along with the underlying assumptions. The valuation estimates are based on estimated benefits for project beneficiaries. This includes increases in the income of household beneficiaries of the SWM, water, and drainage infrastructure investments supported by the project, along with estimates of the increased number of entrepreneurs and employment and estimates of cost savings associated with the infrastructure investments.
4. To calculate this rate of return, the monetary benefits of increased incomes to beneficiaries and the monetary value of jobs (aggregate salaries) that are created as a result of the project investments have been estimated. For the purpose of this analysis, these increases in income and the monetary value of the jobs that are created are considered as the income of the project investments—therein applying the discounted cash flow model for financial analysis of private investments within the context of the World Bank- financed project.
5. **Shadow price of carbon:** As noted in the discussion on climate co-benefits (Annex 4), the project is expected to result in a net reduction in GHG emissions. Using shadow price of Carbon analysis, the ERR incorporating this reduction ranges from 25 percent at the low end of price estimates to 30 percent at the high end. Carbon prices are estimated at US\$40-80 per ton starting in 2020, and increasing to US\$50-100 per ton in 2030, with an annual increase of 2.25 percent.

Component 1: Improved Solid Waste Management

6. For the SWM investments under Component 1 of the project, the NPV is estimated at US\$9.8 million with an ERR of 19 percent.
7. **Key assumptions:**
 - a. **Baseline income:** GDP per capita income in Mali was US\$879 in 2019⁴⁸. However, to account for

⁴⁷ Discount rate: This is based on the risk-adjusted opportunity cost of capital for donor financing in Madagascar.

⁴⁸ Calculated based on World Bank data.



the impact of COVID-19, the baseline annual income assumptions have been adjusted downward to US\$720.

- b. **Income growth:** The analysis is based on incremental income growth for households benefiting from these SWM investments. This income growth can occur through several different avenues as public investments can have wide spillover effects in terms of beneficiary impact. These SWM investments will increase local land values and result in social benefits due to improved health outcomes with the reduction in water and waste-borne diseases. Income growth of 0.3 percent per annum is estimated for these beneficiaries, with an additional 1.5 percent growth resulting from the new SWM investments. Based on an average baseline annual income of US\$720 per beneficiary, this 1.5 percent additionality amounts to a total increase in annual income of only US\$11 per beneficiary distributed over a period of two years.

Table 3.1

Number of infra beneficiaries (Individual)	1,500,000
Number per HH	5
Average annual income (US\$)	720
w/o Project Growth rate	0.3%
Project additionality	1.5%
Number of years of additionality	2

Notes: HH refers to households

8. **Sensitivity analysis:**

- Reducing the assumed project additionality from 1.5 percent to 1 percent, reduces the component ERR to 7 percent.
- Increasing the assumed project additionality from 1.5 percent to 2 percent, increases the component ERR to 27 percent.

Component 2: Improved Water Supply, Sanitation and Hygiene (WASH)

9. For the WASH investments under Component 2 of the project, the NPV is estimated at US\$17 million with an ERR of 20 percent.
10. **Key assumptions:** The impact of the WASH investments is calculated based on estimated benefits for each of the beneficiaries. This includes a consumer surplus (cost savings relative to the costs of fetching water without the project), reduction in the time required for fetching water, and improved health outcomes due to the reduction of water borne and other diseases associated with poor hygiene conditions. The following paragraphs provide more detail on these points, with a table outlining the full list of assumptions.
 - Consumer surplus:** The consumer surplus is equal to the increase in water consumption multiplied by the difference in water prices before and after the project. We assume a 50 percent reduction in water prices paid for direct beneficiaries as a result of the project investments. Households with no private access to private piped water are supplied by neighbors and vendors, especially through powered boreholes. Average daily consumption rates are 10 to 30 liters per capita, with an average sale price of XOF 1,250 per cubic meter. Because vendors often charge higher prices, it is assumed that the average price (for the sake of this analysis) is XOF 2,700 per cubic meter.
 - Improved health outcomes and reduction in time for procurement of water:** In total, it is



estimated that the combined value of these benefits is approximately 3 percent of beneficiary income, including the consumer surplus noted above (US\$10 per annum) for a period of five years following the project investments.

