

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD1061

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$ 30 MILLION

TO THE DOMINICAN REPUBLIC

FOR A

FIRST PHASE OF THE CARIBBEAN REGIONAL
COMMUNICATIONS INFRASTRUCTURE PROGRAM – DOMINICAN REPUBLIC
PROJECT

August 4th, 2014

*Transport & ICT – Global Practice
Caribbean Country Management Unit
Latin America and the Caribbean Region*

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS

(Exchange Rate Effective 26th June 2014)

Currency Unit	=	
DOP 43.47	=	US\$1
US\$ 0.023	=	DOP 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

CAPEX	Capital Expenditure
CARCIP	Caribbean Regional Communications Infrastructure Program
CARIFORUM	Forum of the Caribbean Group of African, Caribbean and Pacific States
CBO	Community Based Organizations
CCT	Centro Cultural de Telecomunicaciones (Cultural Telecommunications Center)
CEPM	Consortio Energético Punta Cana-Macao (Energetic Consortium Punta Cana-Macao)
CIPAF	Centro de Investigación para la Acción Femenina (Investigation Center for the Female Action)
CKLN	Caribbean Knowledge and Learning Network
CPS	Country Partnership Strategy
CTC	Centros Tecnológicos Comunitarios (Community Technological Centers)
CTU	Caribbean Telecommunications Union
DR	Dominican Republic
EIRR	Economic Internal Rate of Return
END	Estrategia Nacional de Desarrollo 2030 (National Development Strategy 2030)
ENHOGAR	Encuesta Nacional de Hogares (National Households Survey)
ETED	Empresa de Transmisión Eléctrica Dominicana (Dominican Electrical Transmission Company)
FDI	Foreign Direct Investment
FDT	Fondo de Desarrollo de las Telecomunicaciones (Fund for the Development of Telecommunications)
Gbps	Gigabit per second
HDI	Human Development Index
ICT	Information and Communications Technology
IDA	International Development Association

IDB	Inter-American Development Bank
IEG	Independent Evaluation Group
INDOTEL	Instituto Dominicano de Telecomunicaciones (Dominican Institute of Telecommunications)
IT	Information Technology
ITES	Information Technology Enabled Services
ITLA	Instituto Tecnológico de las Américas (America's Technologic Institute)
ITU	International Telecommunication Union
LCR	Latin America and Caribbean Region
MDG	Millennium Development Goals
MESCyT	Ministerio de Educación Superior y Tecnología (Ministry of Higher Education and Technology)
MIC	Ministerio de Industria y Comercio (Ministry of Industry and Commerce)
MoF	Ministry of Finance
NAP	Network Access Point
ONE	Oficina Nacional de Estadística (National Statistics Office)
OPTIC	Oficina Presidencial de Tecnologías de la Información y la Comunicación (Presidential Office for the Communications and Information)
PPP	Public-Private Partnership
SFLAC	Spanish Fund for Latin America and the Caribbean
SME	Small and Medium Enterprises
SOP	Series of Projects
UAS	Universal Access Fund
UEPEX	Unidad Ejecutora de Proyectos de Financiamiento Externo (External Financed Project Execution Unit)
UNPD	United Nations Procurement Division
WBG	World Bank Group

Regional Vice President:	Jorge Familiar
Country Director:	Sophie Sirtaine
Practice Senior Director:	Pierre Guislain
Practice Director:	Jose Luis Irigoyen
Practice Manager:	Randeep Sudan
Task Team Leader:	Elena Gasol Ramos

DOMINICAN REPUBLIC
First Phase (SOP 1B) of the Caribbean Regional Communications Infrastructure Program
Project

TABLE OF CONTENTS

	Page
I. STRATEGIC CONTEXT	1
A. Country Context.....	1
B. Sectoral and Institutional Context.....	2
C. Higher Level Objectives to which the Project Contributes	4
II. PROJECT DEVELOPMENT OBJECTIVES	6
A. PDO.....	6
B. Project Beneficiaries	6
C. PDO Level Results Indicators.....	7
III. PROJECT DESCRIPTION	7
A. Project Components	7
B. Project Cost and Financing	9
Project Cost and Financing	9
C. Series of Projects.....	9
D. Lessons Learned and Reflected in the Project Design.....	9
IV. IMPLEMENTATION	11
A. Institutional and Implementation Arrangements.....	11
B. Results Monitoring and Evaluation.....	11
C. Sustainability	11
V. KEY RISKS AND MITIGATION MEASURES	12
A. Risk Ratings Summary Table	12
B. Overall Risk Rating Explanation.....	12
VI. APPRAISAL SUMMARY	12
A. Economic and Financial Analysis.....	12
B. Technical	13
C. Financial Management	13
D. Procurement	14

E. Social (including Safeguards).....	14
F. Environment (including Safeguards).....	15
Annex 1: Results Framework and Monitoring	16
Annex 2: Detailed Project Description	20
Annex 3: Implementation Arrangements	33
Annex 4: Operational Risk Assessment Framework (ORAF).....	48
Annex 5: Implementation Support Plan.....	54
Annex 6: Economic Analysis.....	56

|

PAD DATA SHEET*Dominican Republic**Caribbean Regional Communications Infrastructure Program - Dominican Rep. (P147483)***PROJECT APPRAISAL DOCUMENT***LATIN AMERICA AND CARIBBEAN**Transport & ICT*

Report No.: PAD1061

Basic Information			
Project ID P147483	EA Category B - Partial Assessment	Team Leader Elena Gasol Ramos	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects [X]		
Project Implementation Start Date 25-Apr-2014	Project Implementation End Date 30-Jun-2020		
Expected Effectiveness Date 15-May-2015	Expected Closing Date 30-Jun-2020		
Joint IFC No			
Practice Manager Randeep Sudan	Practice Director Jose Luis Irigoyen	Country Director Sophie Sirtaine	Regional Vice President Jorge Familiar
Borrower: Ministerio de Hacienda			
Responsible Agency: INDOTEL			
Contact:	Jorge Roques	Title:	Coordinador de Proyectos (Projects Coordinator)
Telephone No.:	18293786151	Email:	jroques@indotel.gob.do
Project Financing Data(in USD Million)			
[X] Loan	[] IDA Grant	[] Guarantee	
[] Credit	[] Grant	[] Other	
Total Project Cost:	30.00	Total Bank Financing:	30.00
Financing Gap:	0.00		
Financing Source		Amount	

Borrower	0.00
International Bank for Reconstruction and Development	30.00
Total	30.00

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020
Annual	0.30	4.00	11.00	9.00	3.70	2.00
Cumulative	0.30	4.30	15.30	24.30	28.00	30.00

Proposed Development Objective(s)

The project development objective is to increase access to regional broadband networks and advance the development of ICT-enabled services in the Dominican Republic and in the Caribbean Region.

