Public Disclosure Authorized

Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 02-Jan-2020 | Report No: PIDC28358

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Vietnam	P173106		Mekong Urban Climate Resilience Development Project (P173106)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
EAST ASIA AND PACIFIC	Apr 03, 2020	Jun 23, 2020	Urban, Resilience and Land
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	The Socialist Republic of Vietnam	ODA PMU of Rach Gia City, Kien Giang Province, ODA PMU of Ca Mau Province, ODA PMU of Tra Vinh	

Proposed Development Objective(s)

To improve access to infrastructure, connectivity and to enhance flood and environmental management in selected cities of the Mekong Delta in Vietnam

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	275.01
Total Financing	274.50
of which IBRD/IDA	202.00
Financing Gap	0.51

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	202.00

Non-World Bank Group Financing

Counterpart Funding	72.50
Borrower/Recipient	72.50

Environmental and Social Risk Classification	Concept Review Decision
Substantial	Track II-The review did authorize the preparation to continue

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **Since the introduction of the comprehensive reforms in 1986, known as 'Đổi Mới', Vietnam has experienced impressive economic growth** that has also been equitable and stable, allowing the country to transform from a low-income economy to a middle-income economy in one generation. Vietnam has had one of the fastest GDP per capita growth rates (averaging 5.5 percent a year) since the early 1990s, yielding a three-and-a-half-fold increase in average income. External trade has been a major driver, much of it powered by strong foreign direct investment. 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. That decline has been mirrored by a rise in services and industry shares. These sectoral GDP trends have been broadly matched by sectoral trends in employment.

2. **Economic growth, coupled with the government's strong focus on inclusive development, has yielded shared prosperity and strong gains in poverty reduction**. The $1.90-a-day poverty rate fell from 50 percent in the early 1990s to 3 percent today. Using the General Statistics Office (GSO)–World Bank standard, poverty incidence fell from about 58 percent to 13.5 percent over the same period. Cities are important drivers of economic growth and poverty reduction, contributing over half of the national GDP. Access to basic infrastructure has also improved substantially. Electricity is now available to almost all households, up from less than half in 1993. 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[1]. By the World Bank's measure of shared prosperity (the income growth of the bottom 40% of the population), Vietnam is one of the most noteworthy cases of long-term shared prosperity globally.

3. **Although Vietnam has avoided the large increases in inequality observed in other fast-growing countries, the differences between rich and poor are still significant**. In urban areas, the poverty rates in smaller cities are relatively high as compared to large cities. According to the GSO/WB poverty line, only 1.9% of the urban populations in Hanoi and Ho Chi Minh City (HCMC) are poor, while 11.2% of the populations of small cities[2] are poor. Vietnam's small and medium-size cities[3] represent only 43% of the nation's urban population, however they contain 70% of the total urban poor.[4] In particular, ethnic minorities (15% of the population), face a growing gap relative to the majority population and now represent half of the poor.[5]

[1] Joint Monitoring Program Report (WHO/UNICEF, 2015).
[2] Class 4 and 5 in Vietnam's city classification.
[3] Class 3, 4 and 5 in Vietnam's city classification.
[4] Vietnam Poverty Assessment (World Bank, 2012)
[5] Vietnam 2035 Report (World Bank, 2016)

4. **Despite large investments in risk management, cities in Vietnam remain highly vulnerable to climate related hazards such as typhoons, floods, drought and saline intrusion, which are expected to become more frequent and intense with climate change**. Vietnam has been ranked among the five countries likely to be most affected by climate change[6], due to the concentration of a high proportion of its population and economic assets in vulnerable coastal lowlands and deltas, particularly in cities. It is estimated that Vietnam's average annual disaster related losses are approximately US$2.4 billion, or almost 1.5% of GDP[7], and could climb to 4% in the event of a major disaster. The growth of greenhouse gas emissions in Vietnam is the fastest in the region, while the environmental quality of its air, land, and water has deteriorated considerably. The poor, the elderly and people with disabilities are especially vulnerable to climate change and hydro-metrological disasters, given the rapid increase in the elderly population[8] and the relatively high proportion of people living with disabilities in Vietnam.[9]

5. **The Mekong Delta is particularly vulnerable to climate change and hydro-metrological disasters**, which have significantly impacted the socioeconomic development of the region whose economy relies largely on aquaculture and agriculture. Approximately half of the Delta is flooded to a depth 1 to 3 m annually, and the situation is being further exacerbated by sea-level rise and land subsidence. Although there is a considerable amount of uncertainly in the future climate scenarios for the Mekong Delta Region, sea level rise of between 0.2 and 0.6 m and an increase in rainfall of up to 20% are expected by 2050 and will further increase flood levels[10]. Coastal erosion and saline intrusion leading to the contamination of drinking water, are other issues that are likely to increasingly impact the Mekong Delta in the future.

