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Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 12-May-2023 | Report No: PIDA36044

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Project Name	Parent Project ID (if any)
Ecuador	P181079	Ecuador: Emergency Resilient Reconstruction Project	
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
LATIN AMERICA AND CARIBBEAN	03-May-2023	09-Jun-2023	Transport
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Ecuador	Ministerio de Transporte y Obras Públicas (MTOP)	

Proposed Development Objective(s)

The Project Development Objective (PDO) is to restore connectivity and improve infrastructure resilience and road safety in areas affected by Natural Hazards.

Components

Infrastructure Rehabilitation and Resilience Interventions
Project Management and Institutional strengthening

The processing of this project is applying the policy requirements exceptions for situations of urgent need of assistance or capacity constraints that are outlined in OP 10.00, paragraph 12.
Yes

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	150.00
Total Financing	150.00
of which IBRD/IDA	150.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	150.00

Environmental and Social Risk Classification

High

Decision

The review did authorize the team to appraise and negotiate

B. Introduction and Context

Country Context

1. **Ecuador is a resource-based upper-middle-income country taking steps to rebalance its economy after imbalances accumulated in the oil price boom.** Ecuador's state-led economic model applied during the oil boom allowed the economy to grow and reduce poverty but created substantial macroeconomic and structural imbalances that became evident once the oil price boom ended in 2014. With a fully dollarized economy, macroeconomic buffers and limited access to international capital markets, the country reduced the fiscal deficit from a peak of 9.7 percent of Gross Domestic Product (GDP) in 2016 to near balance in 2022 by rationalizing expenditure, increasing taxes to the better-off firms and people, and taking advantage of recovering oil prices. It also took steps to foster private investment by, for example, reducing trade barriers, advancing trade agreements, easing financial sector repression, and streamlining business regulation. Yet, despite restoring confidence in dollarization and macroeconomic stability, the partial reforms were insufficient to tackle long-lasting development challenges, including a rigid and costly labor market, low access to finance, limited international integration, a challenging business environment, high and regressive fuel subsidies, and uncertainty about future macroeconomic management.

2. **This rebalancing effort, however, has limited growth, also affected by a challenging external and domestic context, including Natural Hazards**. This transition dampened economic activity even before the COVID-19 pandemic, with GDP growth averaging only 0.5 percent between 2015 and 2019. With little scope for fiscal stimulus, the economy contracted by 7.8 percent in 2020 due to the pandemic and grew only by 4.2 and 2.8 percent in 2021 and 2022, respectively. The recovery was constrained not only by the ongoing consolidation process but also tightening international financial conditions and uncertainty generated by Russia’s invasion of Ukraine. On the domestic front, it was negatively affected by increasing uncertainty arising from recurrent waves of social unrest and political polarization and the sporadic disruption in oil production due to damages to pipelines caused by the regressive erosion in the Coca River's basin. Following these patterns, in early 2023, oil production was affected by new damage to the oil pipelines and protests by indigenous communities, and the coastal Guayas region was hit by a 6.8 earthquake, compounding the adverse effects of a heavy rain season. This challenging context not only prevented the country from restarting issuing sovereign bonds after the 2020 friendly renegotiation with international bondholders but also discouraged local and foreign private investment.

3. **Ecuador still needs significant reforms for sustainable, inclusive, green, and resilient growth**. Despite the fiscal balance reached in 2022, Ecuador still requires cementing a sustainable, inclusive, and resilient fiscal framework to reduce debt and build buffers to face the potential effect of compounded global crises and more natural disasters and advancing climate commitments. Despite its low per capita GHG emissions, Ecuador is committed to reaching carbon neutrality by 2050 by, for example, improving sustainable forest management, reducing gas flaring in the oil fields, and fostering private investment in non-conventional renewable energy generation. The country needs to enhance private investment and productivity to improve competitiveness and generate new growth engines and employment, as a decarbonizing world induces the country to move away from the oil sector. High informality and limited diversification result from an underdeveloped private sector linked to structural issues, such as the prevalence of protectionism, rigid labor markets, and distortive market regulation. Addressing these development challenges is critical to generate an economic base that, coupled with a more efficient public sector, could help improve service provision and support the most vulnerable population. Households have been affected by high levels of food insecurity and low access to education and health services since the onset of the pandemic, foreshadowing long-term impacts on human capital.