Components

Component Name	Cost (USD Millions)
Component 1: Regional Connectivity Infrastructure	25.00
Component 2: Open Innovation Hub	3.50
Component 3: Implementation Support	1.425

Institutional Data

Sector Board

Global Information/Communications Technology

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Information and communications	Telecommunications	50		
Information and communications	Information technology	50		
Total		100		

I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Trade and integration	Regional integration	10
Financial and private sector development	Regulation and competition policy	30

Financial and private sector development	Infrastructure services for private sector development	60	
Total		100	
Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]	
Does the project require any waivers of Bank policies?	Yes []	No [X]	
Have these been approved by Bank management?	Yes []	No [X]	
Is approval for any policy waiver sought from the Board?	Yes []	No [X]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []	
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36		X	
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11	X		
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Land Acquisition (Section I.D.3 of Schedule 2)	X		
Description of Covenant			
The Borrower undertakes that the proceeds of the Loan shall not be used to finance land acquisition.			
Name	Recurrent	Due Date	Frequency
Recruitment of a Financial Specialist (Section I.A. 1 (c) of Schedule 2)		15-Jun-2015	
Description of Covenant			
Select and hire the financial management specialist in accordance with Section III of Schedule 2 to the Loan Agreement, no later than 30 days after Effective Date.			

Conditions			
Source Of Fund	Name	Type	
IBRD	Subsidiary Agreement (Section 5.01 of Article V)	Effectiveness	
Description of Condition			
Signing of the Subsidiary Agreement (SA) on behalf of the Borrower and INDOTEL.			
Conditions			
Source Of Fund	Name	Type	
IBRD	Subsidiary Agreement (Section 5.02 of Article V)	Effectiveness	
Description of Condition			
The SA has been duly authorized by the Borrower and INDOTEL and is legally binding upon the Borrower and INDOTEL in accordance with its terms.			
Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Zoila Catherine Abreu Rojas	Procurement Specialist	Procurement Specialist	GGODR
Concepcion Aisa Otin	Financial Officer	Financial Officer	FABBK
Michael J. Darr	Consultant	Consultant	GENDR
Batzul Dashdorj	Program Assistant	Program Assistant	GTIDR
Doyle Gallegos	Lead ICT Policy Specialist	Lead ICT Policy Specialist	GTIDR
Elena Gasol Ramos	Senior ICT Policy Specialist	Team Lead	GTIDR
M. Yaa Pokua Afriyie Oppong	Senior Social Development Specialist	Senior Social Development Specialist	GURDR
Pau Puig Gabarro	Consultant	Consultant	GTIDR
Maritza A. Rodriguez De Pichardo	Sr Financial Management Specialist	Sr Financial Management Specialist	GGODR
Rocio Sanchez Viguera	Operations Analyst	Operations Analyst	GTIDR
Elena Segura Labadia	Senior Counsel	Senior Counsel	LEGLE
Tatiana Cristina O. de Abreu Souza	Finance Analyst	Finance Analyst	CTRLN
Non Bank Staff			
Name	Title	City	
Locations			

Country	First Administrative Division	Location	Planned	Actual	Comments

I. STRATEGIC CONTEXT

A. Country Context

1. Over the past decade, the Dominican Republic (DR) has experienced high economic growth rates. Between 2001 and 2011, the GDP growth rate for the DR was 5.2 percent, almost fifty percent higher than the average growth rate for Latin America and the Caribbean (LAC) over the same period (3.5 percent). The GNI per capita (Atlas method) rose from US\$2,620 to US\$5,240, moving closer to the regional average (US\$8,544 in 2011 for LAC). The Dominican Republic also showed resilience both during the 2003 financial and banking crisis and during the global economic slowdown of 2009. The growth rate in the post-crises years (2006 and 2010) bounced back to 10.7 percent and 7.8 percent respectively and was among the highest in the region over this period.

2. However, poverty and inequality in the DR have proven to be sensitive to shocks with a significant share of the population living in chronic poverty. In 2000, 32 percent of Dominicans were poor, ten percentage points below the average poverty rate for Latin America and the Caribbean. As a result of the 2003 economic crisis, poverty expanded to 56 percent, surpassing the average regional poverty rate. By 2012, the poverty rate had declined to 40 percent, but still remains higher than the regional average. The chronic poverty¹ rate was 17.6 percent of the population in 2000 and while it has declined, still affects a significant share of the population (13.2 percent in 2011). Inequality, as measured by the Gini coefficient has also been sensitive to the economic conditions affecting the DR². In addition, there is a strong gender aspect of inequality which can be illustrated by the considerably larger share of poor female headed households (48.4 percent in urban areas; 52.4 percent in rural areas) than the share of poor male headed households (29.6 percent in urban areas; 37.8 percent in rural areas)³.

3. Poverty reduction and increased shared prosperity in DR will require sustaining growth, strengthening equity and providing access to services and economic opportunities. ICT, particularly high-speed Internet, is playing an increasingly central role in enhancing trade, facilitating cross-border payments and increasing investment, all key components of economic growth/diversification and poverty reduction. For the Dominican Republic, targeting private sector investments in country-wide connectivity, a high degree of government interconnectivity and growth of the local ICT industry will promote competitiveness in a sustainable and resilient economic environment, and enhance quality of public expenditures and institutional development. Also, the Government recognizes that targeted public expenditure on resilient sectors such as Information and Communications Technology (ICT) is essential to diversify its economy and to ensure sustainable source of income for the country.

