



Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 08-Jun-2020 | Report No: PIDISDSA29843



BASIC INFORMATION

A. Basic Project Data

Country Vietnam	Project ID P171700	Project Name Vinh Long City Urban Development and Enhanced Climate Resilience Project in Vinh Long Province	Parent Project ID (if any)
Region EAST ASIA AND PACIFIC	Estimated Appraisal Date 30-Mar-2020	Estimated Board Date 30-Jun-2020	Practice Area (Lead) Urban, Resilience and Land
Financing Instrument Investment Project Financing	Borrower(s) Socialist Republic of Vietnam	Implementing Agency ODA PMU of Vinh Long Province	

Proposed Development Objective(s)

To improve access to infrastructure and connectivity and to reduce flood risk in the urban core area of Vinh Long City.

Components

- Component 1: Flood Risk Management and Environmental Sanitation
- Component 2: Strategic Corridors Development
- Component 3: Resettlement Area Development
- Component 4: Enhancing Climate Resilience and Leveraging Disruptive Technologies in Urban Management

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	202.20
Total Financing	202.20
of which IBRD/IDA	126.90
Financing Gap	0.00

DETAILS

World Bank Group Financing



International Development Association (IDA)	126.90
IDA Credit	126.90

Non-World Bank Group Financing

Counterpart Funding	55.80
Borrower/Recipient	55.80
Other Sources	19.50
NETHERLANDS: Min. of Foreign Affairs / Min. of Dev. Coop.	19.50

Environmental and Social Risk Classification

Substantial

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **The comprehensive 1986 reforms (known as ‘Đổi Mới’) in Vietnam have led to stable and sustained economic growth and inclusive development—transforming the country from a low- to middle-income economy in one generation.** Vietnam’s rapid gross domestic product (GDP) per capita growth rates have averaged 5.5 percent a year since the early 1990s, yielding a three-and-a-half-fold increase in average income. The US\$1.90-a-day poverty rate fell from 50 percent in the early 1990s to 3 percent today. Economic growth has brought dramatic structural transformations, with the agricultural sector’s share in GDP falling from more than 40 percent in the late 1980s to less than 20 percent in recent years. Access to basic infrastructure has improved substantially. Electricity is now available to almost all households, up from less than half in 1993. By the World Bank’s measure of shared prosperity (that is, the income growth of the bottom 40 percent of the population), Vietnam is one of the most noteworthy cases of long-term shared prosperity, globally.

2. **Vietnam’s rapid economic development and structural transformation over the past three decades has led to extensive urban transformation, with urban areas now contributing more than half of the country’s GDP.** Vietnam has a low level of urbanization (37.5 percent of the population in 2017) compared to most of the countries in the East Asia region, but its urban population has grown from fewer than 13 million urban residents in the late 1980s to more than 30 million today. The urbanization process has accelerated in recent years, with half the country’s population expected to live in urban areas by



2035.¹ The Government of Vietnam (GoV) understands the strategic role and importance of sustainable urbanization in achieving its development aspirations as stipulated and updated in 2009 in the Framework Master Plan for Urban Development in Vietnam to 2025 and Vision to 2050. The Master Plan focuses on achieving balanced and sustainable strategic growth across the country.

3. **Vietnam has been ranked among the five countries likely to be most affected by climate change,² due to the concentration of a high proportion of its population and economic assets in vulnerable coastal lowlands and deltas.** It is estimated that Vietnam’s average annual disaster-related losses are approximately US\$2.4 billion, or almost 1.5 percent of GDP.³ Sea level rise of 0.22 meter (m) and an increase in rainfall between 12.4 percent and 33.3 percent are expected by 2030, based on scenario Representative Concentration Pathway (RCP) 4.5,⁴ which will further increase flood levels. Vietnam’s urban transformation has also led to a growth in greenhouse gas (GHG) emissions, which has been faster than any other country in the region.

4. **The Mekong Delta is specifically vulnerable to climate change with sea-level rise and weather-related hazards.** These events include typhoons, floods, and drought, which are expected to become more frequent and intense with climate change and have significantly affected the socioeconomic development of the region. Approximately half of the delta is flooded to a depth of 1 m to 3 m annually, and the situation is further exacerbated by land subsidence and sea-level rise. Many areas of the delta that were previously safe from all but the most extreme floods are becoming more vulnerable to flooding due to land subsidence, linked in part to the overabstraction of groundwater.⁵ It is estimated that the land subsidence rate in the Mekong Delta is about 1–4 centimeter (cm) per year.⁶ In parallel, drought disasters are occurring more frequently. During the 2015–2016 dry season, the Mekong Delta faced extreme drought, during which 400,000 households lacked domestic water. The drought resulted in economic damages totaling VND 7,900 billion (US\$337 million). The poor, the rapidly increasing elderly population,⁷ and the high proportion of people living with disabilities⁸ in Vietnam are especially vulnerable to climate change and hydrometeorological disasters.

