TECHNICAL COOPERATION ABSTRACT (TC-ABSTRACT)

ECUADOR

I. BACKGROUND

Country:	Ecuador
TC Name:	Feasibility study of the broadband networks (backbone, backhaul and last mile) in Ecuador
TC Number:	EC-T1289
Team Leader/Members:	Antonio García Zaballos (Team Leader, IFD/ICS); Félix González (Alternate Team Leader, IFD/ICS); Jiyoun Son (IFD/ICS); Enrique Moreno; (IFD/ICS); Enrique Iglesias (IFD/ICS); Mauricio García (ICS/CEC); and Cecilia Bernedo (IFD/ICS).
TC Taxonomy:	Client Support (CS)
Reference to request:	IDBdocs#38744184
Date of TC Abstract authorization:	April, 2014
Donors providing funding:	TDB
Beneficiary:	Ecuador - Ministry of Telecommunications and Information Society
Executing agency and contact name:	Inter-American Development Bank (IDB), Institutional Capacity of the State Division (IFD/ICS)
IDB Funding Requested:	IDB: US$725,000
Local counterpart funding:	Local: US$ 0
	Total: US$725,000
	Disbursement period (which includes execution period): 21 months
Required start date:	May, 2014
Types of consultants:	Firm and individual consultants
Prepared by Unit:	IFD/ICS
Unit of Disbursement Responsibility:	IFD/ICS
TC included in Country Strategy:	N/A **TC included in CPD:** No
GCI-9 sector priority:	Mentioned under current sector strategies: "Support Competitive Global and Regional Integration", and "Institutions for Growth and Social Welfare".

II. OBJECTIVES AND JUSTIFICATION OF THIS TC

2.1 There is evidence that the acceleration of broadband penetration, adoption and effective use brings clear social inclusion and economic benefits. In particular, it is estimated that on average increases of 10 percent in broadband penetration in Latin American and Caribbean (LAC) countries, have associated increases of 3.19 percent

in GDP, 2.61 percent in productivity and a net generation of more than 67,000 jobs.[1] Additionally, according to a study by Arthur D. Little and Ericsson, 1 percent increase in broadband penetration can bring 4.3 percent increase in exports.

2.2 Unfortunately, the LAC Region is lagging behind other regions with regards to broadband penetration and usage, and the same is true for Ecuador. Whereas broadband penetration for OECD countries is nearly 25.7 percent, for IDB countries it is around 7.6 percent, and in Ecuador only of 4.2 percent.[2] Not only is there a divide with the LAC and the OECD countries, but there also exists a divide within Ecuador. The department of Quito averages 10.88 percent in broadband penetration whereas departments like Los Rios, Manabí, or Santa Elena average 1.64%, 2.08% and 2.37%, respectively. Additionally, the international connectivity in Ecuador is 33.14 Kbps/user. Despite being above the LAC average of 19.44 Kbps/user, is far from other countries in the Region like Uruguay and Chile with more than 40 Kbps/user. The divide is much bigger when comparing with OECD countries, that average 73.39 Kbps/user and have countries with more than 200 Kbps/user, such as Iceland, Switzerland and Sweden. Having a broadband network that links Ecuador to other countries in the LAC Region will provide abundant bandwidth, easier connectivity and reduced costs. It will also help to integrate Ecuador by facilitating trade, social, and cultural exchange between countries. Through connectivity new ways of trade appear in a digitalized world where there are no boundaries.

2.3 This situation has led the Government of Ecuador (GoE) to recognize the importance of increasing broadband connectivity in the country in an effort to facilitate social inclusion for all the population strata, economic growth and contribute to the integration of the country, both nationally and regionally. In fact, the GoE is already working on the development of a national broadband plan[3] that sets the objectives and milestones that will help promoting broadband access, adoption and usage. Thus, the GoE has identified the deployment of new infrastructure as a necessary step to improve the capabilities of the national broadband. This will imply the construction of a new optical backbone and backhaul networks, as well as improved last mile coverage and international connectivity. All this would present several advantages for Ecuador and its regions, related to the improved cost-efficiency of their inter-connection. First, it will allow all of the main cities to access each other through the network directly, without paying transit fees. Second, traffic to other countries from cities near the Pacific coast could be sent through the terrestrial network across the country connecting, thus, the west and east, and the north and the south. Similarly, traffic to other countries from different cities could be achieved thanks to a better interoperability. And the citizens will be benefited from the improved quality and performance of the last mile access networks as well as lower prices.