Table 3.2

Number of infra beneficiaries (Individuals)	425,000
Number per HH	5
Average annual income (US\$)	720
w/o Project Growth rate	0.3%
Project additionality	3.0%
Number of years of additionality	5

Notes: HH refers to households

Table 3.3

Average cost per cubic metre (CFAF)	2700
L / cubic metre	1000
Avg cost per L (CFAF)	2.7
Avg cost per L (USD)	0.0054
Avg daily water consumption (L)	20
Avg daily cost w/o Project (USD)	0.108
Avg cost reduction w/ Project	50%
Avg cost reduction w/ Project	0.054

Notes: CFAF refers to XOF; L refers to labor unit

11.

Sensitivity analysis:

- a. Reducing the assumed project additionality from 3.0 percent to 2.5 percent, reduces the component ERR to 16 percent.
- b. Increasing the assumed project additionality from 3.0 percent to 3.5 percent, increases the component ERR to 24 percent.

Component 3: Investments in Resilient Infrastructure

12.

- This component will include investments in primary drainage infrastructure (sub-component 3.1) and investments in neighborhood upgrading (sub-component 3.2), with a total approximate envelope of US\$90 million. Investments under this component will be prioritized to target major flooding hotspots in Bamako, with investments pre-identified in Communes V and VI of the city. A portion of the envelope under this component will also be directed toward developing a better framework approach for how to plan, target, implement, and maintain both drainage and neighborhood investments to ensure better resiliency against funding.

13.

- While the exact investments remain to be decided, the estimate of the impact of this component is based on two factors: (a) a reduction in costs associated with flooding; (b) social benefits due to improved health outcomes with a reduction in water-borne diseases and an associated reduction in health care costs; and (c) an increase in local land values. Since precise estimates for the benefits of improved health outcomes and the increase in land values are difficult to quantify (especially given that a portion of the budget will be allocated toward framework investments), these two impacts have



been coupled together into an incremental income growth for beneficiary households. Actual impacts are, however, likely to be higher given that flooding has a massive impact on local transport networks, and as such, the time and costs associated with taking goods to market.

14. The NPV and ERR for this component are estimated at US\$9.8 million and 20 percent, respectively.

15. The key assumptions are as follows:

- a. **Number of beneficiaries:** Based on the size of the neighborhoods in the flood hotspot areas where the drainage and neighborhood upgrading investments will be concentrated, we have estimated that there will be approximately 5,000 beneficiaries per km of investments, totaling at 80,000 beneficiaries.
- b. **Reduction in flooding associated costs:** Based on the Post-Disaster Needs Assessment for the 2019 floods⁴⁹, the total cost of damages and losses for the 2019 floods are estimated at ~US\$7.7 million. While this estimate is not broken down by communes, approximately 90 percent of the associated damage was in Communes V and VI where drainage investments under this component will be targeted. As such, an 80 percent reduction in flooding costs is estimated to be associated with these communes because of the project investments.
- c. **Income growth:** As mentioned above, a portion of the impact analysis is based on incremental income growth for beneficiary households of the drainage and neighborhood investments. Income growth of 0.3 percent per annum is estimated for these beneficiaries, with an additional 10 percent growth resulting from the component investments. Based on an average baseline annual income of US\$720 per beneficiary, this 10.0 percent additionality amounts to a total increase in annual income of approximately US\$250 per beneficiary distributed over a period of three years. This large increase is due to the increase in commute and travel costs associated with flooding cost reductions.⁵⁰

Table 3.4

Without project	
Annual flooding costs (US\$)	7,670,295
Percentage in Component target communes	90%
Annual flooding costs (US\$) in target communes	6,903,266
Annual cost growth	2%

With project	
Reduction in flooding costs	80%
Years of impact	3
First year of flooding cost reduction	2023

⁴⁹ République du Mali : Évaluation rapide des dommages, des pertes et des besoins (PDNA) suite aux inondations à Bamako, July 2019.