5. **The impacts of climate change are compounded by insufficient sanitation services, inappropriate land use planning, and environmental degradation that increase vulnerability to water and vector-borne diseases.** While access to clean drinking water and modern sanitation in urban areas has risen from less than 20 percent of all households in 1999 to more than 90 percent and 78 percent, respectively in 2015,⁹ there remains an important gap, particularly in sanitation services in secondary

¹ World Bank. 2016. *Vietnam 2035 Report*.

² World Bank and Asian Development Bank. 2018. *Vietnam: Climate Risk Country Profile*.

³ UNISDR (2014) PreventionWeb. <https://www.preventionweb.net/countries>.

⁴ SIWRR (Southern Institute of Water Resources Research). 2017. Hydraulic Modeling Report for the World Bank Scaling Up Urban Upgrading Project. RCP is a greenhouse gas concentration (not emissions) trajectory adopted by the IPCC.

⁵ GIZ (*Deutsche Gesellschaft für Internationale Zusammenarbeit*). 2019. *Climate Resilience in Vietnam: An Assessment in Metropolitan Regions*.

⁶ Minderhoud, P. S. J., et al. 2015. “Land Subsidence of the Multi-aquifer Subsurface, Mekong Delta.” *Proc. IAHS* 372:73–76.

⁷ Vietnam is one of the most rapidly aging countries in the world. Around 2035, the old age dependency ratio (the number of people 65 years of age or older for every 100 people ages 15–64) will have risen to almost 22 (from under 10 today), while the working-age population will begin to decline in absolute terms. Vietnam 2035 Report (World Bank 2016).

⁸ Statistics show that between 7.5 percent and 15.0 percent of Vietnamese people are living with disabilities. Palmer M., N. Groce, D. Mont, O. H. Nguyen, and S. Mitra. 2015. “The Economic Lives of People with Disabilities in Vietnam.” *PLoS ONE* 10 (7): e0133623.

⁹ WHO (World Health Organization)/UNICEF (United Nations Children’s Fund). 2015. *Joint Monitoring Program Report*.



cities. The result of one in five people without access to sanitation and one in ten without access to water has adverse health consequences, including increased incidence of water-related and vector-borne diseases and increased vulnerability to pandemic events.

6. **An outbreak of the coronavirus disease (COVID-19) caused by the 2019 novel coronavirus (SARS-CoV-2) has been spreading rapidly across the world since December 2019, following the diagnosis of the initial cases in Wuhan, Hubei Province, China.** On March 11, 2020, the World Health Organization (WHO) declared a global pandemic as the coronavirus rapidly spreads across the world. As of June 8, 2020, the outbreak has resulted in an estimated 6,931,000 cases and 400,857 deaths in 216 countries and territories.

7. **Vietnam has been negatively affected by the health and economic crises caused by the COVID-19 pandemic.** Vietnam's urban residents are vulnerable to COVID-19 and other disease outbreaks, although publicly reported cases and fatalities have been limited because of the government's measures to close borders and reduce social contact to halt the spread of the virus. While disease spread has been limited, these restrictive measures have had a negative impact on the economy, with a reported GDP growth rate of only 3.8 percent in the first quarter of 2020. This represents the lowest growth rate since 2009 and is partially attributed to the COVID-19 outbreak. In response to the economic impacts, in March 2020, the authorities announced a credit package totaling VND 250 trillion (about 3.3 percent of GDP) from the banking sector, designed to support affected firms and households. In addition, the Government is developing a post-COVID-19 economic recovery and fiscal stimulus package that is designed to create temporary jobs and ensure equitable growth.

Sectoral and Institutional Context

8. **Vietnam's secondary cities are recognized as a strategic part of its urban system to achieve balanced growth. However, their spatially dispersed urbanization pattern limits their potential for agglomeration economies.** Vietnam's urbanization is dominated by the twin economic engines of Hanoi and Ho Chi Minh City (HCMC) and their respective economic regions, which together accounted for 38.9 percent of Vietnam's overall population and more than 70 percent of national nonagricultural employment in 2016.¹⁰ In contrast, secondary cities outside these two regions have relatively low concentrations of urban population and nonagricultural jobs. These secondary cities have experienced spatially dispersed urbanization since 2010, largely driven by their desire to generate more land-related revenues and move up the Government's urban hierarchy.¹¹ Vietnam's urban areas, as detected using nighttime light data, expanded four times more over the seven years period from 2010 to 2017 than they did during the previous 14 years from 1996 to 2010.¹² As a result, between 2000 and 2015, Vietnam's urban population density remained at 1,890 residents per square kilometer,¹³ which is low compared with other comparable countries in the region and globally. The low urban densities, coupled with poor

¹⁰ World Bank. Forthcoming. *Vietnam's Urbanization at a Crossroad: Embarking on an Efficient, Inclusive, and Resilient Pathway*.