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1 García-Zaballos, A. / López-Rivas, R.: Governmental control on socio-economic impact of broadband in LAC countries. IDB, 2012.

2 Broadband Development Index, Inter-American Development Bank, 2012 (study is in process of being published).

3 http://www.telecomunicaciones.gob.ec/plan-nacional-de-desarrollo-de-banda-ancha/.

2.4 **Objectives of the project:** The general objective of this Technical Cooperation (TC) is to support the GoE in their efforts to increase access, adoption and use of broadband services. Therefore, the specific objectives of this TC are to: (i) quantify and to evaluate the digital divide in terms of infrastructure among the different regions in Ecuador, analyzing the gap between supply of demand; (ii) understand the socio-economic dynamics of the different regions to propose an adoption and usage plan with a focus on achieving social inclusion, economic growth and integration of the less developed regions through education, health and key government services—this plan should include a set of public policies that foster the deployment of the infrastructure and the adoption and usage plan in the different regions that will contribute to the integration of the country, both nationally and regionally; (iii) analyze the financial and economic feasibility of the project and the amount of the necessary subsidy coming from the GoE; (iv) review and update the regulatory framework with the aim of ensuring that the network deployment fosters competition and allows a smooth interconnection with the existing networks; (v) support CONATEL in regulatory issues related to the supervision of the networks operation; (vi) conduct additional environmental, institutional and administrative analyses supporting a possible loan operation; and (vii) develop a dialogue that shows the benefits that broadband connectivity has for the integration of rural and urban areas, as well as the integration among different countries. In addition, within the context of this dialogue, successful cases will be presented, as well as the policies that have been implemented to maximize the effects on trade and integration.

III. DESCRIPTION OF ACTIVITIES

3.1 The activities proposed in this project are divided into eight main components:

3.2 **Component 1: market study.** The objective of this component is to improve the understanding of the market dynamics in the different regions of Ecuador, by preparing a market study for each region, including an analysis of the socio-demographic and economic conditions of the different geographic areas and how these impact broadband availability; an analysis of current supply and demand of telecommunication services; and a forecast of the demand. The activities for the market analysis will include two main pillars: one on the supply side (access) and one on the demand side (adoption and usage).

3.3 **Component 2: technical study.** The objective of this component is to identify the technical considerations for deploying the infrastructure (backbone, backhaul and last-mile), including the structure of the network and the different technological alternatives through the development of a technical study.

3.4 **Component 3: adoption and use study.** The objective of this component is to analyze and define an adoption and usage strategy that guarantees that the infrastructure (foreseen to be deployed in Component 1) would be used by citizens and government—with a special focus on schools, health centers and government facilities and services.

3.5 **Component 4: financial study and governance model.** The objective of this component is to analyze the economic and financial feasibility of the deployment (of the network and of the adoption and usage component) and select a governance model for the possible future bidding and exploitation phases.

3.6 The result of the consolidated financial indicators will determine the amount of necessary subsidy to make the Project feasible.

3.7 The study will add a proposal for a governance model for the project, both for the bidding (especially for the network) and exploitation phases.

3.8 **Component 5: Cost-Benefit Analysis (CBA).** The objective of this component will be to conduct a CBA by identifying all the economic and social benefits (quantitative and qualitative) that will be derived from an eventual project that deploys the proposed infrastructure as long as the adoption and use strategy and the cash flows that have been identified and quantified in component 4.

3.9 **Component 6: revision of the regulatory framework and support to CONATEL.** The objective of this component is to revise and propose updates to the regulatory framework and legislation in order to boost broadband development in the selected areas. This component is particularly relevant because the decision of investing in the deployment of broadband infrastructure by the private sector requires a stable and predictable regulatory framework that creates the conditions to facilitate investments, thus promoting universality in access. The analysis will cover technical, legal and economic aspects.

3.10 Particular attention should be paid to the interconnection regulation between networks (including the development of a draft for RIO and RUO)[4], sharing infrastructure schemas, open/equal access formulas and rights of way since the deployment of the backhaul and last-mile networks may require crossing private properties.