4. **Ecuador is a country highly exposed to Climate Change and Natural Hazards. Ecuador's economy and population are highly exposed to the impact of climate-related disasters, earthquakes, and volcanic risks.**[1] Ecuador is among the 10 countries with the highest Natural Hazard risk in the region and among the top 20 in the WorldRiskIndex 2022.[2] This is due to its exposure to geological and hydrometeorological hazards such as earthquakes, volcanic eruptions, floods, and droughts.[3] Moreover, most of the urban population, 96 percent, resides in coastal and mountainous areas, which further increases the country's vulnerability to phenomena such as El Niño, that can trigger floods and landslides, and La Niña, associated with increased droughts. With frequent climate extremes events adversely affecting both Ecuador’s population and economy, and with global climate change projected to intensify such events, Ecuador's vulnerability to Disasters is expected to rise in the future.

5. **Recent disasters have caused serious damage to critical public infrastructure and loss of lives and are expected to continue.** The earthquake on March 18, 2023, combined with the heavy rains of the winter season that resulted in widespread flooding, erosion, and landslides, have caused destruction and serious damage to critical transport infrastructure and loss of lives. The most recent government estimates indicate that more than 18,000 people were affected (17,491 people from the heavy rains and 1,107 from the earthquake), and 35 died (21 from the rains and 14 from the earthquake). At least 28 roads (including five bridges) were affected throughout the country, eight of which remain closed. The combination of those events epitomizes a broader vulnerability to natural disasters, first of which floods and heavy rains, that are the most frequent hazards. Over the last 35 years, they have accounted for 44 percent[4] of the hazards. In line with those long-term patterns, according to Ecuador’s National Institute of Meteorology and Hydrology

[1] Thinkhazard: https://thinkhazard.org/en/report/73-ecuador.
[2] https://weltrisikobericht.de/wp-content/uploads/2022/09/WorldRiskReport-2022_Online.pdf.
[3] Pan American Health Organization. 2021.
[4] Secretaría Nacional de Gestión de Riesgos del Ecuador. 2023.

(INAMHI), heavy rains have continued in April, with potential compounding effects on the recent events. Recent estimations have raised probability for El Niño phenomenon later this year to 62 percent.

6. **In response to the above events, the Ministry of Transport (MTOP) has declared emergencies in all affected areas, but struggles to shift from a reactive to a proactive disaster risk management strategy.** So far, MTOP has declared Emergencies in Pichincha, Esmeraldas, Santo Domingo, and Azuay provinces and is procuring studies under expedite national mechanisms to prepare the response. By using an asset management system, MTOP could minimize asset downtime, reduce maintenance costs, and improve the overall reliability and safety of its transportation systems. The Bank, through the Green, Safe and Efficient transport infrastructure in Ecuador (P179175) activity, is supporting MTOP in its efforts to improve road safety management and increase institutional capacity for different aspects of planning, prioritization, and tools to monitor and visualize risks. It is defining a prioritization methodology, a criticality analysis, and a tool for risk management and early alert. An asset management system for transport infrastructure is critical to ensure that assets are maintained effectively and efficiently, and to help them make informed decisions about their infrastructure investments.

7. **Ecuador experiences interrelated gender gaps including but not limited to education, employment, and decision-making.** In terms of education, although girls and boys have equal access to education, there is still a gender gap in terms of completion rates, quality, and type of education. Girls tend to drop out of school at higher rates than boys, particularly in rural areas. Additionally, among the people studying Science, Technology, Engineering and Mathematics (STEM) careers, fewer than 1 in 3 graduates in Ecuador are women, perpetuating employment segregation. In the workforce, women tend to be concentrated in low-paying jobs and have limited access to leadership positions where there is a significant gender pay gap, with women earning less than men for doing the same job. Women have additional barriers to their entrepreneurship. For instance, only 58 percent of women have access to a financial account compared to 71 percent of men. Women are 17 percentage points more likely than men to have vulnerable employment, represented by inadequate earnings and difficult conditions of work that undermine workers' rights, further complicating their health and safety.[5] In politics, women are underrepresented at all levels of government. Although the constitution establishes gender parity in political representation, women hold only a small percentage of political positions, particularly at the national level. Ecuador has taken steps to address these gender gaps, including passing laws to promote gender equality and establishing government institutions to address gender issues. However, there is still much work to be done to ensure that women have equal opportunities and rights in all aspects of life in Ecuador.