Sectoral and Institutional Context

6. **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% of the population in 2017) compared to most countries in the East Asia region, but its urban population has grown steadily at 3.4 percent a year since the late 1980s, from fewer than 13 million urban residents 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.[11]

7. **Notwithstanding the impressive social and economic outcomes brought about by urbanization, there are signs that Vietnam's current urbanization model is losing momentum**. A notable characteristic of urban development in Vietnam has been the low and stagnant levels of urban density, with industrial zones developed ahead of demand and a proliferation of small, fragmented and poorly connected urban centers. A focus on rapid industrial development, a lack of integrated planning and competition among provinces, has led to the land area allocated for industries and urban areas increasing in an unplanned manner, often at the expense of highly fertile agricultural land[12]. Between 2000 and 2015, urban density remained at 18.9 residents per hectare, while urban land expanded by over 650,000 hectares[13]. This development pattern is largely driven by cities' desire to generate more land related revenues and move up the government's urban

[6] Vietnam: Climate Risk Country Profile (World Bank and Asian Development Bank, 2018).
[7] UNISDR (2014) PreventionWeb. https://www.preventionweb.net/countries.
[8] 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 aged 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)
[9] Statistics show between 7.5 to 15 per cent of Vietnamese people are living with disabilities. Palmer M, Groce N, Mont D, Nguyen OH, Mitra S (2015) The Economic Lives of People with Disabilities in Vietnam. PLoS ONE 10(7): e0133623.
[10] Mekong Delta Plan (Netherlands Advisory Team, 2013)
[11] Vietnam 2035 Report (World Bank 2016)
[12] Mekong Delta Plan (Netherlands Advisory Team, 2013)
[13] Vietnam 2035 Report (World Bank, 2016).

hierarchy[14], but also reflects the relatively weak institutions responsible for urban development and planning, especially in consideration of climate change and disaster risks. The resulting urban sprawl limits the quality of life and economic productivity of cities and increases the cost of infrastructure such as roads and drainage, as compared to a denser and more compact urban structure. The lower density urban structures also result in higher energy consumption producing high levels of pollution and GHG emissions that have direct impact on air quality and public health, including heat related morbidity and mortality. The World Bank's flagship Vietnam 2035: Towards Prosperity, Creativity, Equity and Democracy report emphasized the need to strengthen institutions for integrated urban planning, both functionally and spatially, to further enable agglomeration economies.

8. **Consistent with international experience, the National Master Plan envisages secondary cities as hubs to drive development** within larger urban areas and provinces, in order to develop a vibrant portfolio of towns and cities performing complementary functions. However, it remains a challenge for many secondary cities to provide basic infrastructure and services to improve people's living conditions and enhance climate resilience. Lack of proper wastewater collection and treatment has led to water pollution of local rivers and canals. Inadequate urban flood protection has left many cities more vulnerable to flood risks. Low quality of transport network imposes higher logistic cost for enterprises and impedes labor mobility. The World Bank's latest report on urbanization in Vietnam[15] recommends that, to sustain Vietnam's long-term growth, a more explicit policy emphasis must be placed on exploiting the potential agglomeration economies of Vietnam's leading urban areas as well as secondary urban centers, through improving infrastructure quality and integration with the surrounding regions.

9. **The Mekong Delta Region (MDR), the agricultural base of Vietnam, is one of the most densely populated regions outside the metropolitan regions of Hanoi and HCMC**. The MDR covers an area of 40,604.7 km^2, with a population of 17,590,400 (2015), accounting for 13 % and 19% of the country respectively. The Mekong River discharges both into the East Sea and through a network of canals, into the Gulf of Thailand or West Sea. The availability of fresh water and the highly fertile soils enables highly productive agriculture and fishery to take place. The MDR is therefore a key economic region, accounting for 95% of the nation's rice for export, 65% of its aquatic output and 70% of fruit production[16]. Cities in the MDR had average annual economic growth rates of between 13 % and 20 % from 2006 to 2010. Despite these impressive economic growth rates, the MDR cities are typically small or medium in size with limited fiscal resources and relatively high poverty rates. MDR cities have struggled to keep up with the demographic and socioeconomic demands brought about by urbanization. Access to basic services, such as sanitation, drainage and quality water supply, remains as low as 15% in MDR cities, as compared to 80% in large cities such as HCMC and Hanoi. Only 7.6% of cities have appropriate wastewater collection and treatment systems, with the majority lacking any systems.[17] In 2016, between 14% and 30% of the population in the MDR cities consisted of low-income households, including a large proportion of ethnic groups and people with disabilities[18]. Most MDR cities frequently suffer from flooding and other negative climate change impacts because of their low elevation and infrastructure deficits.

10. **The Prime Minister's Decision 68 / QD-TTG of January 15, 2018 on Adjustment of Mekong Delta Region Master Plan up to 2030 with a vision to 2050**, has the following objectives: i) development the Mekong Delta region towards green growth, sustainability and climate change resilience so as to play an important role the nation and Southeast Asia region; ii) development the Mekong Delta region to become a national key area for agricultural production, fishing

[14] 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.
[15] Vietnam Urbanization ASA (2019)
[16] Climate Resilience in Vietnam: An Assessment in Metropolitan Regions (GIZ, 2019)
[17] Vietnam Urbanization Review (World Bank, 2011)
[18] More than 20% of Vietnamese households with people with disabilities are concentrated in Mekong Delta Region, where the proportion of households with people with disabilities is as high as 20%, one of the highest ratios among the six regions (only second to the North and Central Coast. Vietnam National Survey on People with Disabilities, 2016

and aquaculture; sea economy development, river and landscape eco-tourism; and iii) development of regional space with synchronous technical and social infrastructure systems, typical of the Mekong Delta region, for economic development, quality of life, and environmental protection. The revised plan also highlights the important role of the three cities of Rach Gia, Ca Mau and Tra Vinh, as key urban areas of the coastal sub-region.