4. The Law on the National Development Strategy of the Dominican Republic 2030 (END, Law No. 1-12)⁴, identifies the development of the ICT sector as one of the key drivers to

¹ Chronic poverty refers to those individuals that are poor in a monetary sense and also poor according to the multidimensional index that takes into account other deprivations such as access to services. Severe poverty refers to those chronically poor that are below the extreme poverty line (monetary methodology).

² The Gini coefficient was 0.48 in 2000, peaked in 2006 when reaching 0.52 and has been decreasing since then until .0.51 in 2011. (see “When Prosperity is not Shared: On the Weak Links between Growth and Equity in Dominican Republic”, World Bank, April 2013)

³ Calculations by CEPALSTAT, around 2010.

⁴ Enacted on the 25th of January 2012.

achieve its objectives of development. Access to the Internet will be monitored as one of the indicators to measure progress towards achievement of the END's objectives.

5. The Dominican Republic can play a key role within the CARIFORUM⁵ region in fostering growth and increasing the competitiveness of the region as a whole. The Dominican Republic's economy is currently the largest and most resilient in the CARIFORUM region. Its GDP (US\$60 billion) is almost a third of CARIFORUM's total GDP (US\$195 billion in 2011). This points to the potential of the Dominican Republic for playing a leading role in fostering regional growth. The Dominican Republic's strategies for ICT can also enhance the competitiveness of the region by strengthening the region's ties to international markets and attracting foreign investment.

B. Sectoral and Institutional Context

6. Liberalization of the telecommunications market has allowed the Dominican Republic's ICT sector to experience tremendous growth in the last decade. The General Telecommunications Law in 1998 created Instituto Dominicano de las Telecomunicaciones (INDOTEL), the state's independent regulatory authority for telecommunications, and opened the market to competition.⁶ The ICT sector has since grown to become one of the major pillars of the country's economy, accounting for 15% of the GDP^{7,8} in 2010.

7. Mobile phone subscription showed dramatic increase during the past decade. Mobile phone subscriptions surpassed 89% in December 2013 compared to 58.1% in 2007.⁹ Competition has been successful in bringing prices down and providing access. The mobile phone market is currently under a restructuring process, where two of the main operators have been taken over by a foreign group of investors, the effect of which remains uncertain.

8. Mobile broadband penetration is also very high. INDOTEL's Rural Broadband Network Project (2007) installed third generation mobile phone services (3G), with broadband internet access in 506 locations countrywide, covering almost all the municipalities (96%).

9. The national fixed broadband market is very active at the retail level, but not at the wholesale level. The main traditional telecommunications operators offering retail services were Codotel/Claro Dominicana, and Tricom¹⁰. In early 2014, Tricom and Orange Dominicana¹¹ were being acquired by the foreign investment group Altice¹². There are several cable television operators which would have the potential to offer fixed broadband access services if they were connected to

⁵ Forum of the Caribbean Group of African, Caribbean and Pacific (ACP) States (CARIFORUM). Participating states: Antigua and Barbuda, The Bahamas, Barbados, Belize, Cuba, Dominica, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Suriname, Saint Lucia, St. Christopher and Nevis, St. Vincent and the Grenadines and Trinidad y Tobago.

⁶ The General Telecommunications Law is consistent with ITU standards and ratifies the WTO Agreement on Basic Telecommunications.

⁷ World Development Indicators 2013 (<http://wdi.worldbank.org/table/5.12#>).

⁸ ICT services include computer and communications services (telecommunications and postal and courier services) and information services (computer data and news-related service transactions).

⁹ INDOTEL Statistics, March 2014.

¹⁰ GlobalComms Database, Telegeography, 2011.

¹¹ Mobile Broadband provider.

¹² Altice Group (<http://www.altice.net/phoenix.zhtml?c=252690&p=irol-aboutgroup>).

international connectivity points at affordable prices. Moreover, electricity transmission companies that have deployed fiber through their transmission networks for internal use, like ETED (Empresa de Transmisión Eléctrica Dominicana) and CEPM (Consortio Energético Punta Cana-Macao) have started or plan to start offering part of these fibers, or of its capacity on a commercial basis. In most areas, except in the main cities, only one provider offers retail fixed broadband services and although an interconnection policy is in place, wholesale prices are not regulated.

10. However, there is still a big gap in both accessibility and prices for fixed internet between major urban centers and rural and remote areas. For the poorest households, fixed internet connectivity prices equal 79% of the household's earnings.¹³ In 26 municipalities (16.8% of the existing 155) there are no fixed internet accounts registered¹⁴, and only 14.4% of households have internet, with 22.1% average in the city of Santo Domingo versus 5% in certain rural areas. The Dominican Republic has connectivity statistics below the regional average for Latin America indicators¹⁵.

11. Fixed broadband is more cost-effective and reliable for intensive users, such as institutional, corporate, and household users than mobile broadband, because it allows for higher access speed and more stability. Fixed broadband is also more reliable for government and corporate clients alike, especially those with decentralized units, which need to offer external online services or internal services through intranet or a private virtual network. The National Fiber Optic Network will help the national and municipal government reach citizens with improved services, and it will help citizens interact with the government.

12. Submarine cable international connections exist and are not an obstacle for fixed broadband supply. In March 2014, the NAP of the Caribbean¹⁶ offered wholesale high speed internet at US\$125 for each Mbps of symmetrical speed (i.e. equal speed for uploading and for downloading). However, in most municipalities this service is offered by a single provider, for about US\$500¹⁷; the difference in price between the NAP and the average municipality is due to national transmission (or backbone) costs; in most municipalities there is no competition in this network segment.

13. In the national fixed broadband market, the incumbent¹⁸ holds more than half of the market and there is not a strong additional player.¹⁹ The heavy upfront investment required to build a high speed fiber optic network, coupled with the low and slow return on investment expected in some of the rural and poorer areas, has discouraged other operators from operating beyond the more densely populated and richer areas.

¹³ Measuring the Information Society, ITU, 2012.

¹⁴ ENHOGAR.

¹⁵ 35.5% vs. 39.5% of internet users; 4% vs. 7.5% of fixed broadband internet subscribers (World Bank Indicators)

¹⁶ NAP of the Caribbean: Network Access Point of the Caribbean. It offers Data Center, Disaster Recovery and Business Continuity Solutions. The main broadband suppliers in the Dominican Republic offer their connectivity services in the NAP of the Caribbean (Tricom, Wind Telecom, Consorcio Eléctrico Punta Cana Macao or CEPM, Orange, Viva, Codetel/Claro, Columbus Network, Estrela Telecom, Unified Communications y OneMax).