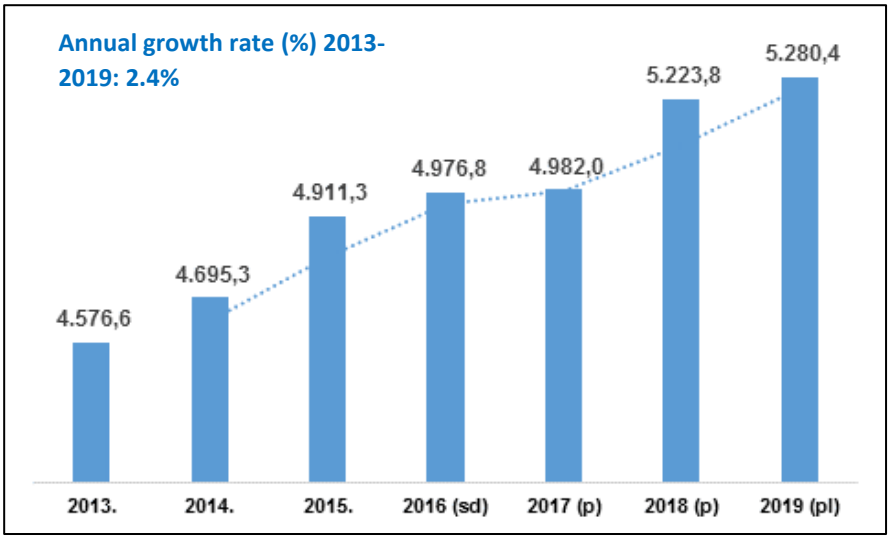
Sectoral and Institutional Context

8. **Transport is key for the development of the Ecuadorean economy.** In 2019, the sector contributed US$ 5.3 billion dollars (see Figure 1.1 below) which was equivalent to 7.3 percent of Ecuador's GDP. Construction represents 7 percent of the employment generation in the country, followed by trade and transport. At the basis of most economic and social interactions, transport infrastructure limitations challenge equality and access to opportunities: in Ecuador only 60 percent of the population lives in urban areas, but the Rural

[5] WB, Ecuador Gender Scorecard. 2023.

Accessibility Index (RAI) shows that only 52 percent of the rural population lives closer than 2 kilometers to a primary or secondary road. Similarly, the economy is impaired by inefficient transport systems.[6] Road safety is yet another challenge, and although crash rates are similar than in other countries in the region, mortality rates are higher in Ecuador.

Figure 1.1 GDP Transport 2013 – 2019 (US$, millions)



Source: Diagnostic of the transportation sector in Ecuador (World Bank, 2020).

9. **Transport is particularly vulnerable to natural and climate-driven disasters.** Losses of connectivity due to Natural Hazards represent an impact both for affected users and economic growth. Affected users see their access to social and economic opportunities impacted via increased transportation costs. Out of the total national road network, around 52 percent are in landslide-prone areas, jeopardizing the road network as a whole. Moreover, 66 percent are in areas vulnerable to seismic intensities that endanger the physical integrity of users and the functionality of the roads and related infrastructure (bridges and slopes). In addition, the road network is highly vulnerable to hydrometeorological hazards, considering that 46 percent of major roads are in flood-prone areas (450 kilometers in areas at high risk of flooding). The road network also faces risks from the presence of potentially active and erupting volcanoes. The country has 84 volcanic formations, of which nine could pose a volcanic hazard to the state road network. Approximately 476 kilometers (8.5 percent of the total) of main roads are in volcanic hazard zones: an area of 913.57 square kilometers has a high probability of being affected by mud and lahars from an eruption of Cotopaxi (including bridges connecting to Quito). Additionally, around 282 kilometers are exposed to risks from other potential volcanic activity.