11. **Ca Mau, Rach Gia and Tra Vinh cities are economic centers in the Mekong Delta Region's industrialization corridor in the coastal zone**. Ca Mau and Tra Vinh cities are located on the banks of the Ganh Hao and Co Chien rivers respectively and Rach Gia is located on the West coast. The three cities are provincial capitals and are also economic hubs for trade, services, and industry in the MDR. Their economies are heavily reliant on revenues from agri-processing industries and the production of agricultural and aquaculture inputs such as fertilizers, pesticides and fish feed, as well as related equipment and machinery industries, tourism and national energy and petroleum services. The populations of the three cities range from approximately 110,000 to 225,000 people. The cities have had average annual GDP growth rates of between 11% and 20% (2015 - 2018). Further socio-economic data is shown in Table 1 below.

Table 1: Socio-economic data in the three cities

	Ca Mau	Rach Gia	Tra Vinh
Population	226,843	227,527	111,978
Area (km^2)	249	115	68
Overall population density (persons/ km^2)	911	1,978	1,646
Average annual GDP growth rate (2015 - 2018)	11%	20%	17%
Economic structure			
Services	59%	78%	52%
Industry/construction	36%	15.5%	45%
Agriculture, forestry and fisheries	5%	6.5%	2%
Percentage of Ethnic Minorities	4%	8%	19%

12. **A key aspect to foster agglomeration economy in the three cities is to improve intra- and inter-city connectivity to bring closer people and jobs, as well as enterprises and markets.**
Mekong Delta region is not currently realizing its huge potential for economic development. One of the key barriers to development of the MDR, is the transportation infrastructure which lacks adequate investment. Tra Vinh, Rach Gia and Ca Mau are all young cities developed from former old towns. The transport system connecting these cities with the surrounding area and with other major economic centers in the region, is poor, discouraging investment by businesses/enterprises. Moreover, since these cities do not have large ports, the goods have to move to/from HCMC and other provinces, mainly by road. The road system in the Mekong Delta cities, including in the three cities targeted by this project, is not clearly classified and includes the following typical phenomena: internal roads especially in the newly developed resident areas are too big, while many urban arterials and regional roads are too small. Poorly sized roads encourages an increase in car ownership, creating more congestion. In many cases, the width of individual roads is not consistent, resulting in unsafe and inconvenient travel. Many main roads are disconnected because of gaps within the roads and with other roads. Road density is also a problem, the urban road network is often too sparse in some areas and too dense in other areas. The current urban road designs only focus on the width and materials of the road surface, while other important aspects such as pavement, trees, drainage, separation, signalling, lights, etc. relating not only to the landscape and environment, but also to safety, are inadequately addressed. In addition, similar to other cities in Vietnam, national roads normally run through the cities' centers and act as both urban arterials and national roads. This results in large volumes of truck traffic in the city core, leading to traffic congestion, road accidents and air pollution. Unplanned development and climate change has led to the roads in the three cities becoming vulnerable to disruptions caused by seasonal flooding. In order to achieve the development objectives stipulated in the Mekong Delta Region Master Plan up to 2030 with a vision to 2050, the transport system needs to be developed in integration with other specialized plans and according to the general construction plan. The three cities require sustainable and integrated urban transportation systems connecting waterways and roads within the cities and with the wider region. The transport systems should include static transport, transport hubs, and transport network densities which comply

with current regulations and standards, including the ratio between road length and urban land.

13. **Climate change has been identified as a major challenge to the urban development of the three cities and their role as engines of economic growth.** Despite steady economic growth, all three cities have fragile economies that are being adversely impacted to varying degrees by climate related events including flooding, sea level rise, saline intrusion, droughts and typhoons. Rach Gia is also being negatively affected by coastal erosion. Salinity, exacerbated by sea level rise, intrudes inland from 20–65 km from the coast, affecting approximately 500,000 ha of land during the dry season. The increase in salinity affects groundwater aquifers and has an impact on drinking water quality for more than 500,000 people in the Mekong[19]. Flooding in the three cities is further exacerbated by land subsidence due to aquifer compaction, largely caused by over extraction of groundwater. A recent study showed that many areas are sinking at a rate of between 1-3 cm per year and a large part of the delta has sunk between 25-35 cm in the past 25 years[20]. Ca Mau is particularly severely affected with average vertical subsidence displacement rates of 2 – 3 cm / year[21]. Given the increasing trends in groundwater demand in the delta, the current subsidence rates are likely to increase in the near future[22]. By mid-century, portions of the Mekong Delta are likely to experience 1 m (0.42–1.54 m) of additional inundation hazard due to land subsidence, loss of mangroves and land-use changes. As a result, the MDR will become more vulnerable to coastal flooding, affecting both the population and infrastructure located in the three cities.

14. **Inadequate and poorly maintained drainage combined with a lack of wastewater collection and treatment, results in unsanitary conditions and environmental pollution.** The three cities suffer from water and environmental pollution resulting from limited drainage capacity and a lack of wastewater collection and treatment. This pollution, exacerbated by the impacts of flooding, represents a serious public health risk. Canal networks, particularly in Ca Mau, suffer from issues of sedimentation, solid waste dumping and surface water encroachment as a result of unplanned urbanization, significantly reducing the capacity of the city's drainage system. Untreated wastewater discharge from both domestic as well as industrial clusters, leads to high pollution loads in waterways. Untreated industrial wastewater is particularly problematic in Vietnam and the MDR. In some provinces, only 15-20 % of industrial clusters have Centralized Effluent Treatment Plants (CETP). Where CETPs are installed, they are frequently not put into operation in order to save cost. Those CETPs that are operational, are reported to have limited treatment capacity, and are often unable to meet the treatment demands from enterprises in the industrial clusters.