¹⁷ Information provided by the Engineer Alvaro Nadal from the NAP of the Caribbean.

¹⁸ The incumbent in the Dominican Republic is Claro. It is the former state-owned monopolistic operator and has about half of the market share in most of the main retail services.

¹⁹ *Dominican Republic JIT Policy Notes 2013*. World Bank, 2013.

14. The proposed Project would support existing Government's efforts in addressing the lack of supply of fixed broadband connectivity, particularly in remote and marginalized areas of the country, and contribute to achieve its goal of providing universal and affordable access to all citizens. In the 2014-2015 Biennial Plan, INDOTEL planned a National Fiber Optic Network for US\$30,000,000, to be carried out through the proposed Project.

15. The proposed Project would also support the Government's efforts to improve the use of ICT's in vulnerable communities by working on the demand side of broadband. In the 2014-2015 Biennial Plan, INDOTEL included a set of projects to reduce the digital divide. In addition, the Ministry of High Education, Science and Technology (MESCyT) and the Ministry of Industry and Commerce (MIC) are promoting entrepreneurship and ICT support programs. The Presidential Office of ICT (OPTIC) in its Strategic Plan 2013-2016, identified among its objectives: 1) enhancing the use of e-government in public sector decision making; 2) creating channels for citizen participation; and 3) facilitating the use of e-services in society and the private sector. The proposed Project will align with these efforts and support an Open Innovation Hub to build ICT skills, particularly among the poor and women, and foster a culture of entrepreneurship by involving citizens in identifying and solving their own problems through ICT solutions.

C. Higher Level Objectives to which the Project Contributes

16. CARCIP addresses key Millennium Development Goals (MDGs).²⁰ It will promote economic growth, helping eliminate poverty by creating new opportunities for the unemployed and underemployed (MDG 1). The Program gives specific consideration to the special telecommunication needs of remote and rural areas ensuring that they will be able to connect to coastal fiber optic cables without experiencing exorbitant prices (MDG 1). ICT can promote the delivery of more effective and efficient services, for instance enabling the efficient delivery of health information in remote areas, and through disease and medical supplies tracking through mobile communication (MDG 4 and 5). Through its PPP (Public-Private Partnership) structure and policy of open access, the Program encourages private sector investment in ICT facilitating universal access to new technologies (MDG 8).

17. The proposed Project is fully aligned with the World Bank's Country Partnership Strategy (CPS) FY15- FY18 for the Dominican Republic, particularly with regard to supporting strategic objective III: "Improved access to more efficient and reliable ICT services". This is an area of strong demand for WBG support for which the WBG has extensive global experience. Given the importance of increased access to ICT services for nationally integrated and inclusive growth and for the open data agenda, this is a high priority area for engagement when applying selectivity filters.

18. The proposed Project will target poor communities contributing to the achievement of the World Bank Group's twin goals. The Project is expected to make ICT-based services and jobs available to a larger share of population, therefore promoting shared prosperity and reducing poverty. The exact location where the new broadband infrastructure will be rolled-out will be defined through a competitive bidding process, taking into account parameters that reflect levels of poverty, access to broadband services, and impact in beneficiaries. The economic analyses carried

²⁰ See <http://www.un.org/millenniumgoals/> for complete list of MDGs.

out show remarkable potential reductions on wholesale and retail broadband services tariffs. This would significantly increase affordability and access to broadband-enabled services, particularly amongst mid and low income households. The proposed Project will also foster the development of innovative ICT based services. This will stimulate the demand of ICT enabled services and jobs. Capacity building activities will help minimize the barriers of entry and maximize inclusiveness of citizens with less income and/or less ICT- skills.

19. The proposed Project is expected to contribute to the overall objectives of the END. Among those is the target of reaching 80% of Internet penetration by 2030. Potential outcomes of the program are likely to include the following:

- a. Help the Government promote economic and social development and reduce poverty by making ICT more accessible to remote rural areas.** International experience²¹ shows that a 10% increase of mobile telephony penetration carries a 0.50% increase in growth of GDP; and a 10% increase of broadband internet service penetration represents a 1.3% increase of growth of GDP. According to the IDB²², in Latin America, a 10% increase in broadband penetration²³ could increase the GDP by 3.2% and increase productivity by 2.6%.
- b. Setting up the foundations to facilitate the development of an IT industry that allows for the country to diversify its economy.** With better and more affordable connectivity across the country, the Dominican Republic could become an attractive destination for the global IT/ITES industry and realize sustained export-led growth. Country-wide ICT-enabled entrepreneurship is also a key element to foster job creation, innovation and competitiveness.
- c. Contribute to emergency national plans with a more resilient regional infrastructure and an emergency communications network that allows the Government to be more responsive.** In emergency situations, high levels of official responsiveness and coordination are essential to save lives. The proposed Project will contribute to that aim by supporting the creation of alternative routes for data traffic, which will enhance the resilience of the communications networks.
- d. Improve government efficiency, transparency, and access to services enabling the development of e-government and e-society applications.** The proposed Project will also expand the telecommunications infrastructure for the government. This will enhance connectivity between central and municipal offices. It will provide government offices with more

²¹ World Bank Group ICT4D, 2009.

²² Inter-American Development Bank, Building bridges, creating opportunities: broadband as a catalyst for economic and social development in the countries of Latin America and the Caribbean, 2012.

²³ Broadband Internet is referred to access to high-speed internet access. There is no an only definition about what access speed qualifies as a broadband connection. The Recommendation I.113 of the section for normalization of the International Telecommunications Union considers broadband to a capacity of transmission higher than the primary speed of the Integrated Services Digital Network (ISDN), i.e., more than the 1.5 or 2 Mbit/s. (<http://www.itu.int/rec/T-REC-I.113-199706-I/en>). The Group of Statistics of the ITU understands as broadband access a speed no inferior to 256 Kbit/s in at least one of the two directions (upload or download) (<http://www.itu.int/ITU-D/ict/handbook.html>). In this document it is taken into accounts this last value.

reliable broadband connectivity and facilitate not only internal, but citizens' access to information and potential services at the national level.