[6] Matriz Insumo Producto Industria por Industria (MIP) Available at: https://contenido.bce.fin.ec/documentos/PublicacionesNotas/Catalogo/CuentasNacionales/Anuales/Dolares/MenuMatrizInsumoProducto.htm.

10. **MTOP has oversight of the sector**. The MTOP mandate covers the development and management of the national public infrastructure, a significant portion of which is related to transport infrastructures. It is in charge of the preparation, implementation, monitoring, and evaluation of public policy related to safe transportation services and infrastructure and sustainable public works. It has a decentralized structure with regional sub secretariats (7) and district directorates (23) who are responsible for implementing the established public policies. In recent years, MTOP has been transitioning from a model of direct administration, where it had a strong capacity to intervene and directly manage infrastructure projects, to a more managerial role where it focuses on planning and oversight. However, this transition poses challenges for MTOP in terms of planning, implementation, and resource allocation. Moreover, low allocation of budget to MTOP in recent years has led to limited capacity to maintain and rebuild the network in case of disasters. MTOP does not have an asset management system. The monitoring of road conditions is rudimentary, and the institution needs to strengthen capacity to transition from a reactive management system to a proactive asset and risk management system with early alerts. In addition, MTOP is responsible for road routine maintenance in publicly manage roads, both directly and through community managed microenterprises. Out of 431 units of MTOP´s heavy equipment only 150 (35 percent) are fully in operation. There are 95 operating with failures, 6 decommissioned, and 180 requiring repairs for operation. In the meantime, MTOP keeps operators for the whole fleet as staff. These operators cannot currently work due to lack of equipment.

11. **MTOP is updating the 2012 Mobility Strategy Plan (PEM in Spanish), which is the main strategy document for the transport sector.** The PEM is a technical document based on national policy that formulates a proposal for a new transportation system and promotes a change in the productive matrix. It entered into force in 2013 with an intervention planned for 25 years until 2037. The document defines its objectives, priorities, pace of action, and working methods, as well as the capabilities and resources of the transportation system that are necessary to achieve the proposed changes. The PEM relies on open data from the Geoportal, a central repository for geospatial data and information in Ecuador. The Geoportal enables users to access and download a variety of geospatial data, such as maps, aerial photographs, satellite images, and other geographic information. The platform also provides tools for analyzing and visualizing geospatial data. MTOP requires support to update and improve usability of the portal.

12. **The National Multimodal Transportation System (NMTS) has gradually deteriorated since 2015, a result of poor maintenance and lack of investment in both existing and new roads.** The NMTS includes 10,313 kilometers of roads, 21 operational airports, and four maritime ports, as well as 965.6 kilometers of deteriorating decommissioned rail network. In 2015, 71.3 percent of the road network was in good condition, 23.2 percent in regular condition, and 5.25 percent in bad condition. As of now, the condition of the national road network is alarming, with 63.4 percent of the roads falling below the acceptable level of quality. This represents a significant decline in road conditions over the past seven years, as the percentage of roads in good condition has decreased by 7.9 percent. During the same period, there has been a considerable increase in the percentage of roads in regular and bad condition, which have risen by 12.6 and 14.7 percent, respectively.[7] These figures demonstrate the ongoing deterioration of the country's road

[7] MTOP Geoportal. 2023.

infrastructure, which is closely correlated to the level of investment in the NMTS infrastructure and the little budget dedicated to maintenance. Furthermore, the terrain in Ecuador is complex due to its diverse geography, which includes coastal plains, Andean mountains, Amazon rainforest, and volcanic islands. About 76 percent of Ecuador's terrain is hilly or mountainous, higher than either of its neighboring countries.[8]

13. **The transport sector in Ecuador is the second biggest Global Greenhouse Gas (GHG) emitter, and the only one that is growing.** Despite accounting for only 0.20 percent of Global GHG emissions, Ecuador ranks as the 8th-largest emitter in Latin America. Moreover, the country's economic growth and its emissions have shown no signs of decoupling. Transport is, second to land-use change, the largest contributors to GHG emissions in Ecuador, and the only sector with an upward trend. Notably, the transport sector has experienced a significant increase in its share of emissions in the last decade, rising from 11.12 percent in 2009 to a share of 20.9 percent of all emissions in 2019. This increase alone has accounted for 57 percentage points of the total increase in GHG emissions in the country from 2013 to 2019. Transport emissions make up nearly a fifth of Ecuador's total GHG emissions and nearly half of the total final energy consumption.[9] One of the main contributing factors to this rise is the fact that the number of registered vehicles almost tripled in a decade, from 918,908 in 2008 to 2,403,651 in 2018. Moreover, these 2.4 million vehicles have an average age of 16 years, making it an old, polluting, and unsafe fleet.