3.11 The regulatory support will also include tasks to strengthen CONATEL in regulation of wholesale services to foster competition not only by reviewing the existing regulatory framework, but also by providing technical support and capacity building.

3.12 **Component 7: support to the preparation of a possible related loan operation.** The objective of this component is to support the preparation of additional environmental, institutional and administrative studies that will support the preparation of a possible loan proposal with Ecuador.

3.13 **Component 8: dissemination.** The objective of this component is to identify specific actions to disseminate the results of the technical cooperation with the main stakeholders. Also a regional dialogue will be conducted to increase awareness and understanding among policy makers and private sector stakeholders of the importance of developing broadband in the Region as triggers for integration and for new ways of doing business. These objectives will be fulfilled by means of a workshop in which the results of this project will be presented. In addition to the

[4] RIO stands for Reference Interconnection Offer and RUO stands for Reference Unbundling Offer. Firms designated as having significant market power must regularly produce these documents including the terms and conditions at which it will provide access to specified services (interconnection and unbundling).

specific results, the following aspects will have to be covered: (i) public policies and governance models to accelerate broadband penetration and effective usage that contribute to a better integration of Ecuador; (ii) status quo in the Region in terms of regulation and especially in terms of the effective use of Universal Access and Service Funds as a tool to reduce the digital divide between rural and urban areas; (iii) identification of public-private partnerships for the sustainable deployment of telecommunications infrastructure; and (iv) identification of success stories in the use of ICT and how it could contribute to regional integration.

3.14 **Expected outputs.** In particular, the project will provide technical assistance including: (i) a diagnostic of the connectivity gap between supply and demand along with a study to identify broadband infrastructure requirements in the different regions in Ecuador and its corresponding feasibility study associated to the network deployment—according to different technologies and geographic areas; (ii) study to identify services that permit the usage of broadband-enabled services with a primary focus on integration, education, health and government services; (iii) financial analysis of the feasibility of the project and the amount of the necessary subsidy; (iv) cost-benefit analysis of the project as a whole; (v) study reviewing the regulatory framework to guarantee a successful deployment of backbone, backhaul and last-mile networks; and (vi) study to support the design of a related loan operation in Ecuador: environmental and social impact study, governance and financial mechanism, methodology for impact assessment.

3.15 **Expected results.** As a result of this project, the GoE will have a better understanding of the current status of broadband in its territories and will be able to prioritize network deployment and investment. As a result, the GoE will have: (i) access to the economic, financial, technical and environmental feasibility of the different alternatives for the network deployment; (ii) an updated and more robust strategic regulatory framework; (iii) a set of policies to boost access, adoption and usage of broadband services; and (iv) a proposal on how broadband could be a tool for integration within the country and with other countries. Ultimately, if the GoE decides to invest in improving its broadband networks, a greater penetration of broadband connectivity is expected to increase competitiveness and social inclusion in the selected regions, overcoming the lagging patterns currently observed.

Table 3.1: Indicative matrix of the results

Suggested indicator	Measurement Unit	Base-line	Target at the end of the TC
Output Indicators:			
Component 1: Market study • Survey results. • Diagnosis of the gap between supply & demand (forecast). • Socio-economic characterization of the population	No. of Documents	0	1
Component 2: Technical study • Orographic study according to population distribution • Analysis of the technological alternatives for the infrastructure, logic and physical design of the network and deployment & implementation plan • Proposal of public policies that may foster the deployment	No. of Documents	0	3