⁵⁰ A study on the impact of flooding in Kinshasa demonstrates that the daily cost of flood disruption to commuter travel in Kinshasa at US\$1.2 million. Per person the reduction in flood disruption can amount to approximately a 10 percent increase in income for impacted households. He, Yiyi, Stephan Thies, Paolo Avner, and Jun Rentschler, *The Impact of Flooding on Urban Transit and Accessibility: A Case Study of Kinshasa*. World Bank Global Facility for Disaster Reduction and Recovery, December 2020.

**Table 3.5**

Number of beneficiaries (individuals per km)	5,333
Number of km	15
Number of beneficiaries (individuals, total)	80,000
Average annual income (US\$)	720
w/o Project Growth rate	0.3%
Project additionality	10.0%
Number of years of additionality	3

16. Sensitivity analysis:

- a. Reducing the estimated reduction in flooding costs from the assumed 80 percent to 60 percent, reduces the component ERR to 17 percent.
- b. Increasing the estimated reduction in flooding costs from the assumed 80 percent to 90 percent, increases the component ERR to 22 percent.
- c. Reducing the assumed project additionality from 10 percent of beneficiary income to 8 percent, reduces the component ERR to 14 percent.
- d. Increasing the assumed project additionality from 10 percent of beneficiary income to 12 percent, increases the component ERR to 25 percent.

Potential impacts of infrastructure investments

17. Since activities under this component consist of technical assistance in various forms, a valuation is not estimated. However, activities under this component will help to amplify the impact of the other components. Below a discussion from relevant literature on the potential impact of different activities under the components of the project is provided.
18. The literature studying the impact of improved public service delivery and infrastructure supports the investments under this project. While the exact additional impact depends on the location and sector, the following studies demonstrate the impact of public service and infrastructure improvements, in support of the key assumptions:
- a. A study on the impact of flooding in Kinshasa demonstrates that the daily cost of flood disruption to commuter travel in Kinshasa at US\$1.2 million. Per person the reduction in flood disruption can amount to approximately a 10 percent increase in income for impacted households.⁵¹
 - b. Economic Policy Institute (2012) finds that public capital investments lead to returns on private sector productivity ranging from 15 to 45 percent.⁵²
 - c. Segel (2006) discusses the cost of various diseases and their impact on low-income populations.⁵³
 - d. WHO (2004) underscores the positive impact of drainage systems on waterborne diseases.⁵⁴
 - e. International Labor Organization (ILO) (2010) finds that investments in the district and national road and drainage network realized under a UNDP/ILO Project in Indonesia resulted in a cash

⁵¹ He, Yiyi, Stephan Thies, Paolo Avner, and Jun Rentschler, *The Impact of Flooding on Urban Transit and Accessibility: A Case Study of Kinshasa*. World Bank Global Facility for Disaster Reduction and Recovery, December 2020.

⁵² Economic Policy Institute: <https://www.epi.org/publication/bp338-public-investments/>

⁵³ Segel, J. E. 2006. Cost-of-Illness Studies—A Primer. RTI International RTI University of North Carolina Center of Excellence in Health Promotion Economics.

⁵⁴ Hutton, G. and L. Haller, "Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level", WHO, 2004.



- injection of US\$145 per beneficiary household, amounting to a 33 percent increase in income.⁵⁵
- f. World Bank (2015) finds that rural road and water investments in the Bico de Papagaio and Southeast regions of Brazil resulted in monthly income increases between US\$48 and US\$67 per household.⁵⁶
 - g. The Congressional Research Service (2011) calculates that a 10 percent increase in public capital stock results in multifactor productivity growth (including labor, capital, materials) by almost 4 percent.⁵⁷
 - h. Research highlights the importance of better infrastructure related to trade costs and ability to export. Delays in getting goods back and forth through the customs, as well as the overall unpredictability of transport times constrain firms from participating in time-sensitive production often important for manufacturing and agribusiness industries. Nordas (2005) finds that an additional day required for exporting is equivalent to being 70 km farther away from the trade partner. Similar calculations suggest that if time to export can be reduced by 1 percent, exports on average could increase by more than 1.5 percent.
 - i. Dorosh and et al. (2010) find that agricultural production is highly correlated with proximity (as measured by travel time) to urban markets. Likewise, adoption of high-productive/ high-input technology is negatively correlated with travel time to urban centers. There is therefore substantial scope for increasing agricultural production in Sub-Saharan Africa, particularly in more remote areas. Total crop production relative to potential production is 45 percent for areas within four hours' travel time from a city of 100,000 people. In contrast, it is just 5 percent for areas more than eight hours away. Low population densities and long travel times to urban centers sharply constrain production. Reducing transport costs and travel times to these areas would expand the feasible market size for these regions.
 - j. The literature also supports the link between stronger institutions and economic performance. For example, Hall and Jones (1999) argues that differences in factor productivity are due to differences in "social infrastructure" – meaning that institutions can contribute to the accumulation of skills that contribute to economic performance.