14. **Ecuador suffers from a high rate of vehicle crashes, and the World Health Organization reports that road crash injuries are one of the leading causes of death.** Factors contributing to road safety issues include poor road infrastructure, inadequate vehicle maintenance, and reckless driving. In addition, driving conditions can be particularly challenging during the rainy season, when landslides and flooding can lead to road closures, delays, and hazards due to hydroplaning effects. Various efforts by government agencies and increased driver awareness and the traffic reduction during COVID pandemics have contributed to a decrease in the number of road accidents from 2017 to 2020. However, accidents are currently rising from previous years. According to the Road Safety Yearbook 2021 (GoE), 85 percent of fatalities are men, compared to 15 percent for women. Of the total number of deaths (around 2,000 deaths per year), the most affected group were between 20 and 29 years of age, which is considered a high productive age where many of them are heads of households. This translates into a social and economic problem for their family and environment. In August 2020, the United Nations General Assembly approved Resolution A/Res 74/299 establishing a Second Decade of Action for Road Safety with the goal of reducing road traffic deaths and injuries by 50 percent between 2021 and 2030.

15. **There is gender segregation in employment in the infrastructure and transport sectors.** Women's participation in transportation sector jobs is very low. Only seven percent of workers in the transport and storage sectors in Ecuador are women, and only four percent of workers in the construction sector are

[8] Briceño-Garmendia et al. 2015.

[9] Climate Watch Historical GHG Emissions. 2022. Washington, DC: World Resources Institute. Available online at: https://www.climatewatchdata.org/ghg-emissions. Notes: Totals excluding Bunker Fuels. Energy excludes transportation. For more information about the categories, see the Climate Watch Country Greenhouse Gas Emissions Data Method Note.

women.[10] Based on analysis conducted for women working in roads in a similar context in Latin America, women face barriers that hinder participation with recruitment (for example, lack of gender sensitive engagement and selection processes, job descriptions targeting men, gender stereotypes, lack of skills and access to training for the use of specialized equipment) and retention (for example, lack of flexible work policies, limited access to care options, sexual harassment in the workplace).[11]

16. **The proposed project will support the Government of Ecuador in responding to the March 2023 earthquake and the heavy rains of the 2022-2023 winter season, while supporting strategic initiatives to improve resilience.** The project includes interventions both to restore connectivity in areas impacted by Eligible Disasters, as well as to reduce vulnerability in areas subject to imminent risk to people, assets, or the environment. Moreover, the project will improve response capacity in MTOP both by providing financing to restore heavy equipment fleet, and capacity strengthening. Finally, all interventions will include activities to improve road safety and gender performance.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

17. **The Project Development Objective (PDO) is to restore connectivity and improve infrastructure resilience and road safety in areas affected by Natural Hazards.**

Key Results

18. **The PDO Level Indicators correspond to the three parts of the PDO:**
    - **(a) PDO 1: Restore connectivity in areas affected by Eligible Disasters**: (i) Average travel time in Intervened Areas; and (ii) People with enhanced access to transportation services.
    - **(b) PDO 2: Improve resilience:** (i) Number of beneficiaries with access to climate-resilient roads.
    - **(c) PDO 3: Improve road safety:** (i) Number of road traffic fatalities in Intervened Areas.

[10] ILOSTAT. 2021. https://www.ilo.org/shinyapps/bulkexplorer28/?lang=en&segment=indicator&id=SDG_0831_SEX_ECO_RT_A.
[11] Casabonne, Ursula, et al. 2015. Roads to Agency: Promoting Women's Participation in Rural Transport Projects, Washington: World Bank: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/666721468185041902/roads-to-agency-effects-of-enhancing-women-s-participation-in-rural-roads-projects-on-women-s-agency-a-comparative-assessment-of-rural-transport-projects-in-argentina-nicaragua-and-peru.