20. The proposed Project will contribute to addressing the differences in men's and women's access to certain ICT-enabled productive resources. The Project activities, many oriented to female participants, will pursue ensuring an overall equitable participation by men, women, boys, and girls in capacity building and technological transfer activities, to foster equitable access to ICT-enabled productive resources. The Project's success in promoting stakeholders and beneficiaries' female participation will rely on: (i) the identification of specific training targets for the poor, mixed male and female, and female-only groups; (ii) the inclusion of women facilitators and mentors; and (iii) the inclusion in the Project's results framework of an indicator tracking the level of participation of women.

21. The proposed Project will contribute to the further integration of the Dominican Republic in the Caribbean region, expanding the regional broadband networks' capillarity. Strengthening the connectivity with regional and global broadband networks improves the region's overall competitiveness in international markets and improves regional trade. It also provides economies of scale to increase the viability of new locally-developed digital services. This infrastructure allows access to regional and international knowledge networks. It would allow the country to deepen its economic and social ties with the region, leveraging existing regional networks like the Caribbean Knowledge and Learning Network (CKLN), leading to more employment opportunities and private investment. The proposed project in the Dominican Republic will leverage significantly the developments achieved by CARCIP in the neighbor island countries that joined the Program (Saint Lucia, Saint Vincent and the Grenadines, and Grenada), due to its relative weight within the region.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

22. The Project Development Objective is to increase access to regional broadband networks and advance the development of ICT-enabled services in the Dominican Republic and in the Caribbean Region.

23. This is fully consistent with that of the overall CARCIP Program, namely to increase access to regional broadband networks and advance the development of an ICT-enabled services industry in the Caribbean Region. The proposed Project's objective is expected to be achieved through: (a) targeted investments in ICT infrastructure that fill the gaps at the national and municipal level, preferably in partnership with the private sector; (b) creating an open innovation ecosystem that fosters the development of ICT skills and ICT enabled services; and (c) strengthening institutional capacity/arrangements to ensure effective program implementation and outcomes.

B. Project Beneficiaries

24. The proposed Project will benefit the citizens of the Dominican Republic. The primary target groups of the proposed Project are the actual and potential ICT services consumers (government, residential, and business), including specific tailored programs for children from poor neighborhoods

and women. It is expected that: (a) ICT consumers will enjoy greater access to better quality and lower priced ICT services, including high speed internet access, and there will be new consumers in the areas covered by the Project, including some the most underserved and poor areas of the country; and (b) ICT skills of citizens, entrepreneurs and developers will increase. In pursuit of the World Bank's main development goals, the selection of the areas where the Project activities will be implemented will take into account development parameters like poverty level, internet penetration and population; thus prioritizing certain groups of beneficiaries.

C. PDO Level Results Indicators

The achievement of the Project Development Objective will be monitored and measured through the following key results indicators:

- i.** Percentage increase in Broadband Penetration
- ii.** Decrease in retail price of internet services
- iii.** Number of services or applications created

III. PROJECT DESCRIPTION

A. Project Components

Component 1: Regional Connectivity Infrastructure (US\$25 million).

25. Subcomponent 1A: Enabling Environment (US\$1 million). Technical Assistance and Capacity Building for: (i) implementation support for the national fiber optic network, considering different alternatives to involve the private sector. This will include supporting the organization of a public competitive bidding and the negotiation of the contract; the services of an independent verification agent to certify that winning bidders have fulfilled the service agreements requirements; and, an impact assessment of the potential effects of grouping broadband public sector demand, including awareness raising and coordination activities (US\$0.5m); (ii) strengthening the legal and regulatory environment to harmonize it at the regional level (US\$ 0.3m); (iii) support regional coordination activities with other CARCIP program countries, for instance, activities organized by the Caribbean Telecommunications Union (CTU) (US\$ 0.1m); and (iv) design detailed environmental and social impact assessments and management plans, and monitoring their effective implementation (US\$ 0.1m).

26. Subcomponent 1B: Connectivity Infrastructure (US\$24 million). This component will support the reduction of broadband connectivity gaps between rural and poor areas, and urban and developed areas, through the deployment of a National Fiber Optic Network. This network will provide high-speed fiber optic connectivity to at least 12 head municipalities, and support the creation of a PPP that could expand that connectivity to all 32 head municipalities, the Capital District, and a large percentage of the 155 municipalities in the country, including the 32 above-mentioned. The infrastructure will enable the general population and the public sector to have affordable high-speed connectivity. It will reach interconnection points with regional backbone networks, as part of CARCIP's regional strategy

27. The proposed Project foresees involving the private sector, possibly under "a carrier of carriers" model, offering wholesale broadband to other telecommunications operators. As the private

sector's participation is a factor that is undetermined at this point, the Project has been designed to fully fund the public sector's participation and engage the private sector based on the recommendations and mechanisms elaborated in subcomponent 1A.

Component 2: Open Innovation Hub (US\$3.5 million)

28. This component is designed to leverage the opportunities created by the newly available infrastructure deployed in Component 1. It will stimulate broadband adoption to increase impact of the infrastructure by creating an ICT-enabled open innovation ecosystem in the Dominican Republic through an Open Innovation Hub. This program will tackle two important barriers to broadband service adoption: lack of digital literacy and lack of perceived value of broadband connectivity by companies and public administration.

29. The main activities under the Hub are: (i) improve ICT skills, with a special emphasis on women and children from poorer communities; (ii) promote the creation of an Open Innovation Ecosystem (citizens, Academia, SMEs, NGOs, public authorities, developers, artists, makers, etc.) leading to ICT enabled products and services to address societal challenges; and (iii) connect knowledge and entrepreneurs with incubators, investors and business opportunities.

30. The Hub will leverage existing infrastructure, such as INDOTEL's Cultural Center for Telecommunications (Centro Cultural de Telecomunicaciones) in Santo Domingo, as the Hub epicenter, and; INDOTEL's network of Telecenters (approximately 900) ensuring a proper connection to rural and most vulnerable communities.