15. **Integrated flood and environmental management entails deploying a mix of structural and non-structural measures, including flood mitigation infrastructure, nature-based solutions, awareness and information, emergency management, land use planning and development control**. The current grey infrastructure solutions in the three cities result in increased stormwater runoff, fast discharge of flood water, and a lack of infiltration, exacerbating localized flooding. The extensive use of concrete, the felling of trees, and the extension and widening of the roads, increases both the urban heat island and greenhouse gas emissions (GHGs). Various green, environmentally friendly nature-based solutions, such as retention and detention ponds, water absorbing landscapes, bio-engineering methods to create more natural embankments in order to reduce erosion etc., can complement these engineering measures. In order to apply these nature-based approaches, the cities' staff capacity in green infrastructure and bioengineering solutions, needs to be strengthened. Together with wastewater collection and treatment to improve water quality, these measures will reduce the rate and volume of stormwater runoff, flooding, heat and GHGs emissions; and increase urban livability, resilience and attractiveness of the three cities.

16. **Effective management of flood risk and environment also requires an integrated and cross-sectoral approach, in particular close coordination among several government agencies that have overlapping mandates and**

[19] Climate Resilience in Vietnam: An Assessment in Metropolitan Regions (GIZ, 2018)
[20] Utrech University website (2017) article from the Urbanizing Deltas of the World programme dated 1st June 2017
[21] EMSN-057: Ground subsidence analyses, Mekong Delta, Vietnam Final Report (GIZ, 2018)
[22] Minderhoud, P.S.J.; Erkens, G.; Pham, V.H.; Bui, V.T.; Erban, L.; Kooi, H.; Stouthamer, E. Impacts of 25 years of groundwater extraction on subsidence in the Mekong delta, Vietnam. Environ. Res. Lett. 2017.

authorities in flood risk management. In the three provinces, the Departments of Agriculture and Rural Development (DARD) are responsible for irrigation and flood management; the Departments of Construction (DOC) are responsible for urban planning and construction management, while maintenance may be outsourced to private companies; the Departments of Transport (DOT) are 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; and the DONREs are 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 of these fragmented institutional structures and consolidate the operations and maintenance strategy as part of an integrated flood management system. The cities have limited capacity for monitoring flood and water related hazards, salinity and erosion. This capacity needs to be strengthened in coordination with the Vietnam Meteorological and Hydrological agency and its regional offices.

17. **The Government of Vietnam (GoV) adopted Resolution No. 120[23] in 2017 on Sustainable and Climate-Resilient Development of the Mekong Delta, which sets out the guidance for the future development of the Mekong Delta**. It highlights the importance of "nature-based adaptation, environmentally sound and sustainable development, on the basis of actively living with flooding". It also proposes 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 multi-sectoral integrated planning approach at the national, regional and provincial levels. Linked to this, the Ministry of Planning and Investment (MPI) is preparing a Mekong Delta comprehensive development plan for climate change adaptation and socio-economic development. This plan will guide development planning for the 13 MDR provinces.

18. **Due to the exponential growth of technology advances and their increasing accessibility and affordability**, **cities globally are increasingly tapping into information and communication technologies (ICT) to improve the efficiency, effectiveness, and adaptability of their physical, social, institutional and economic infrastructure.** There are many smart city solutions globally that Vietnamese cities can learn from in order to improve their sustainability and resilience, including those aimed at increasing citizen participation. In 2018, the Prime Minister issued a decision to approve the scheme for *"Development of sustainable smart cities in Vietnam in the period of 2018-2025, vision to 2030",* which identifies the Mekong Delta as one of the focus areas. The MOC is responsible for developing a smart city plan and the Ministry of Information and Communication (MOIC) released a decision on smart city ICT framework in May, 2019. There is a clear need to invest in smart ICT, and in particular, geospatial capabilities in the MDR cities. In order to improve integrated urban planning, cities should invest in GIS systems and skills and develop platforms for sharing data across urban sector agencies.

Relationship to CPF

19. **This operation is consistent with the World Bank Country Partnership Framework (CPF) for Vietnam 2018-2022[24], including support for two important higher-level objectives.** Firstly, the project will contribute to improved flood, drainage and connectivity infrastructure in the urban core areas of Ca Mau, Rach Gia and Tra Vinh cities, as well as enhancing urban management. This will directly contribute to the achievement of Objective 5 of the CPF to "improve planning, management, and delivery of infrastructure and land in cities". Secondly, the project will support the achievement of Objective 10 of the CPF to "increase climate resilience and strengthen disaster risk management" under the third focus area to "enhance environmental sustainability and resilience". The proposed project will support resilient urban infrastructure investments and provide technical assistance to improve: the urban and disaster risk management capacity of the three cities; communication and raising community awareness; and improving the efficiency of infrastructure services through leveraging smart city solutions. The proposed project is fully aligned with the Bank's Twin Goals of eliminating extreme poverty and boosting shared prosperity by supporting the three cities in increasing access to improved basic services

[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.
[24] Country Partnership Framework for the Socialist Republic of Vietnam for the Period FY18-FY22 (World Bank 2017, Report No. 111771-VN).

for the bottom 40% of the population, removing infrastructure constraints, improving connectivity and access to jobs for both male and female members of local communities.

20. **The Mekong Urban Climate Resilience Development Project is in line with the World Bank's new generation of urban interventions in Vietnam centered around a multi-sectoral approach to improve access to urban services and resilience**. The project will build on the lessons and experiences of the Bank's previous and ongoing interventions in the MDR and other countries, and will be guided by the following principles: a) leveraging accessible and affordable new technologies for better managing risk, with a focus on incorporating flood risk assessment in planning, strengthening operation and maintenance, sharing of information across administrative units, and community participation; b) integrating remedial and preventive measures to increase connectivity and guide future urban development in low risk areas, while improving the living conditions of the urban core; c) harmonizing nature-based solutions with gray infrastructure design to increase adaptability and reduce the life cycle costs of operation and maintenance; and d) enhancing the quality of infrastructure with consideration of climate change and the needs of diverse populations including women, ethnic groups, elderly and the disabled.