⁵⁵ ILO 2010, "Benefits of Improved Road Access". *LINK*

⁵⁶ World Bank, 2015 "Evaluating the Social and Economic Impacts of Rural Road Improvements". *LINK*

⁵⁷ Congressional Research Service (2011). "the role of public works infrastructure in economic recovery". *LINK*



ANNEX 4: Climate Change Considerations and Analysis

COUNTRY: Mali
Bamako Urban Resilience Project

Climate and Disaster Risks

1. Climate risks, such as drought and floods, pose the greatest threats to Bamako. Results from the climate screening exercise have determined that the initial level of exposure the prospective locations of SWM and WASH infrastructure regarding the climate and geophysical hazards are moderate. Sector specific climate risk management measures will be integrated into the physical investments and soft components of the project design, to ensure robust and sustainable adaptation and mitigation solutions are adopted.
2. During project implementation, location specific research and analyses including hydrogeological studies and vulnerability mapping will be conducted to strengthen opportunities to enhance climate resilience solutions for infrastructure, as well as early warning systems and emergency recovery plans.
3. **Result:** The project will result in a net emissions reduction of 4,985,906 t_{eq}CO₂ equivalent to a reduction of 29.3 percent of the sector's emissions over the project lifetime, compared to the baseline scenario. The emissions reduction is primarily driven by the development of modern disposal facilities including landfill gas capture and improved management of fecal sludge.

Table 4.1: SWM and WASH Sector Emissions over Economic Lifetime of the Project

	2021 (base year)	2023	2025	2040	Total 2020-2040
Total sector emissions baseline scenario (t_{eq}CO₂ /year)	532,186	620,660	687,671	1,103,001	17,033,648
Project emissions reduction (t_{eq}CO₂ /year)	-	93,250	217,567	381,903	4,985,906
<i>of which:</i>					
SWM					
<i>Waste Management</i>	-	93,250	163,280	271,760	3,670,043
<i>Landfill fugitive emission capture</i>	-	-	33,811	56,163	720,215
WASTEWATER & WATER					
<i>Latrines improvement</i>	-	-	8,386	26,902	282,304
<i>Facultative lagoon treatment improvement</i>	-	-	11,793	26,482	306,200
<i>Non revenue water reduction</i>	-	-	297	596	7,144

Table 4.2: Summary Results

Economic Lifetime (years)	20
Gross Emissions over Economic Lifetime (t _{eq} CO ₂)	17,033,648
Net Emissions Reduction over Economic Lifetime (t _{eq} CO ₂)	4,985,906
Average Annual Emissions Reduction (t _{eq} CO ₂)	249,295

Analysis Boundary:

The analysis boundary for the climate change assessment and GHG accounting estimations cover the project territory i.e.,



the Greater Bamako including the District of Bamako and 25 rural municipalities.