¹¹ The urban classification system consists of six classes of urban areas that are defined by different levels of economic activities, physical development, population, population density, and infrastructure provision. It serves as a basis for the central government to determine budget transfer allocations to urban areas, thus providing strong incentives for cities and towns to move up the urban class ladder.

¹² World Bank. Forthcoming. *Vietnam's Urbanization at a Crossroad: Embarking on an Efficient, Inclusive, and Resilient Pathway*.

¹³ World Bank. 2016. *Vietnam 2035 Report*.



connectivity, not only impede labor mobility, agglomeration economies, and regional integration but also contribute to increased vulnerability to climate risks.

9. **The Mekong Delta Region (MDR), located in proximity to the metropolitan region of HCMC, is one of the most populated regions and the agricultural base of Vietnam.** The region makes up 12 percent of the country's territory and 19 percent of total population. Despite average economic growth rate of 13 - 20 percent (2006 to 2010), MDR cities are typically small or medium in size with limited fiscal resources and relatively high poverty rates. In 2016, between 14 and 30 percent of the population consisted of low-income households, including a large proportion of ethnic minority groups and people with disabilities.¹⁴ Access to basic services, such as sanitation, drainage, and quality water supply, remains as low as 15 percent in MDR cities compared to 80 percent in large cities such as HCMC and Hanoi. Less than 8 percent of MDR cities have sanitary wastewater collection and treatment systems, with the majority lacking such services.¹⁵ Most MDR cities frequently suffer from flooding and other negative climate change impacts because of their low elevation and infrastructure deficits.

10. **Vinh Long is strategically located along the economic corridor that connects HCMC to the MDR.** Vinh Long City, the capital of Vinh Long Province, is one of the 13 provinces in the MDR, with a population of around 150,000 and an annual GDP growth rate of about 10 percent. Regional¹⁶ and master¹⁷ planning has identified Vinh Long as a center for agriprocessing, commercial activities, research and technology transfer services, and eco-tourism in the region. Vinh Long is a transportation hub in the MDR with multiple highways intersecting in the city.¹⁸ The HCMC-Can Tho highway, which is currently under construction, and the planned HCMC-Can Tho railway are expected to pass through Vinh Long to further unlock its economic development potential. Vinh Long's waterways are also important links that connect it with other provinces in the MDR and the whole country. Vinh Long's Transportation Master Plan aims to improve the city's connectivity while improving traffic safety and reducing environmental pollution, to facilitate urban development and promote stronger integration with the national, regional, and local transportation system.¹⁹

11. **Flooding and poor environmental sanitation are major impediments to Vinh Long's long-term development.** Located on the Tien river plain, the city has a low elevation of 1.6 m to 2.5m above mean sea level. Approximately 60 percent of the city is susceptible to flooding due to extreme rainfall and high water levels in the Mekong river. Large parts of the city were inundated by flooding in September 2019, causing severe disruption to traffic flows and the livelihoods of many low-income people living in these areas. The Southern Institute for Water Resources Research (SIWRR)²⁰ calculated that without any protection measures, the estimated annual damage to the city is VND 626 billion (US\$27 million). The city

¹⁴ More than 20 percent of Vietnamese households with people with disabilities are concentrated in the MDR. Vietnam National Survey on People with Disabilities, 2016.

¹⁵ World Bank. 2011. *Vietnam Urbanization Review*.

¹⁶ 2018 Adjusted Regional Plan for Infrastructure Development of the Mekong Delta.

¹⁷ Decision 1824 of the Prime Minister dated December 25, 2018, on approval of the Master Plan for Socioeconomic Development of Vinh Long Province to 2030 and the Decision 86/QD-UBND dated January 13, 2020, on approval of the Adjusted Vinh Long City Master Plan up to 2035.

¹⁸ National Highway 1A and highways 53, 54, 57, and 80.

¹⁹ Resolution 116/ND-HDND, dated July 2018, of Vinh Long Province People Council on approval of the Adjusted Master Plan on Transportation Network Development in Vinh Long Province till 2020 and orientations to 2030.

²⁰ Urban Flood Risk Analysis, Vinh Long City Urban Development and Enhanced Climate Resilience Project in Vinh Long Province, Southern Institute for Water Resources Research, December 2019.



lacks a comprehensive approach to managing flood risk, which is exacerbated by the lack of flood defenses, an aging drainage system which is in poor condition, and a canal network which suffers from sedimentation and human encroachment. Untreated wastewater quality in the city is reported²¹ to exceed the national standard by 1.3–11.0 times.²² An estimated 12,000 m³ of predominantly untreated wastewater is being discharged directly to rivers and canals each day, leading to serious public health impacts. The city's priorities are urban wastewater system upgrades, flood risk mitigation infrastructures, and nature-based solutions to increase water retention.