C. Proposed Development Objective(s)

To improve access to infrastructure, connectivity and to enhance flood and environmental management in selected cities of the Mekong Delta in Vietnam

Key Results (From PCN)

21. The PDO outcome indicators are:

Table 1. PDO Outcome Indicators

PDO Outcome	Outcome indicator
Improved access to infrastructure	• People provided with access to new or improved drainage and sewage services (total number, percentage of which female) • Users satisfied with the new or improved drainage and sewage services (percentage, percentage of which female) • People living in the urban area protected by improved flood mitigation infrastructure (number, percentage of which female)[25]
Improved connectivity	• People with access to new or improved roads (number, percentage of which female) [26] • Reduction in travel time on new or improved roads[27]

[25] This indicator is defined as the number of people who used to be threatened by flood risks, and who are now protected by improved flood mitigation infrastructure built under the project. The number of people is defined by the flood risk maps generated through the hydraulic model, using population numbers from surveys or statistical data, and assuming infrastructure designed to protect against flooding associated with 10-year return period local rainfall flood for urban drainage works (in Tra Vinh, Ca Mau and Rach Gia) and 100-year return period riverine flood for river flood protection works (in Tra Vinh).
[26] This indicator calculates the number of beneficiaries living within 500 m along the new or improved roads as well as those traveling on these roads.
[27] This indicator is defined as the reduction in travel time by percentage.

Enhanced flood and environmental management	• People benefitting from improved flood and environmental management (number, percentage of which female)[28] • The reduction in time spent by local women and men on unpaid clean-up work after a flood, as a result of the improved flood mitigation infrastructure in the three cities • Geospatial data being used by the three cities for improved urban management

D. Concept Description

22. **The proposed project focuses on investments to unlock the development potential of the urban cores of Ca Mau, Rach Gia and Tra Vinh cities and promote a more compact development pattern**. The three cities have been identified as key hot spots in the Mekong Delta region for climate change and water related disasters, including coastal erosion, landslides, flooding, subsidence and saline intrusion. Poor connectivity is also a significant challenge, which forms a barrier to spatial integration and development of the cities. Improving the management of flooding and other water related risks as well as intra-urban connectivity are expected to promote the economic and demographic densification of these cities and enable them to function as economically and physically integrated metropolitan areas.

23. A comprehensive set of structural and non-structural measures will be introduced including green climate resilient infrastructure and flood control solutions that mitigate flooding, while simultaneously addressing environmental pollution, land subsidence and salinity through ground water recharge and other water quality improvement measures. The operation will also focus on investments in strategic roads and bridges to improve intra-urban connectivity, especially access to centers of employment, and to guide urban growth to areas with lower risk. Increased demand for land along transport corridors will also create an opportunity for the local governments in the cities to capture some of the associated land value increase. Citizens and community organizations will be engaged throughout the project preparation and implementation process in order to raise their awareness about flood risks and enhance their ownership of the project. Urban management in the three cities will be improved in order to strengthen the efficient operation and maintenance of infrastructure and enable the cities to become more interconnected, livable and resilient to disasters.

24. **The project will enhance and leverage prior and ongoing World Bank financed projects.** The operation will build on the recently completed World Bank financed Mekong Delta Region Urban Upgrading Project (MDR-UUP) (2012 to 2017), which invested in tertiary infrastructure upgrading in Low Income Areas (LIAs), including in the three cities under this proposed operation. The MDR-UUP also financed key transport links to connect LIAs to primary road network and dredging of heavily polluted canals adjacent to LIAs. Design Guidelines on Green Infrastructure and Universal Access developed under the ongoing Scaling Up Urban Upgrading Project (2017-2023) will be systematically applied in this project. Complementarity with other ongoing World Bank financed projects will be leveraged, including: The Vietnam Improved Land Governance and Database Project (VILG) (2016 to 2021) which is improving the efficiency and transparency of land administration services in 33 provinces including Kien Giang and Tra Vinh, through the development and implementation of the national Multipurpose Land Information System (MPLIS); the Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods Project (2016 to 2022) which focuses on control of salinity intrusion and aquaculture in rural areas in 9 provinces in the Mekong Delta, including the provinces targeted by the proposed project.

[28] This indicator will include those protected by investments under component 1.

25. The project will build on the assistance being provided by other donors to the three cities. GIZ is supporting Ca Mau and Rach Gia through phase 2 of the Mekong Urban Flood Resilience and Drainage Programme (closing in December 2019). The GIZ programme seeks to address flood risk reduction, planning and resilience, including improving hydraulic modeling, updating Digital Elevation Models, providing training on flood early warning systems and developing drainage master plans (not yet approved by the provinces). In addition, GIZ have piloted innovative approaches to sustainable urban drainage systems in roundabouts (Ca Mau) and sidewalks (Rach Gia). These pilots are highly relevant to the proposed project and the project design will build on these studies. GIZ has also supported a land subsidence study that is being used to inform the development of the project and has provided support to improve planning and monitoring capacity in Ca Mau and Rach Gia. In addition to GIZ, there are some additional supports from other donors:

