

TC Document

I. Basic Information for TC

▪ Country/Region:	COLOMBIA
▪ TC Name:	Support for Strengthening the Rural Road Network
▪ TC Number:	CO-T1542
▪ Team Leader/Members:	Cruz Moreno, Paula (INE/TSP) Team Leader; Camos Daurella, Gibet (INE/TSP) Alternate Team Leader; Alonso Martin, Tania (INE/TSP); Ariza Donado, Natalia (CAN/CCO); Bertossi, Fanny (INE/TSP); Bustos Rios, Maria Paola (CAN/CCO); Cardenas Garcia, Claudia Mylenna (VPC/FMP); Galarza Molina, Diana Carolina (INE/TSP); Hillman, Eugenio F. (VPC/FMP); Lee, Chunghwan (INE/TSP); Negret Garrido, Cesar Andres (LEG/SGO); Rosa Da Silva Cruvinel, Rodrigo (INE/TSP)
▪ Taxonomy:	Client Support
▪ Operation Supported by the TC:	N/A
▪ Date of TC Abstract authorization:	01 Apr 2020.
▪ Beneficiary:	Colombia
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	Public Capacity Building Korea Fund for Economic Development(KPC)
▪ IDB Funding Requested:	US\$750,000.00
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes Execution period):	32 months
▪ Required start date:	August 2020
▪ Types of consultants:	Firms and individuals
▪ Prepared by Unit:	INE/TSP-Transport
▪ Unit of Disbursement Responsibility:	CAN/CCO-Country Office Colombia
▪ TC included in Country Strategy (y/n):	Yes
▪ TC included in CPD (y/n):	Yes
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Social inclusion and equality; Productivity and innovation; Economic integration; Institutional capacity and rule of law; Environmental sustainability; Gender equality

II. Objectives and Justification of the TC

- 2.1. The general objective of this TC is to implement a strategy for strengthening the rural road network in Colombia. It will then be used to support the Government of Colombia (GoC), through the National Planning Department and the Ministry of Transportation, in strengthening the rural road network. The specific objectives include: (i) contribute to the construction of the rural road network inventories from the use of new technologies such as artificial intelligence; (ii) support municipalities to prioritize infrastructure interventions and rationalize investments through an efficient model of road management; and (iii) develop knowledge products that help generate evidence and contribute to the development of local capacities.
- 2.2. **Justification.** One of the most important challenges to increase productivity and economic competitiveness that Colombia faces is to improve the provision and quality of transport infrastructure and associated services. In the last 20 years, the Colombian

transport network expanded thanks to the participation of the private sector. This expansion process was consolidated under the 4G road concessions program, currently being implemented. This process has allowed Colombia to advance in the improvement and construction of its high-impact transport infrastructure (large foreign trade corridors). However, the country still has considerable lags in terms of quantity, quality, and coverage of the transport infrastructure and especially in the services associated with it.

- 2.3. To make better use of investments already made in the sector and for transport to be a real agent of change and contribute more to the country's growth, Colombia must manage transport interventions with a systemic and integrated vision.
- 2.4. While it must be considered that Colombia has a natural barrier associated with rugged topography and the big distance between production and consumption centers, there are important opportunities for improvement that complement the advances of 4G.
- 2.5. Colombia has a road network consisting of approximately 206,727 km, of which 19,306 km are the National Primary Network, 45,137 km are recognized as the National Secondary Network, and 142,284 km are the National Rural Network. That is, the rural road network represents about 69% of the total network and has the greatest coverage in the national territory. Its ability to function at optimal levels of service is regarded as a fundamental contributor to boosting the level of economic growth of the country's rural population.
- 2.6. The rural network or “first-mile network” is fundamental to the transport of agricultural products from rural areas to municipalities and collection centers. Between 2010 and 2016, Colombia invested 3.1 billion pesos in the rural network, however, only 25% of the network is in good condition. In these conditions, rural roads are particularly vulnerable to weather conditions and climate change, which further contribute to the deterioration of the infrastructure. Bad conditions of the rural network increase the production costs of the agricultural sector, which, although it represents 6.2% of GDP, is very important for the Colombian economy as it supports 3.8 million jobs and 7.6 billion annual income from exports. Guaranteeing the infrastructure for this first link, or the first mile, is key to enhancing the development of Colombian production chains and to increase exports from the sector.
- 2.7. For this reason, the GoC identified the rural road network, that connects the territories and supports the economic potential of the Colombian countryside, as a strategic priority for the country's competitiveness, equity, and regional integration. This policy is framed in the National Development Plan 2018-2022 “Pact for Colombia, Pact for Equity”, since previously limited intervention to support strategic roads in regions that are often difficult to access, has contributed to isolating these municipalities from the most important urban nodes and hindered access to national and international markets. Indeed, 48% of the population has no connection to large cities and the services and benefits they offer, and 47% of the rural population live in conditions of poverty, which is why the 2018-2020 National Development Plan defined the goal to make interventions on more than 15,000 km of rural roads to connect territories. It is worth noting that poverty conditions are generally deeper for Colombian women living in rural areas than for men, as stated by FAO and UN Women among other institutions, which is why developing rural infrastructures will also have an impact on gender equity and equality of access to opportunities in the country.
- 2.8. One of the main obstacles to develop rural road infrastructure is the lack of a detailed inventory of the rural network of the country, which makes it difficult for regional