31. The component focuses on overcoming skills gaps identified by ICT companies and by the MESCyT in order to increase competitiveness of existing companies, create jobs and new startups. The Hub will also support ICT experts, businesses and entrepreneurs for the creation of innovative solutions to fight poverty and inequality in vulnerable urban and rural communities. This will lead to the creation of a set of Open Source and Open Data applications and services addressing societal challenges. The applications will focus on cost-efficiency, ease of transferability and scalability potential. Applications and services published as Open Source will be available for others to use, adapt, enhance and redistribute.

32. Activities will leverage lessons learned from the World Bank's infoDev team, with successful results in implementing mLabs and mHubs in African and Middle East Countries. They will also leverage the World Bank's liaison with the European Network of Living Labs, which has experience on Open Innovation initiatives across the world, to ensure proper knowledge transfer.

Component 3: Project Implementation Support (US\$1.425 million).

33. This component will provide resources for the establishment and logistic support for a core PCU staff to administer and coordinate project implementation. It will also support oversight arrangements and capacity building for key Policy and Regulatory institutions.

B. Project Cost and Financing

34. The instrument to be used will be an Investment Project Financing through a Series of Projects. The total cost of the DR Project of the SOP (Series of Projects) is estimated at US\$30 million, funded by an IBRD (International Bank for Reconstruction and Development) loan.

Project Cost and Financing

Project Components	Project cost US\$ million)	IBRD Financing (US\$ million)	% Financing
1. Regional Connectivity Infrastructure	25	25	100
1.A Enabling Environment	1	1	100
1.B Connectivity Infrastructure	24	24	100
2. Open Innovation Hub			
3. Project Implementation	3.5	3.5	100
Support	1.425	1.425	100
Total Costs			
Total Project Costs	29.925	29.925	100
Front-End Fees	0.075	0.075	

C. Series of Projects

35. The World Bank approved the CARCIP Program in 2012 as a Series of Projects (SOP) sharing a common project design addressing specific issues faced by all participants but without any interdependency among projects. Saint Vincent and the Grenadines, Saint Lucia, and Grenada took part in the first phase of this modular regional Program. The Dominican Republic will be joining the Program through the proposed Project, to be financed by a US\$30 million loan. The Program will remain open to other regional countries willing to embrace its basic principles: (i) liberalized ICT Sector; (ii) country commitment; (iii) explicit request by the country authorities; (iv) guaranteed open and non-discriminatory access to the communications infrastructures developed under the Program; and (v) commitment to support the potential Public-Private Partnerships funded by the Program. The proposed Project in the Dominican Republic is a timely engagement that will allow sharing lessons learnt with the other countries participating in the First Phase, which is currently under implementation. These regional synergies will be enabled by the fact that the development objectives of the Project in the Dominican Republic are fully aligned with the overall Program goals: to increase access to regional broadband networks and advance the development of ICT-enabled services in the Dominican Republic and in the Caribbean Region

D. Lessons Learned and Reflected in the Project Design

36. **The proposed Project will benefit from the World Bank's experience in managing regional and national ICT Projects.** The proposed project takes into account experience from implementation of telecommunications sector reform/development projects, and regional connectivity projects in particular in Africa, South Asia, East Asia and Pacific, and from operations in the Caribbean region. Specific lessons reflected include focus on: (i) country/regional priorities

and ownership; (ii) strong policy/regulatory environments, including PPP frameworks and safeguards to underpin investment in ICT infrastructure; (iii) flexible program which is able to adapt to changing environments; and (iv) strong but lean implementation arrangements with effective performance monitoring. These lessons have shaped the design of the proposed program, risk analysis and management, and selection of country readiness/eligibility criteria.

37. The proposed Project will benefit from the World Bank Group’s experience in PPPs. The World Bank has extensive experience in supporting governments to structure PPPs for international, regional and national connectivity. Challenges in structuring PPPs, and corresponding World Bank learned solutions, have included: (i) inadequate trust and cooperative relationships between government and private sector and between competitors – the World Bank Group has been instrumental in mediating and developing transparent governance frameworks; (ii) inability of governments to provide effective regulations, and therefore any solution that depends solely on the regulator likely to fail – the World Bank Group has supported development of robust transaction agreements with clear rules of engagement adapted to the regulatory framework; (iii) high cost of quality expert advisory services for design, management of tenders and negotiation of contracts, and countries’ reluctance to invest their limited resources on such expertise – the World Bank Group has identified and made available additional Trust Funds to hire experts to complement preparatory work.

38. The proposed Project applies lessons learned in World Bank projects, mainly in Africa and in other Caribbean Countries. The Project will provide support to national regulatory institutions to strengthen their capacity to ensure an enabling environment for PPPs and competitive access to communications infrastructure. Financing of the connectivity infrastructure would be based on a competitive performance based financial incentives, under a public-private partnership model, and payments would be triggered by demonstrated delivery of pre-defined outputs.

39. The World Bank IEG (Independent Evaluation Group) report on ICT includes a set of recommendations that have also been addressed in project design:

- a. Reform and access.** Support broadband and Internet access by incorporating lessons learnt from experience and by updating the regulatory frameworks. In the regulatory aspect, IEG suggests to maintain the focus on preserving competition and supporting policy makers with new regulatory issues, as well as support catalytic public-private partnerships to accelerate regional and national backbone deployment to promote access to underserved areas. CARCIP is working with both national and regional institutions to update and improve the regulatory frameworks, to increase competition that could make broadband services more affordable. The proposed Project will support the Government to structure an appropriate PPP to own/manage connectivity infrastructure in a transparent and non-discriminatory manner.
- b. Applications.** IEG suggests building ICT expertise and awareness across regions, while taking into account the local context, building ICT skills, implementing the right policies, and promoting the benefits of shared infrastructure and services so that applications and services may be shared across government agencies wherever feasible. This is the approach taken by customizing CARCIP to each country’s need, within the regional context, as well as in defining the components, and in particular Component 2.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

40. INDOTEL will create a PCU to be responsible for the implementation of the proposed Project. The fiduciary aspects of the Project will be implemented by the PCU which will coordinate the technical, logistics and implementation aspects of the Project, as well as relevant stakeholders and beneficiaries. Given that INDOTEL's staff had no experience in Bank's procurement processes, the PCU has been strengthened with a Procurement Specialist with relevant experience in Bank's procurement procedures and requirements. Additional procurement staff may be needed based on the workload. Further, its capacities may need to be strengthened by adding financial management expertise to accommodate the additional work to be undertaken, and to maintain segregation of duties in key financial management processes so as to keep a solid internal control environment. Detailed implementation arrangements are included in Annex 3.