- In Tra Vinh, KfW has funded the construction of a WWTP and a primary sewage network to be commissioned shortly. The proposed project will expand on the achievements of the KfW project through construction of the secondary and tertiary sewage network in Tra Vinh's urban core.
- In Ca Mau, funding from the Italian ODA has been secured for an environmental sanitation project covering construction and rehabilitation of the wastewater network and construction of a wastewater treatment plant with capacity of 8,000 m3/day, as well as provision of equipment and technical assistance to the Project Management Unit. The project has already been approved but not yet implemented, mainly due to lack of counterpart funds.
- Rach Gia province is discussing funding for the construction of two WWTPs for the city with a combined capacity of 25,000m3/day and drainage/sewage network project covering three urban communes (not overlapping with the proposed Bank financed project) with DANIDA. The project is awaiting approval and funding. Rach Gia has also received support from the Republic of Korea for technical assistance in green urban planning (completed in 2018), which is closely linked to the proposed project.
- Despite these complimentary project investments, there is a clear need for a transformative operation for the three cities, similar to the ongoing Vietnam Scaling Up Urban Upgrading Project (SUUP) (2017 to 2023)[29].

Project Components

26. The project is organized around four components:

Component 1: Environmental improvement and flood risk management (WB Loan: US$ 67.5 million)

27. The objective of this component is to improve environmental sanitation and enhance flood risk management in the urban cores of the participating cities. The investments include: (i) upgrading and constructing drainage and sewer systems, dredging inner city canals and rehabilitating detention lakes; and (ii) developing information systems to support integrated flood risk management.

28. The investments proposed by the participating cities are in line with the approved cities' master plans. They follow no-regret investment principles and prioritize green infrastructure approaches rather than traditional grey structures, in order to increase the cities' climate change resilience capacities for sustainable urban development. Design of this component will be based on an assessment of the flood risks, including flood hazard and the vulnerability of the affected community. Non-structural measures will focus on putting in place effective mechanisms for institutional coordination, integrating flood risk analysis in urban planning and management, and improving operation and management (O&M). In addition, the design of infrastructure will factor in access to services for women and men and universal design[30] considerations. The protection of land from flooding under this component, is expected to create an opportunity for the local government in these cities to capture some of the associated land value increase accrued to the private sector. The reduction in flood-related risk in the urban core of the cities, is expected to result in a reduced housework burden for local women and girls, freeing up their time

[29] The SUUP is scaling up the MDR UUP operation in order to improve access to infrastructure in priority city areas and improve urban planning in Bac Lieu, Ben Tre, Long Xuyen, Soc Trang, Tan An, Vi Thanh and Vinh Long, in the Mekong region
[30] Universal design refers to measures to ensure universal accessibility, for example for older people and people with disabilities.

to participate in education and income generating activities.

29. *Sub-component 1.1: Environmental improvement and flood mitigation.* Under this sub-component, measures will be taken to improve tidal and stormwater flooding in the three cities. The approaches taken to flood mitigation will also assist in groundwater recharge, in order to combat subsidence and saline intrusion. Investments will finance structural measures that improve the *pathways*[31] of floods, by dredging and improving canals. Flood *receptors* will be protected by upgrading and constructing road drainage systems and building flood control infrastructure such as sluice gates, in order to prevent tidal flooding and salt water intrusion. The *sources* of flooding will be controlled through investments in Sustainable Urban Drainage Systems (SUDS), flood retention and detention through rainfall capture, dredging and improvement of lakes and runoff control. Green, nature-based solutions are proposed to reduce runoff, minimize flooding and encourage groundwater recharge such as water absorbent landscape, pervious pavement, detention and retention ponds; while bio-engineering methods are proposed as more natural ways to stabilize canal embankments using soil bags, gabions, erosion control blankets, geogrids etc. These solutions will be incorporated to reduce the burden and associated cost of the gray infrastructure. The designs of drainage infrastructure will take into account climate change scenarios produced by MONRE. Hydraulic models developed through the technical assistance provided by GIZ to Ca Mau and Rach Gia cities and the existing hydraulic model for Tra Vinh city, will be used and updated as appropriate for the pre-feasibility and the feasibility studies in order to assess flood risk and design options.

30. In addition to the investments in flood mitigation, this sub-component will include construction and upgrading of drainage and sewage networks in the urban areas of the participating cities and improved environmental monitoring, particularly for water quality, using specific smart city applications. In the urban core area of Tra Vinh, the existing secondary and tertiary drainage and sewage network will be rehabilitated, expanded and connected to the existing primary network, including the construction of wastewater pumping systems. Wastewater will be collected and transported for treatment at the recently constructed wastewater treatment plant financed by KfW, prior to discharging into local water bodies. In Rach Gia, a small wastewater treatment facility, with a capacity of less than 5000 m3/day will be constructed in a newly developed industrial cluster. The facility will treat industrial wastewater from over 80 polluting factories[32] that the city is planning to relocate to the cluster from their current locations along rivers and canals across the city, reducing the discharge of untreated industrial wastewater. The investments in environmental improvement under this subcomponent will contribute to improve water and overall environmental quality for the cities and create attractive public spaces.

31. In the interest of maximizing the available finance for development, the project will explore options for increased private sector participation through partial financing of infrastructure and operations by private operators. Furthermore, through investments in critical infrastructure such as urban drainage and flood protection, there are expected to be spillover benefits into investments in industrial zones and tourist attractions, that will lead to further private investment in the city.