investment to be focused and executed accurately and efficiently. The last rural road inventory was conducted in 2010 and allowed to estimate that the network has an extension of approximately 142.000 km. According to the Ministry of Transportation, currently, only 11,276 km of rural roads are inventoried representing only 7% of the estimated network. Colombia has a National Road Inventory Program; however, it is necessary to advance its implementation specifically in the rural network: (i) to establish the state of, and specific needs of, the regional network; and (ii) to be able to standardize and systemize the information and road infrastructure demand. Today, with the new technologies (Big Data, drones, satellite images) Colombia could generate, at a lower cost and time, georeferenced inventories of the network with centralized data, that facilitate decision making and investment prioritization.

- 2.9. In relation to the new technologies to identify the lengths of tertiary roads, Korea's construction industry has utilized the drones for diverse purposes, including to observe inaccessible spots and inspect their safety, to get a digital map, and to calculate the earthwork quantity, etc. In addition, Korea's government has implemented many policies of fostering drone technologies and relevant industries, with a focus in construction areas on enhancing the credibility of drone land surveying and refining the quality of digital topographic maps through several pilot projects. Ultimately, it led to the establishment of standardized public survey work guidelines using the drones in 2018. The topographic map is fundamental to the infrastructure industry and the accurate digital map is well recognized because it can save us lots of money and time.
- 2.10. Likewise, Colombia defined the "specifications of a typical project" for the improvement of rural roads and good contracting practices (standardization of contracts, transparency, and publicity, packaging of rehabilitation and maintenance contracts). In this case, it is also necessary to comply with the implementation of these measures to generate economies of scale, improve spending efficiency, promote the participation of more proponents and optimize the use of investment resources. This also enables improvement in the productivity of infrastructure construction, through the incorporation of alternative technologies and innovation in construction processes, considering the individual characteristics of each geographical region (new materials). It is also imperative to consolidate a sustainable financial and operational scheme that ensures the safeguarding of the investments executed over time, and that includes participation from the authorities at regional and municipal levels. Based on this analysis, this TC will support the GoC, through a package of measures such as studies, implementation of new technologies, pilots' schemes, etc. for the strengthening of the rural road network. These activities contribute to the national government's strategy for the improvement and maintenance of productive roads: the Colombia Rural program, which promotes rural connectivity through investments in the rural network in 2019-2022. The TC contributes to the objectives of regional development and rural territories connection defined in the National Development Plan 2018-2022, the national policy for rural roads management (CONPES 3857), the Final Agreement to End the Conflict and Establish a Stable and Sustainable Peace where the development of rural road infrastructure is an essential strategy of the Integral Rural Reform, and the National Transport Infrastructures Plan for Regional Integration adopted by the Resolution 3260 of 2018 of the Ministry of Transportation.
- 2.11. This TC is complementary to the Sustainable Colombia Program of the Bank (CO-L1166) that aims to contribute to the sustainable development of rural areas of the country and, especially, areas affected by the armed conflict, with the specific objectives of: (i) preserving the natural capital of these areas; (ii) improving the level

of income of the rural population; and (iii) strengthening the technical capacities of local and regional stakeholders. Additionally, this TC will continue the efforts made by the Bank and the Government of Colombia since the 2000s to develop regional road infrastructures through two subnational loans with the regions of Cundinamarca (CO0264) and Antioquia (CO-L1016) and technical assistance for rural roads and rural roads for non-motorized transportation (CO-T1040 y CO-T1034).