Activities analyzed in the Project scenario cover the following:

- a. Construction of modern landfilling capacity, including landfill gas capture and flaring
- b. Improved material recovery for dry recyclables
- c. Improved management of latrines
- d. Construction of fecal sludge treatment facilities (facultative lagoons with surface aerators)
- e. Extension of the water distribution network

Methodology:

- a. The World Bank's Climate and Disaster Risk Screening Tools and the Climate Change Knowledge Portal were two key resources used to assess the climate vulnerability context of the Project location.
- b. The Climate Action for Urban Sustainability's CURB Tool v 2.0 was used to estimate the existing and potential greenhouse gas (GHG) emissions of Waste Disposal and Water and Wastewater management, within the Project area following the International Panel on Climate Change (IPCC) methodologies.
- c. The Institute of Global Environmental Strategies GHG Calculator for Solid Waste was used to calculate the accrued GHG emissions reduction based on the United Nations Framework Convention on Climate Change approved methodology (AMS-III.G.: Landfill methane recovery) with respect to the existing technologies over the entire project life span.

SWM Baseline for 2020:

- a. The total municipal waste generated yearly is 720,000 tons for a population of 2,680,000 people.
- b. It is assumed that:
 - In Bamako, 100 percent of the waste is currently disposed of in open dumps (designated dumpsites, illegal dumpsites or drainage system);
 - There is no official material recovery and informal recovery occurs at source;
 - All dumpsites were not designed and are not operated as sanitary landfills and no LFG collection system is in place.
- c. The waste composition data was drawn from bibliography, resulting from sampling in Bamako as part of the 2004 SWM strategy. Composition is as follows:

Table 4.3: Municipal waste composition in Bamako⁵⁸

Waste type	Paper/cardboard	Textiles	Organic Waste	Wood	Rubber & leather	Plastics	Metal	Glass	Other (sand)
Percentage (by weight)	3.5	1.0	35.0	0.0	0.0	3.5	3.5	1.0	52.5

WASH Baseline for 2020:

- a. 25 percent of the population is relying on on-site sanitation, 60 percent on facultative lagoons and 15 percent consists of direct discharge in drains and waterways
- b. It is assumed that:
 - In Bamako, 100 percent of the fecal sludge removed from cesspits is currently disposed of in unregulated disposal sites;
 - None of the current fecal sludge disposal sites were designed and equipped for aeration or biogas recovery
- c. Water losses in the current system amount to 34 percent

⁵⁸ TECHSULT- National Solid Waste Management Strategy - 2004



Project Scenario

The scenario is based on expected sequence of proposed activities, specifically the phased development of SWM and WASH infrastructure and operational improvement in each sub-sector:

- a. **2021** – Project start;
- b. **2023 – SWM** (a) the new sanitary cell at Noumouboougou is retrofitted, including LFG capture and flaring; Dumpsite within the city are progressively cleared and waste transported to the landfill, and (b) an additional 5 percent of the municipal waste stream will be diverted from disposal due to improvements in waste diversion activities as well as sensitization and professionalization of front-end workers;
- c. **2025** – (a) the new landfill is operational in Mountougoula offering additional landfill capacity; (b) material recovery accounts for 20 to 30 percent of dry recyclables stream; and (c) all transfer points are in place, limiting open dumping.

WASH

- d. **2021** -Project starts
- e. **2023** - (a) two fecal sludge treatment lagoons are constructed with surface aerators, and (b) improvements are made to sludge removal and transportation
- f. **2025** – Investments in the water distribution system are completed and reduce water losses

For both sub-sectors, improvements are considered to last until the end of the economic life of the project.

Key Assumptions:

- a. The project is expected to have an economic lifespan of 20 years (2020 to 2040);
- b. Landfill gas recovery rate is expected to remain at a minimum of 50 percent of total waste-related emissions
- c. Construction of a modern water distribution system will bring water losses from 34 percent to 30 percent at the end of the project

Data Sources:

- World Bank – Bamako, An Engine of Growth and Service Delivery, 2018
- Politique Nationale d'Assainissement (National Sanitation Policy) – Ministère de l'Environnement et de l'Assainissement (Ministry of Environment and Sanitation) - 2009
- Stratégie Nationale de Gestion des déchets liquides (National Strategy for Management of Liquid Waste) - Ministère de l'Environnement et de l'Assainissement (Ministry of Environment and Sanitation) -2008
- Stratégie Nationale de Gestion des déchets solides (National Strategy for Management of Solid Waste) - Ministère de l'Environnement et de l'Assainissement (Ministry of Environment and Sanitation) -2008