D. Project Description

Component 1: Infrastructure Recovery and Resilience Interventions (estimated total costs US$135 million)

19. **Framework approach for infrastructure interventions.** The project activities are defined under a framework approach. There is uncertainty about future emergent needs, as well as about existing emergencies that will be supported by the project (the Borrower may resort to national funds to intervene on any of them during preparation). In this scenario, the Project definition of infrastructure activities is based on eligibility. Positive eligibility criteria will be teleological: the activity fall under the description of Infrastructure Recovery and Resilience Interventions. The Project Operational Manual (POM) will include a process to identify Eligible Activities under Subcomponents 1.1 and 1.2 that comply with requirements regarding their scope as well as, environmental, social, and technical risks. The POM will clarify that any activities that involve the use or potential pollution of international waterways, i.e., river systems and connected aquifers, will not be eligible for Project financing.

20. **Subcomponent 1.1. Infrastructure Recovery.** This component includes Eligible Activities related to restoring connectivity lost by damages in transport infrastructure caused by an Eligible Disaster. This may include, among others, designs, works supervision, audits, project management, general civil works (construction, rehabilitation, or improvement), procurement or leasing of equipment, operators, consultancy services, Land Compensation Payments and any other investment directly linked to Infrastructure Recovery. All Infrastructure Recovery Interventions will address climate resilience including : (i) priorization based on climate and disaster resilience assessment, (ii) use of climate change projections for its engineering designs and (iii) inclusion of Resilience Interventions (as defined in the next paragraph). These activities will support both provisional solutions and activities for immediate emergency response, as well as definitive solutions to rebuild better. In the interventions to be financed for both construction and rehabilitation, MTOP will prioritize the implementation of mechanisms to ensure universal access for all beneficiaries, i.e., free access for people of all ages and abilities in different situations and in different circumstances. Through this subcomponent, the project will contribute to closing gender employment gaps in the construction sector by providing training opportunities for women in the operation of specialized equipment (for example, heavy machinery, vehicle drivers, and occupational health and safety) and provision of a certificate prior to the commencement of works. Unlike Component 2, training and community activities under this subcomponent will be specifically related to Eligible Activities implementation.

(a) An Eligible Disaster refers to an event—national or localized in scope—that affects transportation infrastructure and has occurred on or after 2022, for which one or more of the following have been issued by a competent authority:

i. Declaration of Emergency (*Declaratoria de Emergencia*)
ii. State of Emergency (*Estado de Excepción*)[12]

[12] According to the National Constitution (Article 164), the President of the Republic may decree a state of emergency in all or part of national territory in case of aggression, international, or internal armed conflict, serious internal commotion, public

21. **Subcomponent 1.2. Resilience Interventions.** This subcomponent will include Eligible Activities related to increasing the resilience of Highly Vulnerable Transport Infrastructure (HVTI) to Natural Hazards. This may include, among other, designs, works supervision, civil works, acquisition of equipment, consultancy services, or Land Compensation Payments. These activities will support interventions such as urgent rehabilitation of poorly maintained HVTI, mitigation of Natural Hazards[13] with a focus on climate resilience (for example, slope stabilization and revegetation, drainage, or increase in road elevation). In the case of standalone Resilience Interventions (that is, not linked to an Infrastructure Recovery Intervention under Subcomponent 1.1), the Borrower will prepare a technical justification providing evidence of HTVI for the purposes of assesing elegibility. The Project Operational Manual will define the process for this assessment.
    (a) Natural Hazards refer to:
        i. Geological hazards: extreme natural events originating in the Earth's crust, such as earthquakes, volcanic eruptions, tsunamis or tidal waves, and landslides (as a secondary event after an earthquake);
        ii. Hydrometeorological hazards[14]: natural events such as heavy rains, flooding, and rainfall triggered; and
        iii. Intensified El Niño phenomenon causing heavy rains, floods, storm surges, or rainfall triggered landslides.
    (b) HVTI refers to transport infrastructure that is exposed to Natural Hazards, and that poses, or, upon the occurrence of the Natural Hazard, likely would pose an imminent threat to lives, assets, or the environment.