12. The severe flood risk in the core urban area, together with the lack of integrated planning, has led the city to sprawl outward along the national roads and main waterways in different directions, while large pockets of land in the core urban area remain undeveloped. This fragmented development pattern results in high and unsustainable costs for infrastructure provision and limits the ability of the Government to provide adequate water and sanitation services to the public. This in turn results in greater vulnerability to water and vector-borne diseases and the spread of disease. The sprawl also causes increased GHG emissions and high transport costs, along with the loss of productive water-retaining agricultural land. An integrated approach to flood risk management and urban planning will promote compact development, lower the cost of basic service provision, and reduce vulnerability to climate, disaster, and health risks.

13. The institutional arrangements to manage flooding in the MDR are complex and require an integrated and cross-sectoral approach, particularly, for coordination between agencies with overlapping mandates and authorities. In Vinh Long Province, the Department of Agriculture and Rural Development (DARD) is responsible for irrigation and flood management. The Department of Construction (DOC) is responsible for urban planning and construction management, while maintenance may be outsourced to private companies. The Department of Transport (DOT) is responsible for the planning, design, and maintenance of the transport system, which requires close coordination with DOC for the drainage and wastewater system and with the Urban Public Works Company for urban landscaping and street lighting. The Department of Natural Resources and Environment (DONRE) is responsible for water resource and environmental management. In addition, the Provincial Steering Committee of Disaster Prevention, Search and Rescue coordinates flood management and emergency response. There is a need to strengthen coordination among these institutions and consolidate the operation and maintenance (O&M) strategy as part of an integrated flood management system.

14. In 2017, the GoV adopted Resolution No. 120²³ on Sustainable and Climate-resilient Development of the Mekong Delta, which sets out the guidance for the future development of the Mekong Delta. The resolution highlighted the importance of “nature-based adaptation, environmentally sound and sustainable development, on the basis of actively living with flooding.” It also proposed to “develop an Integrated Master Plan for sustainable and climate resilient development of the Mekong Delta.” This is in line with the new Planning Law, approved in 2017, which requires a multisectoral integrated planning approach at the national, regional, and provincial levels. Linked to this, the Ministry of Planning and Investment (MPI) is preparing the Mekong Delta comprehensive development plan for

²¹ Vinh Long Department of Natural Resources and Environment (DONRE) report.

²² Environmental Monitoring Report by the Vinh Long Department of Natural Resources and Environment, 2015.

²³ Resolution No. 120/NQ-CP issued by the Government on November 17, 2017, following the Regional Sustainable Development Conference held in late September 2017, hereinafter referred to as Resolution No. 120.



climate change adaptation and socioeconomic development. This plan will guide development of the 13 MDR provinces, including Vinh Long.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

15. The Project Development Objective (PDO) is to improve access to infrastructure and connectivity and to reduce flood risk in the urban core area of Vinh Long City.²⁴

Key Results

PDO Level Indicators

16. Progress toward achievement of the PDO would be measured through the following outcome indicators, as shown in Table 1.

Table 1. Outcome Indicators

PDO Outcome	Outcome Indicator
Improved access to infrastructure	People provided with access to new or improved drainage and wastewater systems (total number, percentage of which female)
Improved connectivity	Reduction in travel time between (i) the north and the south of the city (Ward 8 and Ward 9) and (ii) the southeast and southwest of the city (NH1 and NH53 and NH57)
Reduced flooding risk	Area protected by 1 in 100-year river flood (ha) ^a
Improved urban management	Integrated flood risk management system developed

Note: a. This indicator measures the area (ha) protected by the polder structural system from 1 in 100-year river flood, based on hydraulic modeling.

D. Project Description

17. The proposed project will take an integrated multisectoral approach to promote the economic and demographic densification of Vinh Long’s urban core, thereby unlocking the city’s development potential and enabling the city to function as an economically and physically integrated metropolitan area. The project investments include a comprehensive set of structural and nonstructural interventions to improve access to infrastructure and reduce flood and environmental pollution risk in the urban core area

²⁴ ‘Infrastructure’ includes flooding mitigation works such as sluice gates and embankments, canal and drainage system improvements, roads and bridges, wastewater treatment plants (WWTPs), and sewer networks.



of Vinh Long City, through developing flood control systems and nature-based solutions, wastewater collection and treatment, as well as key transport links.

18. These measures will eliminate the physical constraints to development in the urban core area, increase land values, stimulate private capital investments, and reduce the pressure for urban sprawl. Increased demand on land will create an opportunity for the local government in Vinh Long to capture some of the associated land value increase from private development. By providing comprehensive improvement to infrastructure in the urban center and increasing the connectivity of these areas to other parts of the city, the project is expected to improve the living conditions of the poor and vulnerable populations and increase their accessibility to jobs and public services. Citizens and community organizations will be engaged throughout the project implementation process to raise their awareness about flood risks and enhance their ownership of the project. Providing technical assistance to improve urban planning, transport management, and the O&M of infrastructure will enable the city to become more interconnected, livable, and resilient to natural disasters.

19. The project will be implemented with due consideration to COVID-19 and will seek to minimize the risk of disease transmission through stakeholder consultation and engagement. While the outbreak is still prevalent, stakeholder consultations and engagements will avoid large public gatherings and make use of online channels. To mitigate the risk of future disease transmission, the project is designed to strengthen municipal wastewater services and make infrastructure more resilient to potential future outbreaks.