41. The PCU will interact with current procurement and financial management structures detailed in the Operations Manual. Also, INDOTEL's Board includes the Ministry of Economy, Planning and Development which ensure the participation of the different agencies involved in the implementation.

B. Results Monitoring and Evaluation

42. The PCU will bear the primary responsibility for project monitoring and evaluation (M&E), and as such, will establish standard formats and guidelines for data collection and reporting and organize training sessions for Project stakeholders in their use. Data for many of the indicators in the results framework are already being collected on an annual basis by national level institutions, such as the National Statistics Office (Oficina Nacional de Estadística or ONE) or by INDOTEL itself. Monitoring and evaluation of the Project will be embedded in the various components of the Project to ensure results are properly monitored. In addition, the CTU will be monitoring the implementation at the regional level to ensure success of the overall CARCIP.

C. Sustainability

43. The Government is committed to a holistic ICT agenda which ensures the sustainability of the program. Moreover, the approach of the Project covering both the supply and the demand side of the ICT sector ensures its sustainability beyond the program duration. As demand is created through the development of a broadband ecosystem that spurs human capacity as well as ICT and non-ICT related entrepreneurship and social innovation, it is expected that supply of ICT services will be further stimulated, ensuring a self-reinforcing cycle of ICT investment and growth in the country.

44. The PCU has carried out stakeholder consultations during the preparation of the Project to ensure relevance of the activities proposed. Stakeholders consulted include telecommunications operators, public administration (at the central and local levels), universities, private firms, and NGOs. The proposed Project will connect and leverage existing initiatives and public spaces to increase Project sustainability. The existing strong collaboration environment, including citizens as main actors, can also support sustainability of Project initiatives under Component 2.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	Rating
Stakeholder Risk	Moderate
Implementing Agency Risk	Moderate
- Capacity	Moderate
- Governance	Moderate
Project Risk	
- Design	Moderate
- Social and Environmental	Moderate
- Program and Donor	Low
- Delivery Monitoring and Sustainability	Moderate
Overall Implementation Risk	Moderate

B. Overall Risk Rating Explanation

45. The overall risk is Moderate, with the main risks being: (a) possible opposition from the private sector and low participation; and (b) the novelty of the design of the open innovation component in the country context could lead to uncertain uptake and results. These risks will be managed through: (a) awareness raising activities, conducting a thorough study of the legal framework that will support the required Public Private Partnership (PPP) to structure it in such a way that is resilient to possible challenges and to aggregate the demand for broadband services to be attractive for the private sector; and (b) consultations with the main stakeholders in the country, and by linking the Project's activities with existing open innovation efforts in the country.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

46. Under the current competition scenario in the wholesale and retail broadband markets, reliable broadband services are not available or affordable for many potential consumers. Moreover, the development of ICT-based services and applications is relatively limited, which also hampers socio-economic development. Therefore public intervention, possibly under a Private-Public Partnership scheme, is needed to change the current market dynamics and strengthen competition in the backbone and access segments of the broadband network; as well as to catalyze the existing open innovation dynamics. The World Bank has the unique advantage of having the technical expertise as well as the engagement with local and international stakeholders, to support the Dominican Republic public authorities to finance, design, and manage the deployment of a backbone broadband network and an Open Innovation Hub.

47. CARCIP's regional connectivity will boost the fixed broadband connectivity in the Dominican Republic and increase its affordability. For the Dominican Republic, the net economic impact is more than US\$ 107 million, US\$ 24 million in present value (29 percent EIRR), with a terminal value of US\$ 190 million, and with a 14.86 percent cumulative average growth rate (CAGR) in terms of subscribers. A detailed explanation of the approach, assumptions and results is included in Annex 6.

48. The proposed Project could provide a sustainable source of income to help diversify the economy and reduce unemployment in the Region. The development of an ICT industry in the countries of the Caribbean region can contribute to diversify the economy from tourism and provide a less cyclical source of income. By its nature, the ICT industry makes it easier to redirect exports from one set of demand countries to another when economic crisis impact the initial set of demand countries. Moreover, ICT services have proven to be among the most resilient sectors in the global economy²⁴. As tourism dependent economies, most Caribbean countries receive tourists from mostly North America and Europe, and they are not integrated in trade relationships with the BRIC nations (Brazil, Russia, India, China). The proposed Project has the potential to integrate BRICs and the Caribbean countries, which could anchor them with high performing economies for future growth and also foster tourism diversification. The impact of connectivity in rural areas will contribute to integrate social groups and bridge the gender divide.

B. Technical

49. The Project seeks to (i) provide technical support to the network design (ii) ensure that the legal and regulatory framework is adequate; (iii) design the PPP bidding process to promote leveraging the Project funds with private sector investment; (iv) roll out the connectivity infrastructure according to the proposal awarded in the competitive bidding process; (v) create an Open Innovation Hub to work on the demand-side of the broadband ecosystem; (vi) support ICT experts, businesses and entrepreneurs in the creation of innovative solutions to fight poverty and inequality in vulnerable urban and rural communities; and (vii) support implementing all the previous actions.

50. Technical network design issues include openness to PPP arrangements where appropriate, open and competitive networks, effective utilization of government networks to complement national networks, financing of terrestrial cable deployments, and assistance to develop a broadband ecosystem by implementing open innovation approaches to spur human capacity as well as ICT and non-ICT related entrepreneurship and social innovation.

C. Financial Management

51. The financial management (FM) of the proposed Project will be undertaken by the PCU. INDOTEL has considerable experience with implementing the financial aspects of ICT Projects but needs to strengthen its FM capacity to manage World Bank Projects. Financial management assessments were carried during Project preparation to ensure that the systems to be used to manage

²⁴ UNCTAD, Information Economy Report (2009), available at http://unctad.org/en/docs/ier2009_en.pdf.

the Project satisfy the Bank requirements. The Bank concluded that FM arrangements are adequate to provide, with reasonable assurance, accurate and timely information on the status of the Project. Details of conducted financial management assessments are included in the Annex 3.