22. **Subcomponent 1.3. Activities to complement Recovery and Resilience Interventions.** This subcomponent will include main or complementary activities in the intervened areas to foster community participation, efficiency, resilience, road safety and inclusive participation for projects. To foster community participation, in addition to consultations, this subcomponent may include training for local communities and microenterprises. This may include, among other things, capacity building to participate in the implementation of project activities, community response to emergencies, encouraging the participation of local microenterprises in post-reconstruction maintenance works. Despite creating opportunities for all community members, particular attention will be given to ensure women will benefit from upcoming employment opportunities through the hiring by the government of community members for maintenance works, as well as the support of microenterprises. To promote efficiency, resilience and road safety, the design (Terms of Reference, or ToRs) of Infrastructure Recovery and Resilience Interventions will consider recycling opportunities, prioritize the use of environmentally friendly materials (for example, asphalt emulsions, warm and cold asphalt mixes, asphalt base stabilization) and construction methods (for example,

calamity or natural disaster. Also, Article 166 of the National Constitution mentioned that the President shall notify the declaration of the state of emergency to the National Assembly, the Constitution Court and the corresponding international organizations within forty/eight hours following the signing of the corresponding decree.

[13] Interventions will be informed by best practices and international guidelines, such as, "Green Roads For Water," Guidelines for road infrastructure in support of water management and climate resilience. World Bank Group, 2021

[14] As described in Annex 2 section A, climate change is expected to intensify hydrometeorological hazard and El Nino phenomenon hence becoming resilience to those hazards will support climate change adaptation of Ecuador's transport infrastructure

water reuse, minimization of material transport needs). To promote resilience and road safety, all interventions will include road safety audits and resilience considerations from the pre-design phase and the implementation of the road safety audit recommendations. To help bridge the gender gap, civil works contractors will include in their offers, as per their ToRs, the provision of training for women to obtain certifications to operate heavy machinery prior the commencement of civil works. Community emergency response training and microenterprise training activities will also promote women's leadership and management.

23. **Subcomponent 1.4. Acquisition of MTOP's equipment for emergency response and preventive maintenance.** This subcomponent can include the acquisition of emergency response and maintenance equipment by MTOP necessary to respond to emergencies in the short term. The acquisition or overhaul of heavy machinery for emergency response may include equipment such as dump trucks, backhoe loaders, loaders, and excavators. The acquisition of temporary equipment for emergency response may include temporary bridges, temporary culverts, generators, lighting and communications equipment. The acquisition or overhaul of heavy machinery for evaluation, preventive maintenance and reconstruction may include pavement and vulnerable zone evaluation equipment such as deflectometers, laser profilometers, roughness meters; and construction execution equipment such as motor graders, finishers, road rollers, asphalt mixers, asphalt distributors, and recycling machines. The contracts will include maintenance.

Component 2: Project Management and Institutional Strengthening for Resilience (US$15 million)

24. **Subcomponent 2.1. Asset management system and planning tools**. This subcomponent includes the purchase and/or design, implementation, and staff training of a transportation infrastructure asset management system, which will improve MTOP capacity for asset and disaster risk management. The system will include climate hazard data, that will be used to prioritize resilient interventions and will support an effective climate adaptation planning of transport assets. It consists of a software-based solution designed to help MTOP manage the lifecycle of its transportation assets, such as roads, bridges, tunnels, railways, airports, seaports, and other related infrastructure. It will include a combination of tools for inventory management, condition assessment, performance monitoring, scheduled maintenance and repair activities, budgeting, forecasting, reporting, and analytics. The Asset Management system will enable the MTOP to prioritize interventions in the medium term and swiftly identify urgent action needs such as preventive maintenance, all while responding to early warnings. This will significantly enhance the resilience of roads climatic change impacts, including floods and landslides, thereby ensuring their durability and safety. The system will also improve the capacity for operation and maintenance of the heavy machinery for which MTOP is responsible. This component also includes the operationalization of these tools and the improvement of the MTOP geoportal. The component may include support to improve the geoportal and the development of tools for open data and information sharing. The aim is to increase competitiveness and efficiency. This will in turn enable the development of information sharing platforms based on planned or executing activities. These activities include employment opportunities from private contractors, availability or need of materials for recycling, machinery.