Suggested indicator	Measurement Unit	Base-line	Target at the end of the TC
Component 3: Adoption & usage study • Proposal for adoption and usage plan (content, applications, devices and training) and deployment & implementation plan • Proposal of public policies that may adoption & usage	No. of Documents	0	2
Component 4: Financial study & Governance model • Financial study for the infrastructure and adoption & usage deployments along with a consolidated financial study that permits to calculate the amount of the necessary subsidy. Financial study for the adoption & usage component along with a business model proposal • Governance model for the project	No. of Documents	0	2
Component 5: Cost-benefit analysis • Methodology for the cost-benefit analysis • Cost-benefit analysis including quantitative and qualitative benefits (indirect benefits and positive externalities)	No. of Documents	0	2
Component 6: Revision of the regulatory framework and support to CONATEL • Review of the regulatory framework • Draft for RIO and RUO	No. of Documents	0	2
Component 7: Support to the preparation of a related loan operation • Environmental and social impact studies • Execution & governance mechanism for the loan operation	No. of Documents	0	2
Component 8: Identification of public policies and strategic regulations that contributes to the integration of Ecuador with other countries and within the country. Also a regional dialogue on how broadband may contribute to increase integration in the region and within the country with the participation of public and private stakeholders	No. of events	0	1
Outcome Indicators:			
Increased government awareness and understanding of the current status of broadband in the country and additional related action to accelerate the penetration, adoption and use of broadband services, and better understanding on how broadband could be a catalyzer for regional integration	No. of citations of the TC products in national government strategic documents	0	3

Table 3.2: Budget of reference

Activities	Description	IDB	Total
Component 1: Market study	Consultancy: understanding of market dynamics including an analysis of the socio-demographic and economic conditions of the different geographic areas and an analysis of current supply, demand and forecast of the demand of telecommunication services.	50,000	50,000
Component 2: Technical study	Consultancy: identification of the technical considerations for deploying the infrastructure (backhaul and last-mile), including the structure of the network and the different technological alternatives through the development of a technical study.	250,000	250,000
Component 3: Adoption & Usage study	Consultancy: analysis and definition of an adoption and usage strategy that guarantees that the broadband infrastructure can be enjoyed by the citizens with a special focus on schools, health centers and government facilities and services	50,000	50,000
Component 4: Financial study & Governance model	Consultancy: analysis of the economic and financial feasibility of the deployment (of network and adoption & usage component) and selection of a governance model for the bidding and exploitation phases.	50,000	50,000
Component 5: Cost-Benefit analysis	Consultancy: cost-benefit analysis by identifying all the economic and social benefits (quantitative and qualitative) and the costs.	50,000	50,000

Activities	Description	IDB	Total
Component 6: Revision of the regulatory framework and support to CONATEL	Consultancy: review and proposal of updates to the regulatory framework and legislation in order to boost broadband development. Additionally, support to CONATEL in regulatory issues.	100,000	100,000
Component 7: Support to the preparation of a related loan operation	Consultancy: support to the preparation of additional environmental, institutional and administrative studies that will support the preparation of the loan proposal	100,000	100,000
Component 8: Dissemination	Development of a Regional Dialogue with the participation of the public and the private sector to identify lessons learnt in terms of public policies and strategic regulations from different Regions on how broadband has become a catalyzer for regional integration	50,000	50,000
Contingences		25,000	25,000
Total		**725,000**	**725,000**

IV. EXECUTING AGENCY AND EXECUTING STRUCTURE

4.1 The executing agency will be the IFD/ICS Division, which will operate in coordination with the staff of the Ministry of Telecommunications and Information Society of Ecuador and with other involved institutions. The participation of the Bank as executing agency is expected to facilitate the timely implementation of the TC, which involves highly technical aspects and requires a wide international knowledge.

V. PROJECT RISKS

5.1 This Project presents two risks that could affect the impact, quality or sustainability of the expected results: (i) lack of institutional capacity to design, implement and monitor policy and regulatory reforms, such as the ones to be recommended in the project; and (ii) that the results of the project are not taken into account to increase broadband connectivity due to a lack of formal commitment to deploy infrastructure once the project is finished. The first risk will be mitigated by the fact that the project will be executed by the IFD/ICS Division, as per the government's request. In addition, the project will include a monitoring process throughout the implementation of the project to allow for the different institutions to get involved from the beginning to the end of the project.

5.2 The second risk is mitigated by the fact that this project is a direct response to the interest presented by the Government to the Bank, as it seeks to further promote broadband penetration in the country.

VI. EXCEPTIONS TO THE POLICY OF THE BANK

6.1 There are no exceptions to the policy of the Bank.

VII. ENVIRONMENTAL STRATEGY

7.1 Given that the current TC revolves around a study, there are no social or environmental risks associated with it. This operation is classified as a Category "C" according to the classification toolkit of the Bank (see the link: IDBdocs#38744169).