2.12. **Strategic alignment.** This TC is aligned with the following priorities of the Update to the Institutional Strategy of the Inter-American Development Bank Group 2020-2023 (AB-3190-2): (i) social inclusion and equality, through the promotion of access to transport infrastructure to all people with a view to promote rural development; (ii) productivity and innovation, by contributing to the strengthening of productivity and competitiveness in regions of Colombia and developing the use of new technologies and pilots; (iii) gender equality, by contributing to improving access to services and economic, social and cultural opportunities of women in rural areas taking into account the special vulnerability of women in rural areas; (iv) environmental sustainability, by supporting improvement in the infrastructure construction, especially the promotion of alternative technologies and innovation in construction processes, considering the individual characteristics of each geographical region as stated by the national policy; (v) economic integration, by increasing the competitiveness of rural areas, national agricultural production and its supply chain; and (vi) institutional capacity and rule of law, by transferring technical knowledge to municipalities on road management best practices. It also aligns with the Bank's Strategy (EBP) with Colombia 2019-2022 (GN-2972 y CII/GN-402), in the strategic areas of: (i) increasing economic productivity, by increasing the competitiveness of rural areas, national agricultural production, and its supply chain, as well as contributing to raising the quality of infrastructure and fostering innovation and digital ecosystems, as it will promote decision-making based on data; (ii) public management effectiveness, as it will support the National government and municipalities to optimize public spending on road infrastructure; and (iii) ensure greater social mobility and consolidation of the middle class, as it will focus on improving conditions of the rural population in Colombia. It is also aligned with the transversal area of climate change, by promoting resilient infrastructures. In addition, this TC is aligned with the objectives of the Public Capacity Building Korea Fund for Economic Development KPC as it will support the efficient allocation and use of public sector resources of sub-national governments, by developing planning and management tools for municipalities to identify, focus and optimize infrastructure interventions and thus rationalize the allocation of resources.

2.13. Likewise, the TC is aligned with the Transportation Sectoral Framework Document (SFD) (GN-2740-7) and its focus on "regional integration" and "institutional development in the transportation sector". It is also aligned with the Sustainable Infrastructure for Competitiveness and Inclusive Growth IDB Infrastructure Strategy (GN-2710-5), by responding to the priority areas of action of "promoting access to infrastructure services" by promoting access to the rural road network to increase the region's productivity and expand market access opportunities and "supporting the construction and maintenance of an environmentally and socially sustainable infrastructure" as it looks to support infrastructure management to boost its positive impacts on inclusion and poverty reduction.

III. Description of activities/components and budget

3.1 To achieve the proposed objectives, this non-refundable technical cooperation will finance three components:

- 3.2 **Component 1: Identification of rural routes based on artificial intelligence algorithms (US\$200,000).** Through this component, the GoC will be supported with the identification of the rural network using new technologies, such as the use of satellite images, artificial intelligence, and others. For this project, it is estimated it will be possible to reach 100% of the inventory of the rural road network of the country and complete the corresponding information for maps of the National Integral System of Roads -SINC- system administered by the Ministry of Transportation that stores and presents the maps of the different modes of transport of the Country. The final products of this component will be the shapefiles of the Colombian rural road networks, as well as reports on the methodologies developed and implemented for infrastructure detection.
- 3.3 **Component 2: Support the sustainable planning and management of road infrastructure (US\$390,000).** Through this component, support will be provided to the GoC to optimize the planning, management, maintenance, and repairs of road infrastructures. A model for road management will be developed to help the State and municipalities to identify adequate timing and location to make road infrastructure interventions and consider technical, social, economic, and environmental criteria, including technological functionalities for data visualization. This component will also include the structuration and conduction of pilot projects in municipalities for road planning and management. Eventually, these tools provided to local municipalities will allow them to rationalize and optimize the allocation of resources for road infrastructure interventions. The component will look to promote financial, social, and environmental sustainability in the development and management of road infrastructure. The viability of impactful interventions, such as the promotion of the use of sustainable and local construction materials, will be studied.
- 3.4 **Component 3: Institutional strengthening and knowledge transfer (US\$160,000).** This component aims to contribute to strengthening the institutional capacities of the transport sector, through a transfer knowledge from Korea and other international best practices to Colombia through the development of training workshops and dissemination of good practices focused on drones and other new technologies for surveying or building rural roads. The training workshops will ensure the participation of women and at least 15% of people trained will be women. In addition, it will finance the dissemination strategy of the knowledge products developed in components 1 and 2. These products may include, among others, videos, infographics, Brown Bag Lunch (BBLs), and events. It will also finance activities related to the analysis and review of the achievement of the objectives of the TC and the evaluation of its results.

IV. Budget

- 4.1 The total budget of the TC will be US\$750,000, which will be financed by resources from the Public Capacity Building Korea Fund for Economic Development (KPC), without counterpart resources. The table below shows the amounts of financing required per component to achieve the expected results.