20. The project is organized around four components. A detailed description of the project is included in Annex 1. A map showing the geospatial location of the investments is presented in Annex 4.

Component 1: Flood Risk Management and Environmental Sanitation (Total Cost: US\$93.0 million; IDA Credit: US\$73.8 million; Development-related Infrastructure Investment Vehicle [DRIVE]²⁵ Grant: US\$17.1 million; Counterpart Funds: US\$2.1 million)

21. The objective of this component is to reduce flood-related risks and improve environmental sanitation in the urban core of Vinh Long City through investments in drainage, flood protection structures, sewage networks, and wastewater treatment. In addition to improving the environmental sanitation conditions in the city, the upgrading of wastewater collection and treatment in Vinh Long will contribute to improving surface water quality. Design of this component was based on the existing national building codes and standards and investment proposals were selected based on assessment of the flood risks, including flood hazards and the vulnerability of the affected community. Investments will consist of a balance between gray and green infrastructure (or nature-based solutions).

Subcomponent 1.1: Flood risk mitigation and urban drainage

22. This subcomponent will finance flood risk mitigation structures such as embankments and tidal sluice gates, rehabilitation, and improvement of the canal and drainage system in the city core areas, and investments in green infrastructure to retain and infiltrate rainwater. A polder approach will be used for

²⁵ Certain activities of the project are expected to be co-financed by a grant from the Development-related Infrastructure Investment Vehicle (DRIVE) of the Netherlands Enterprise Agency (Rijksdienst voor Ondernemend (RVO)) under the Ministry for Foreign Trade and Development Cooperation of the Netherlands.



flood risk mitigation, which can be expressed as a structural system consisting of (a) a closed 'ring embankment with tidal sluice gates' to protect areas on the edge of rivers from high water levels (that is, river and tide floods) and (b) a drainage system including regulated sluice gates, open canals, sewers, stormwater retention, and pumps to facilitate runoff of rainwater.

23. In line with city planning,²⁶ three small polders will be established along the small branches of the Co Chien river, to prioritize flood protection for the existing dense urban areas (1,788 ha across seven urban wards). The design of the polders will ensure that the navigation needs and the water flow in the main branches of the Co Chien river are preserved. The area to the south, which is predominantly agricultural land, is reserved for urbanization over the next 20 years, according to the city's Master Plan. This area would be protected in the future as it becomes urbanized, either through an expansion of the polder structure or through elevation of the ground level for new development, combined with the creation of additional retention capacity in low-lying areas. A hydraulic modeling study was completed to assess the city's flood risk with updated data, analyze the cost benefit of various investment options, and demonstrate how green solutions such as retention areas could play a more important role as part of the overall flood risk mitigation strategy. The stabilization of the polder embankment will consider green bioengineering methods. Where possible, amenities comprising green spaces with native and shade providing tree species and promenades with tracks and boardwalks along the embankment will be provided for both cyclists and pedestrians to turn the waterfront into an attractive recreational area.

24. Urban drainage investments will finance 30 km of new and upgraded drainage pipeline as well as dredging of 22 km of canals including bank improvements. These investments are critical for enhancing the capacity of rainfall capture, retention, conveyance, and infiltration to reduce flood risks and sustain the significant private and public investments in the inner parts of the city. The designs of drainage infrastructure are in compliance with the existing national building codes and standards and are based on up-to-date climate data. Climate change scenarios produced by the Ministry of Natural Resources and Environment (MONRE) have been incorporated into hydraulic modeling work for resilient measures such as green infrastructure and nonstructural approaches. Secondary flow paths for the conveyance of floodwater in excess of the drainage system capacity will be considered. Low-lying areas in the urban center, often occupied by relatively low-income inhabitants, are particular vulnerable and need extra care.

25. Given the semidiurnal tide regime in the project area (high tide and low tide occur twice per day), the polder system will be operated for drainage purposes during the rainy season and during the dry season, the sluice gates will be operated flexibly, in combination with improved canals, to create a valuable, high-volume urban reservoir for the city.

Subcomponent 1.2: Wastewater collection and treatment system

26. This subcomponent will finance the construction of a separated stormwater and wastewater collection system, including 58.3 km of primary and secondary sewers, over 105.7 km of tertiary sewers, 8 pumping stations, household connections, and a sequencing batch reactor (SBR) wastewater treatment plant (WWTP). Wastewater collection and treatment will be prioritized for urban inner areas (covering seven wards:1, 2, 3, 4, 5, 8, and 9), with an estimated service population of approximately 140,000 by

²⁶ Flood Control Plan for Vinh Long City (approved by the Ministry of Agriculture and Rural Development [MARD] in 2013) and the Adjusted Construction Master Plan for Vinh Long City (approved in 2020).