32. *Sub-component 1.2: Development and operation of an integrated flood risk management system in the three cities.* Currently, there is considerable fragmentation and overlap in flood risk management responsibilities among key agencies in Ca Mau, Rach Gia and Tra Vinh. This lack of clarity reduces effectiveness in planning, implementation and operation of the flood related infrastructure in each of the three cities. There is also a lack of investment in infrastructure maintenance, which is critical in order to reduce vulnerability to disasters and climate risks, to reduce contingent liability and to ensure sustainable economic growth. Improvement to the flood risk management system will enable the cities to: i) define clear roles and responsibilities of key agencies, including DARD, DoC and Water Supply and Drainage Companies, in the operation and management of the city flood control and drainage system; ii) install a SCADA system in the flood mitigation structures including devices such as remote surface and groundwater level sensors, flow gauges, rain fall recording stations,

[31] The 'source-pathway-receptor' model is a useful tool to help understand flooding risk and flood mechanisms. The flood sources include water from rivers and the sea, as well as groundwater and direct rainfall. The pathways consist of overtopping of flood defences, seepage through dikes, rising groundwater. While receptors are the people, property, infrastructure and urban developments in the flood plains. Fluvial Design Guide, Environment Agency, UK, FO Ogunyoye, J JH Flikweert, no date) http://evidence.environment-agency.gov.uk/FCERM/en/FluvialDesignGuide.aspx

[32] Factories include ship building, wood processing, construction materials production and seafood processing

hardware and software for internal and external data processing and operation of sluice gates; iii) develop an operation & maintenance (O&M) strategy and framework, and equip the three cities with the necessary equipment and information management systems for O&M of the flood risk management systems; and iv) develop an improved early warning information system, building on the hydraulic modeling financed by GIZ in Ca Mau and Rach Gia, as well as conduct public awareness raising through existing mass media and organizations

Component 2: Urban corridor development (WB Loan: US$ 89.0 million)

33. This component will finance investments to rehabilitate and construct approximately 37 km of urban roads and bridges across the three cities in accordance with the approved Master Plans, in order to increase intra-city connectivity and align with the regional and inter-regional transport network. These investments include important vertical and horizontal links in the urban road network to improve connectivity between the urban center and industrial area and guide more resilient and compact urban development to less flood prone areas, as well as bypass to national roads to divert inter-city traffic away from going through the cities to improve traffic safety and reduce congestion. Connectivity in project cities will be significantly improved, thus increasing transport-related efficiencies, reducing transport costs and providing better and safer access for residents to jobs, education, healthcare and other services. Land values and investment opportunities along transport corridors are expected to increase as a result of the investments, which is value-creation that the cities can capture using a variety of mechanisms and convert into public revenue.

34. The project will also promote non-motorized transport options as well as consider the future creation of urban public transport networks in the design of main roads that orients the development of compact cites to ensure better access to services and facilities via public transport, walking, and cycling, and more efficient utility and infrastructure provision. The road width will be based on sound analyses of travel and traffic demand and approved masterplans. Traffic safety issues will be thoroughly reviewed and addressed, 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 informed by appropriate climate change scenarios, while the elevation of roads will take into account projected increases in seawater levels and land subsidence. The design will also incorporate nature-based solutions such as “green roads” comprising pervious pavement and water absorbing tree pits and landscape, as well as universal access criteria such as providing a network of accessible pedestrian routes, appropriate tactile pavement, improved sidewalk space and pedestrian crossings, creation of appropriate parking spaces for motorcycles to reduce the obstruction to pedestrians, and prioritizing pedestrian connections to major destinations such as schools, employment centers, markets and shopping areas and public transportation stops.

35. In addition to the investments in roads, component 2 will also improve traffic management and the integration of transport and flood management in the city, by: i) integrating transport data with the cities’ proposed geospatial data sharing platforms (to be supported under component 4), enabling travel demand analysis for transport planning and supporting improved operation and maintenance of connectivity infrastructure; ii) install traffic cameras and a vehicle weight control system within the city area; and iii) installing smart street lighting in order to improve safety at night, particularly for women.

Component 3: Resettlement Area Development (WB Loan: US$ 16.3 million)

36. The project will try to minimize resettlement impacts through adopting fit-for-purpose standards and appropriate designs, however, significant resettlement impacts are expected, particularly under the proposed flood control investments and environment improvement (i.e., drainage and sewage systems, industrial cluster) in Component 1 and the roads in Component 2. An estimated 735 households may have to be relocated under the project. Each city plans to develop a resettlement site (RS) with associated technical and social infrastructure to ensure improved living conditions and security of tenure for relocated households. The resettlement sites in the three cities will cover a total area of 46 hectares (Rach Gia: 10 ha, Tra Vinh: 10 ha, Ca Mau: 26 ha). The three proposed RS currently consist of mainly agricultural land and are in general well located with social infrastructures in close proximity. In Tra Vinh and Ca Mau, the proposed RS are an

extension of the RS developed under the MDR-UUP.

37. An investment for technical and social infrastructure at resettlement sites will be proposed, and will incorporate green and nature-based solutions, such as park connectors, water absorbing tree pits and landscapes, pervious pavements, stormwater detention ponds, raingardens, etc.

Component 4: Enhancing Climate Resilient Urban Management (WB Loan: US$ 3.9 million)

38. This component aims to improve urban management in a climate and risk informed manner and to set the stage for the development of Ca Mau, Rach Gia and Tra Vinh as smart cities. Through investments in data and ICT, the project will finance the development of a geospatial data sharing platform to improve data sharing across different departments. Component 4 will also support the development of specific smart phone applications to engage communities in order to improve service provision and raise awareness on climate resilience. In addition, project implementation support will be provided through this component.