Table 1. Indicative Budget

Activity/Component	Description	IDB/Fund Funding	Total Funding
Component 1	Identification of rural roads based on artificial	200,000	200,000

Activity/Component	Description	IDB/Fund Funding	Total Funding
	intelligence algorithms		
Component 2	Program for the sustainable planning and management of regional road infrastructure	390,000	390,000
Component 3	Knowledge transfer from Korea to Colombia about drone technologies and other type of technologies	160,000	160,000
		US\$750.000	US\$750.000

V. Executing agency and execution structure

- 5.1 Because it is a Client Support TC, in accordance with the applicable policies and guidelines (documents GN-2470 and GN-2629-1) the Bank, through the Transport Division, will be the executing agency of the TC to ensure technical and operational viability and efficiency of the execution of the TC and ensure the cooperation and coordination with different public entities at national and local scales. Additionally, as the Bank will act as an intermediary to ensure synergies with regional and international projects (i.e., transfer knowledge from Korea as well as other high impact projects of the region such as the experience of the Bank in supporting the Rehabilitation of Rural Road Programs in Peru). The selection and contracting of consulting services will be carried out in accordance with the Policies for the Selection and Hiring of Consultants financed by the Inter-American Development Bank.
- 5.2 The sector specialist and focal point in the Office of the Bank in Colombia will be Paula Cruz, Senior Transport Specialist in Colombia, and the team leader of this TC. She will receive support from IDB and PEC consultants when necessary to supervise the cooperation for an estimated cost of US\$10.000.
- 5.3 The IDB will execute this TC in strong coordination with the main beneficiary, the Ministry of Colombia. Punctually, it will organize coordination meetings with relevant stakeholders at a national scale (National Planning Department, INVIAS, etc.), as well as departments and municipalities during the execution of projects that specifically involve a territorial entity (i.e., a pilot project to test a model). The selection of and coordination with territorial entities will be conducted by both the IDB and the Ministry, as a national authority.
- 5.4 **Acquisitions and financial management.** The activities to be carried out under this operation have been included in the Procurement Plan (annex) and will be executed following the Bank's established procurement methods, namely; (i) hiring individual consultants, as established in AM-650 standards; (ii) contracting of consulting firms for services of an intellectual nature according to GN-2765-4 and its associated operational guides (OP-1155-4); and (iii) contracting of logistics and other services other than consulting, in accordance with policy GN-2303-28. This TC does not

present fiduciary management risks as it will be executed by the IDB. For this reason, no financial audit is required.

- 5.5 Only two consultancies are expected to be contracted under a direct contracting scheme: (i) the consultancy for the elaboration of technical notes on technology-based solutions for road infrastructure; and (ii) the consultancy for technical support to the supervision and execution of the cooperation, as these are contracts under US\$40.000 that will be provided by consultants pre-identified by the IDB, with relevant experience in the country and a large experience of collaboration with the institution.
- 5.6 Regarding the ownerships of the products acquired under this TC, the Government of Colombia will be the owner of the Model for road management financed under Component 2. However, the IDB will be the owner of all the Intellectual Property Rights of the products developed under this TC, to eventually replicate these tools in other countries of the region.
- 5.7 **Execution structure.** The execution period will be 24 months, and the disbursement period will be 32 months.

VI. Project Risks and Issues

- 6.1. The risks identified for the execution of this cooperation are the following.
- 6.2. Difficulties of accessibility in remote areas (principally due to restrictions due to COVID-19): the risk is considered minor, as most activities and communications will be realized virtually. However, if the execution of some projects requires fieldwork and the crisis of COVID-19 is still prevailing, the team will implement the following mitigation strategy: take into account COVID-19-related conditions and restrictions to select the territories involved in the projects and ensure the implementation of strict biosecurity measures.
- 6.3. Ensure knowledge transfer in a context of potential high turnover in administrations: This is a risk common to every process of capacity building and knowledge transfer. In order to mitigate the risk, the team in coordination with beneficiaries will select staff with long-term stability in the institution (i.e., public servant status) and ensure to document each process (record workshops, elaborate completion reports, etc.).

VII. Exceptions to Bank policy

- 7.1 No exceptions to Bank policies have been identified.

VIII. Environmental and Social Strategy

- 8.1 This CT has no environmental or social implications because it is consulting services for studies, in accordance with the Environment and Safeguards Compliance Policy (OP-703) (SSF, SPF). Therefore, it is classified as Category "C".

Required Annexes:

[Request from the Client - CO-T1542](#)

[Results Matrix - CO-T1542](#)

[Terms of Reference - CO-T1542](#)

[Procurement Plan - CO-T1542](#)