2035, covering a land area of about 2,060 ha. The treatment capacity of the WWTP in 2023 is estimated to be up to 15,000 m³ per day-night. To improve monitoring and control, a Supervisory Control and Data Acquisition (SCADA) system will be installed at the WWTP.

27. The project will provide technical assistance to explore options to involve the private sector in the construction and operation of the WWTP through a design build operate (DBO) contract, to improve the quality, sustainability, and cost-effectiveness of wastewater services. The use of renewable energy sources such as solar energy will be explored to meet a portion of the treatment plant's energy demand.

28. Investments in the new wastewater treatment system are expected to result in improved and financially sustainable wastewater collection and treatment that will better protect human health by improving the resilience of the city to infectious disease outbreaks, including the current COVID-19 pandemic.²⁷ The physical investment identified under this subcomponent will be complemented by an IEC campaign described in Component 4 of the project.

Component 2: Strategic Corridors Development (Total Cost: US\$34.2 million; IDA Credit: US\$34.2 million)

29. The objective of this component is to increase connectivity and flood protection capacity in Vinh Long. This component will finance prioritized investments in roads identified in the city's master plans²⁸ and will specifically finance three urban roads. The first two roads run through the existing built-up area, creating important vertical and horizontal links in the urban road network, while the third road diverts intercity traffic from the national roads and future expressway and serves as a development boundary to the south. Two of these three roads in the south also form part of the overall flood control scheme, serving as the boundary of the current and future polder system.

30. The proposed roads will improve traffic safety by providing alternative routes for the intercity traffic to bypass the city center; provide better accessibility for residents to jobs, education, and other services; and allow for mixed land uses and densification in less flood-prone areas. Increased accessibility and connectivity because of the new and improved transport infrastructure is likely to increase land values and investment opportunities along transport corridors, which is value-creation that the government can capture using a variety of mechanisms. Land use regulations and development control will be carefully considered along the road in the south that forms the city's development boundary. This should enable the city to proactively guide urban growth to areas with lower flood risk and densify the urban core area while minimizing the risk of urban sprawl.

31. The project will also promote nonmotorized transport options and consider the future creation of urban public transport networks in the design of main roads. The road width will be based on sound analysis of travel and traffic demand. Traffic safety issues will be thoroughly reviewed and addressed,

²⁷ According to an article recently published by the Lancet, data suggest the possibility of extended duration of viral shedding in feces, for nearly five weeks after the patients' respiratory samples tested negative for SARS-CoV-2 RNA; COVID-19 is caused by a unique group of viruses transmitted from animals to humans. While it is similar to the flu, there are distinct differences, most notably a dry cough and shortness of breath. In more severe cases, it can cause pneumonia, severe acute respiratory syndrome (SARS), kidney failure, and even death.

²⁸ Draft Adjusted Construction Master Plan of Vinh Long City and approved Adjusted Transport Development Master Plan up to 2020 with a vision to 2030 dated 2018.



especially at intersections with major roads and transit roads of national highways/bypasses, as well as pedestrian crossings. To address the potential impacts of climate change, road drainage structures will be designed based on hydrologic analyses that adopt climate change scenarios, while the elevation of roads will take into account projected increases in seawater levels. The design will also incorporate international experience in nature-based solutions such as 'green roads' comprising pervious pavement and water-absorbing tree pits and landscape, as well as universal access criteria to provide a network of accessible pedestrian routes with appropriate tactile pavement and improved sidewalk space and pedestrian crossings, while taking into account appropriate parking spaces for motorcycles to reduce obstruction to pedestrians.

Component 3: Resettlement Area Development (Total Cost: US\$26.1 million; Counterpart Funds: US\$26.1 million)

32. The project will try to minimize resettlement impacts through adopting fit-for-purpose standards and appropriate design; however, significant resettlement impacts are expected due to the proposed investments, particularly under the embankments in Component 1 and the roads in Component 2. An estimated 550 households may have to be relocated under the project. This component will ensure improved living conditions and security of tenure for those target communities who are subject to relocation and resettlement under the project.

33. An investment for technical and social infrastructure at the resettlement site in Ward 8 of Vinh Long City will be proposed with green and nature-based solutions incorporated, such as park connectors, water absorbing tree pits and landscapes, pervious pavements, stormwater detention ponds, raingardens, and so on. This resettlement site covers an area of 12.5 ha, which is currently agricultural land and not occupied by any households, easing the compensation process. In addition, the resettlement site is assessed to be appropriate, as it is just 5 km from the city center and close to National Road 53. Services (water, drainage, electricity, and access roads) are already present along the proposed resettlement area, which will facilitate the development of the site.