- *Support the development of a geospatial data sharing platform and leverage ICT for improving urban management.* A geospatial data infrastructure that integrates spatial and non-spatial data is important for multi-dimensional assessments of climate resilience and serves as a foundation for creating applications for monitoring, evaluation and enforcement of plans. This activity will support the development of data sharing platforms for each of the three cities in order to integrate multiple data sources from different departments. Land, citizen and business registration data will be prioritized for inclusion in the data sharing platforms. The platforms will be used across line departments for spatial planning. Hosting will be provided by the People's Committee (PC) in the three cities, through coordination with DOIC, in order to ensure strong ownership of and commitment to the platforms by the PCs. In Rach Gia and Tra Vinh, the platforms will draw on the outputs of the ongoing VILG project. Proper institutional mechanisms and procedural guidelines for data sharing and updates will be developed and approved by the PCs, in order to regulate data sharing in each of the three cities, as well as to strengthen the capacity of the cities' staff to manage and use the data platform to support city planning and management functions. In addition, this activity will also pilot community-based initiatives using mobile applications to improve real-time disaster monitoring and management such as flood and erosion.

- *Project implementation support.* TA will be provided for: (i) the preparation of technical designs for infrastructure investments; (ii) independent monitoring of Environmental and Social Framework (ESF) standards; (iii) independent financial audits; and (iv) strengthening implementation capacity for project management, ESF standards, financial management, procurement, and monitoring and evaluation.

Project Beneficiaries

39. The project will directly and indirectly benefit a total of 268,750 people, including 58,300 in Ca Mau, 142,050 in Rach Gia and 68,400 in Tra Vinh cities. Residents will benefit from improved urban infrastructure that will reduce the risk of flooding and other water related risks, improve the environment, as well as improve connectivity through new and improved roads and bridges, linking industrial clusters and tourist attractions in the project cities. This will benefit the workers and business persons, as well as visitors traveling to and from the city. Provincial and city People's Committees also directly benefit from the technical assistance and capacity development activities for improved project management, geospatial data and information management, flood risk management and O&M.

Proposed Project Cost

40. The total project cost is US$ 274.5 million, of which US$ 202 million will be financed by the WB Loan. The remaining US$ 72.5 million will be financed through counterpart funds from the PPCs and the CPCs. The counterpart funds

will be used to finance land acquisition and compensation, technical assistance activities, project management, and other costs. The project cost by components is as follows:

Table 3: Proposed Project Cost (US$ million)

Item	Tra Vinh		Ca Mau		Rach Gia		LOAN		TOTAL
Loan	IBRD	CF	IBRD	CF	IBRD	CF	IBRD	CF	
Component 1	17.54	0	11.29	2.2	38.66	4.22	67.5	6.4	73.9
Component 2	25.38	0	21.8	8.6	41.12	8.41	89	17	106
Component 3	3.48	10.9	9.65	5.3	3.18	1.02	16.3	17	33.3
Component 4	1.75	2.2	1.02	0.55	1.07	0	3.9	2.8	6.7
Other costs and contingency									
Taxes, interest, fees	0	5.04	0	4.38	0	15.58	25.3	29.3	54.6
Contingency	7.22	2.72	6.56	2.49	12.6	3.49			
Sub-total	**55.37**	**20.86**	**50.32**	**19.12**	**96.63**	**32.72**	**202**	**72.5**	
TOTAL	**76.21**		**69.45**		**129.35**		**274.5**		

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

Summary of Screening of Environmental and Social Risks and Impacts

41. As part of environmental and social screening, the team has reviewed the project concept note, experience of relevant projects, related laws and regulations including Law on Environmental Projection, Land Law, Labor code. The project is expected to bring about significant positive impacts for improving cities drainage and environmental sanitation with an outcome of better health of the population. The project environmental risks and impacts mainly relate to the implementation and operation of the investments under Component 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; localized flooding, disturbance to the traffic, and traffic safety issues; interruptions to public utilities services; loss of trees and vegetation cover. Most of these are risks and impacts are temporary, at low to moderate level and reversible. 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; damages to existing weak structures and local houses due to dredging or piling; pollution of soils and surface water from improper handling, storage and disposal of dredged materials, nuisance and visual impacts. The main risks and impacts during operation would be 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, change drainage patterns, or 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 the existing urban zone. The main social risks and impacts for the project may relate to land acquisition and resettlement for establishing facilities/structures for the project and the temporary impacts on livelihoods. Possible impacts on ethnic minorities may be expected. In addition, there are potential adverse health and safety impacts on workers and communities.

42. The relevance of the ESSs to the project has also been assessed and include ESS1 through ESS8 and ESS10. The

Bank Policy on Projects on International Waterways is triggered, while the policy on Projects in Disputed Areas is not triggered for the project.

43. Prior to Bank Board Approval of the project, the Borrower will: 1) Complete a draft Environmental and Social Commitment Plan (ESCP), with specific requirements for each city; 2) Complete a draft Stakeholder Engagement Plan (SEP) for each city; 3) Complete a draft RPF (based on the RPF prepared under the MDR-UUP); 4) Complete a draft EMPF (based on the EMPF prepared under the SUUP); 5) Complete a draft ESIA/ESMP for each city; 6) Complete a draft Labor Management Procedures (LMP) for each city; 7) Complete a Due Diligence Review for area where land acquisition already took place in Tra Vinh and Ca Mau; 8) Confirmation on common approach for the assessment and management of environmental and social risks and impacts, if applicable; and 9) Prior to project Appraisal, the draft ESCP, ESIAs, SEPs, RPF, EMPF, LMPs will be disclosed in places accessible to the public to meet the requirements set out in ESS10.

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