25. **Subcomponent 2.2. Capacity building activities, including training, knowledge exchanges, guidelines, and manuals on relevant topics**. In addition to specific support in capacity building linked to activities included in Component 1, this component will include capacity building activities for civil servants in relevant agencies,[15] civil society, media, private firms, and other relevant stakeholders. This will include training in relevant topics for those responsible for the planning, implementation and policy related to transport infrastructure management, climate resilience and adaptation, road safety, gender, and other topics relevant to the project. Activities may take the form of training workshops, knowledge exchange visits, drafting of guidelines and manuals. They will target implementation and planning capacity strengthening on topics such as community participation, efficiency, climate resilience and adaptation, circular economy, road safety, gender, and emergency response. This subcomponent may also include technical support for updating relevant technical regulations issued by MTOP. The technical regulation may be updated to better account for climate change projection and prioritization of climate adaptation investment in transport sector. The subcomponent may also include an analysis of the specific barriers that women in the project areas face in order to work in construction. The analysis will be used to develop an Action Plan for the training and certification of women on specialized equipment, which will be implemented under Component 1 activities.

26. **Subcomponent 2.3. Project Management Support.** This subcomponent include activities to support the Borrower in the technical and administrative management of the Project. It includes

    (a) Support to the Project Implementation Team (PIT). This subcomponent may include any expenditure related to the PIT operation, including, among other staff costs, acquisition of equipment, travel related expenses, office supplies, or communications-related expenditures.

    (b) Project Management and Technical Support (PMTS). In addition to the PIT, this subcomponent will include a Project Management and Technical Support firm. The PMTS firm will provide specialized technical support to the Borrower in the design and implementation of relevant activities during the implementation of the Project. This includes engineering support, as well as support on gender, road safety, resilience, and other technical relevant topics.

    (c) Environmental and Social Framework Support (ESFS). Like the PMTS, this subcomponent will include an environmental and social consultancy firm in charge of supporting MTOP in environmental and social risks and impact management. The firm will elaborate E&S instruments as required for different interventions. It will also ensure MTOP capacity building in E&S risk management matters and support MTOP in carrying out consultations and monitoring and supporting management of grievances. In addition to design, implementation and monitoring activities, the firm will coordinate with the technical teams to address emergent issues with environmental and social implementations, as well as facilitate other

[15] "Relevant agencies" refers to agencies involved directly or indirectly in the implementation of activities or policies related to the project activities and objectives. For example: MTOP, ANT, and CTE.

participatory processes beyond E&S risks. The ESFS will also provide training to MTOP on E&S risk management and World Bank Standards.

Legal Operational Policies

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

Summary of Assessment of Environmental and Social Risks and Impacts

E. Implementation

Institutional and Implementation Arrangements

27. **MTOP will be the Project's implementing agency.** MTOP through the PIT, and with support from the PMTS and the ESFS, will be responsible for the implementation and overall project coordination, planning, monitoring, procurement, financial management, ESF matters, and all other aspects related to Project implementation. The members of the PIT will be dedicated exclusively to project implementation. The PIT will work across MTOP's organic structure and coordinate with relevant departments. It will be the main focal point for the Bank, and in terms of project execution. The PIT is responsible for overall Project monitoring and evaluation (M&E) and reporting. The Project Operational Manual (POM) will include all procedures, rules, and standards for the implementation of all components and aspects of the Project including, but not limited to, (i) institutional arrangements; (ii) operation of the PIT and involved MTOP departments; (iii) Project planning and M&E; (iv) social and environmental management, reporting, communication, and human resources; (v) procurement; (vi) administrative processes and financial management (FM); (vii) grievance procedures and (viii) procedures for amending the POM. In addition, the PMTS, and the ESFS will provide technical support in its respective areas. The Bank will provide Hands-on Expanded Implementation Support (HEIS) on procurement if requested by the Borrower. The Borrower may also make use of project funds for the retroactive financing for eligible expenditures which fully comply with the applicable provisions of the Project Financing Agreement.

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