Component 4: Enhancing Climate Resilience and Leveraging Disruptive Technologies in Urban Management (Total Cost: US\$15.9 million; IDA Credit: US\$7.4 million; DRIVE Grant: US\$0.7 million; Counterpart Funds: US\$7.8 million)

34. This component aims to improve urban management in a climate and risk informed manner and to set the stage for the development of Vinh Long as a smart city through leveraging disruptive technologies. The proposed project will support implementation of Vinh Long's smart city framework currently being developed, through investments in data and information and communication technologies (ICTs), in conjunction with counterpart funds from the province. Combined, these activities should improve knowledge of the built and natural environments, which can better inform decision making in the future. For example, it will create a visual representation of flood risk overlaid with existing people and assets to guide future development in a risk-informed manner, away from high flood and climate risk. Analyzing data related to lack of access to basic services, population income level, and density will also enable decision makers to identify areas of high health risk to prepare for and respond to future health crises.



35. Key investments under Component 4 include an integrated flood risk management information system, strengthened IEC and O&M on wastewater management, a geospatial data sharing platform to improve data sharing across different departments, and an intelligent transportation system (ITS). Component 4 will also provide technical implementation support to the implementing agencies in Vinh Long. Component 4 includes the following subcomponents:

- (a) **Subcomponent 4.1: Developing an integrated flood risk management information system.** This subcomponent will result in a dynamic model that will enable technical experts and decision makers to better predict flood events and respond to flooding with an integrated set of actions. The following activities will be supported under this subcomponent: (i) training, workshops, and provision of technical assistance to enhance the capacity of staff in Vinh Long on flood risk management, including incorporating nature-based solutions; (ii) improving the availability of information on predicted river water levels and rainfall in Vinh Long; (iii) developing a protocol for operating sluice gates when extreme conditions are predicted; (iv) developing an early warning system to inform the population when extreme flood situations are forecasted, as well as conducting public awareness raising through existing mass media and organizations; and (v) developing an O&M framework and identification of suitable information systems for improving O&M of the flood control structures.
- (b) **Subcomponent 4.2: Strengthening IEC and O&M on wastewater management.** This subcomponent will result in the public being more informed of the health risks associated with poor water and sanitation practices and improved institutional management of the WWTP system. To maximize the public health benefits of the wastewater investments under Component 1, the project will conduct a community-based IEC campaign to encourage households to connect to the sewer system and maintain their connections in good working conditions. The IEC campaign is expected to improve the awareness of Vinh Long citizens on the importance of hygiene practices such as frequent handwashing with soap and other behavioral practices, to reduce transmission of diseases. The institutional development and strengthening activities under this subcomponent will include a focus on contingency planning to ensure the continuity of wastewater services during the current COVID-19 pandemic and future potential pandemics. The project will also provide comprehensive capacity building and training for all stakeholders on managing the service contract of the WWTP and the network, including associated facilities; developing and strengthening institutions in the areas of asset management and O&M arrangements, including transparency and accountability mechanisms; connecting households to the network; improving septage management; and developing cost-reflective tariff mechanisms.
- (c) **Subcomponent 4.3: Developing a geospatial data sharing platform.** This subcomponent will support the development of a web-based geospatial data sharing platform to integrate multiple data sources from different departments in Vinh Long. The platform will draw on the outputs of the ongoing World Bank-financed Vietnam Improved Land Governance and Database Project and will be used across line departments for spatial planning and development. Proper institutional mechanisms and procedural guidelines for data sharing and updates will need to be developed, as well as strengthening the capacity to manage and use the data platform to support various city planning and management functions. In addition, this activity will pilot community-based initiatives using mobile applications to improve real-time monitoring of issues such as flooding and erosion to generate asset and exposure data that can be added to the database. A study will also be conducted



to analyze land subsidence rates and patterns in Vinh Long, using satellite imagery to support future urban planning.

- (d) **Subcomponent 4.4: Improved transport management.** This subcomponent will support the ongoing efforts of the city to improve the effectiveness of transport management, integration of transport and flood management, and application of smart transportation system. This activity will (i) integrate transport data with the city geospatial data sharing platform, to enable travel demand analysis as inputs to transport planning; (ii) improve traffic safety through deploying ITS, including installing traffic signals at intersections along the project corridors; (iii) in coordination with DOT’s ongoing proposal, install speed camera and vehicle weight control system within the city area; and (iv) enhance DOT staff capacity in the application of ITS in traffic management and transport planning.
- (e) **Subcomponent 4.5: Project implementation support.** Technical and financial resources will be available to ensure efficient implementation of the project that adheres to social and environmental standards while ensuring transparency in procurement and high-quality construction. Technical assistance will be provided for (i) the preparation of technical designs for infrastructure investments; (ii) independent monitoring of Environmental and Social Framework (ESF) standards; (iii) construction supervision; (iv) independent financial audits; and (v) strengthening implementation capacity for project management, ESF standards, financial management (FM), procurement, and monitoring and evaluation (M&E). Project implementation will be undertaken with consideration for the COVID-19 pandemic. Particular measures, such as remote project management and supervision tools to limit in-person interactions, will be taken to avoid virus transmission when necessary.

Legal Operational Policies

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

Summary of Assessment of Environmental and Social Risks and Impacts

The project environmental risks and impacts would mainly be related to the implementation and operation of the investments under Components 1, 2 and 3 of the project. The bulk of anticipated impacts would be related to construction works and include common risks such as dust, noise, vibration, generation of solid wastes and wastewater, water quality reduction, localized flooding and related unhygienic conditions, disturbance to landscape, interruptions to public services and infrastructure, traffic and traffic safety issues, loss of some trees, vegetation cover and benthic species, health and safety risks to workers, etc. Most of these impacts are temporary, at a low to moderate level and reversible, however, there are some incremental disturbance and safety risks to the affected parties in urban and semi-urban areas when construction activities are carried out in parallel with those under the SUUP. In addition, there are also other specific risks and impacts related to the location and typology of investments such as safety risks related to UXO left from the war which ended in 1975, damages to existing weak structures due to dredging or piling, serious pollution from improper handling, storage and disposal of dredged materials, localized



flooding, nuisance and visual impacts. The main risks and impacts during the operation would be permanent changes in land use and elevated local ground elevation at and/or along the new roads. The new roads may cause access disruptions and community fragmentation, altered drainage patterns and increased traffic safety risks. These could result from poor planning/design and inadequate stakeholder consultation and engagement during project preparation and implementation. Induced development such as new residential and commercial structures along new/improved urban roads would be expected, however, with low to moderate impact within an existing urban zone. Regarding wastewater system operations, there are pollution risks due to failures at the pumping stations and the treatment plant. Given the type and scale of the project related investment items, the level of GHG emissions is expected to be minimal. Changes in landscape, disrupted access to water fronts from the river/canal side, pollution and localized flooding, may also be issues related to canal and river embankment construction and operation.

The comprehensive improvement of infrastructure in the urban core area related to the canal embankments, drainage system, and wastewater treatment system, strategic corridor development, and resettlement and compensation, may require land acquisition and there may be a need for relocation of households, as well as a temporary restriction of access to infrastructure and livelihood opportunities. According to the ESIA's results, potential social risks and adverse impacts include: (i) land acquisition from an estimated 1,800 PAHs, of whom 550 may have to be relocated or resettled within their existing land plot; (ii) the loss of agricultural land, affecting farmers' livelihoods; (iii) loss of assets affixed to lands, commercial and other properties; (iv) possible additional land acquisition, under city financed domestic projects, and along the urban main roads for future development, may lead to a perception that these are associated with the World Bank financed project; (v) relocation of graves; (vi) the risk that city government units responsible for land acquisition and resettlement may not have the capacity to deliver the land and the resettlement site required for the project in a timely fashion, (vii) the risks and impacts on community health and safety due to construction works (wastewater, dust, noise) and operations (traffic accidents), and related risks from the influx of labor into low income project areas, characterized by poor and vulnerable residents, during construction (e.g. Gender-based violence, sexual exploitation and abuse, and the spread of sexually transmitted and communicable diseases); (viii) increase of conflict between users of wastewater discharge connections; and (ix) uneven access to project benefits among vulnerable groups such as poor households and female headed households.

E. Implementation

Institutional and Implementation Arrangements

Project Implementation Arrangements

36. **PMU and Project Steering Committee (PSC).** This project will have project implementation arrangements similar to those of the ongoing SUUP. The official development assistance (ODA) PMU of Vinh Long Province, which is currently implementing the World Bank-financed SUUP subproject in Vinh Long City, is proposed to be the implementation unit of this project. This PMU has been trained by the World Bank under the SUUP on various aspects of project management including procurement, FM, and safeguards. Additional technical expertise related to flood management, water and sanitation will be mobilized. Staff with required qualifications on procurement and accounting will be appointed by the PMU. The PSC, chaired by the Chairperson of Vinh Long Province and comprising heads of relevant departments of the province and city, which has been established to provide strategic directions and oversight of the SUUP, is expected to oversee this project as well.



Implementation Capacity

37. During the early stages of implementation, the city will require significant support and monitoring, as well as strengthening of staffing to meet the World Bank’s fiduciary and ESF requirements. Additional technical expertise related to flood management, water, and sanitation will be mobilized and additional staff with the required qualifications in procurement, accounting, and ESF shall be appointed by the PMU for this project. The World Bank will provide extensive project implementation support to the city under Component 4 of the project and conduct training on fiduciary and ESF policies and procedures for implementing agencies and relevant PPC departments. The World Bank will also regularly assess and monitor the adequacy of staffing and capacity of PMU and ensure that measures are taken by the PMU to meet the requirement.

38. To implement the technical assistance program under Component 4, the World Bank will build on the ongoing technical assistance on integrated master planning, nature-based solutions, and universal access under SUUP and will mobilize additional specialized expertise on specific technical areas such as flood risk management and smart cities. Timely consultations and engagement with relevant central agencies such as the Ministry of Construction, Ministry of Transport, and MARD will be conducted through workshops and trainings, to share progress and lessons from this project and discuss how to mainstream these considerations into relevant policies and regulations.

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