D. Procurement

52. Procurement for the proposed Project will be carried out in accordance with the World Bank "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011 and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011 and revised July 1, 2014, in addition to the provisions that will be stipulated in the Loan Agreement. For each contract to be financed, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame will be agreed between the Dominican Republic and the Bank and set out in the Procurement Plan. The Procurement Plan will be updated at least annually or bi-annually as required to reflect the actual Project implementation needs and improvements in institutional capacity.

53. An assessment of INDOTEL's capacity to implement procurement activities was carried out during Project preparation. The PCU has already hired a Procurement Specialist to start preparing the Procurement documents of the project. The assessment concluded that, although INDOTEL implemented a Bank Project successfully, this Project closed in 2006 and since then the procurement staff dedicated to the Project was no longer in INDOTEL. The Bank has recommended strengthening the capacity of the PCU by recruiting an experienced Procurement Specialist with relevant knowledge of Bank's Procurement and Consultant Guidelines. More details are provided in the respective technical annex.

E. Social (including Safeguards)

54. While unlikely, the possibility that there may be a need for land acquisition for terrestrial facilities has triggered OP/BP 4.12 (Involuntary Resettlement). Due to the fact that specific Project areas are still unknown, a Resettlement Policy Framework (RPF) has been prepared and disclosed in the Dominican Republic (in INDOTEL, in its webpage, and in a national newspaper) and in the World Bank's webpage on May 22nd 2014. Although no land acquisition will be financed by the proposed Project, any land acquisition in the context of the project must follow the RPF. The RPF covers the regional aspects and context of CARCIP but has been prepared for the Dominican Republic. However, impacts are not anticipated given that facilities are expected to follow existing rights of way, especially roads. A determination of specific impacts will be made early during Project implementation and corresponding Resettlement Action Plans, if applicable, will be prepared. In the meantime, the PCU will build its capacity to manage safeguard issues in view of the region's vulnerability, and the related Projects, which require effective management of social safeguards. Additional capacity will be added as required.

55. The Program is expected to have many positive social impacts by improving access to communications, and the development of an ICT-enabled open innovation ecosystem in the Dominican Republic. Particularly, the program is expected to: (i) enable ICT to become a driver for sustainable economic growth; (ii) support ICT experts, businesses and entrepreneurs for the creation of innovative solutions to fight poverty and inequality in vulnerable communities of urban and non-urban areas of the Dominican Republic; (iii) enable the government to use ICT to provide

decentralized services; (iv) improved access and quality of ICT services for the general population, business, and government; (v) reduce isolation and enhance economic activities in rural areas; and (vi) create additional opportunities for women entrepreneurs to develop ICT-related SMEs through targeted skills development and relevant business development support. The open innovation component will implement citizen engagement and co-creation activities, including tailored programs for women and children, taking into account the levels of poverty and access to internet, amongst other parameters, to target the beneficiary communities. Besides the implementation arrangements, during Project preparation the team consulted and engaged most relevant stakeholders, who have shown proactivity and interest in taking part in the Project implementation phase. A more detailed description is in Annex 3.

F. Environment (including Safeguards)

56. The Environmental Assessment Category of the Project is B. OP/BP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats), and OP/BP 4.11 (Physical Cultural Resources) have been triggered. Major social and environmental impacts of such activities are not anticipated. Nevertheless, appropriate safeguards instruments have been prepared to ensure that all Project activities meet the requirements of the relevant national legislation and international conventions to which the region is a signatory, as well as World Bank Group safeguard policies.

57. The exact locations of the backbone network have not yet been determined, and it is therefore premature to undertake a site-specific Environmental and Social Impact Assessment (ESIA) and a Resettlement Action Plan (RAP). These will be part of the Environmental and Social Management Framework (ESMF) (consistent with national laws and OP 4.01). Prior to Project appraisal, the draft ESMF and RPF were reviewed by the Bank and publicly disclosed in country as well as in the World Bank Infoshop, on May 22nd 2014. The purpose of the frameworks is to: (i) provide as much information as possible about potential environmental impacts at the Project's current state of preparation; (ii) inform the Project planning and design process by comparing the potential impacts of alternative locations, configurations, and construction techniques that are under consideration; and (iii) describe the procedures for subsequent assessment of impacts and development of the appropriate impact management when the details of the Project become available. These management instruments are likely to be an Environmental and Social Management Plan (ESMP) and associated in-country permit requirements, and will be prepared in conformance with the procedures and methods described in the ESMF. Potential impacts in Natural Habitat (OP/BP 4.04) are addressed in the ESMF through including for the network's bidding process a screening criterion to avoid negative impacts in Natural Habitats and avoid critical natural habitats. Also, potential impacts in Physical Cultural Resources (OP/BP 4.04) are addressed in the ESMF including provisions and guidance on the chance finds procedures within the EMP and contracting documents.

58. The physical components of terrestrial connectivity to be financed under the program will likely include construction of ducts, poles and deployment of earthed and unearthed cables. The ESMF will discuss the deployment of earthed or unearthed cable for national backbones, government networks and rural networks. Specific ESMPs will be prepared as necessary for terrestrial facilities, if any, during Project implementation in line with the Environmental and Social Management Framework once the locations of those facilities have been identified. The ESMF specifically excludes the installation and maintenance of submarine cables or the installation or improvement of landing stations on coastal zones.

Annex 1: Results Framework and Monitoring

Country: Dominican Republic

Project Name: Caribbean Regional Communications Infrastructure Program - Dominican Rep. (P147483)

Project Development Objectives

PDO Statement

The Project Development Objective (PDO) of the Dominican Republic proposed Project is to increase access to regional broadband networks and advance the development of ICT-enabled services in the Dominican Republic and in the Caribbean Region.

These results are at | Project Level

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator, definition, etc.)
				YR1	YR2	YR3	YR4	End Target				
Percentage increase of Broadband Penetration	<input type="checkbox"/>	Percentage	0.00	0.00	0.00	10.00	20.00	30.00	Annual	Operators / Regulators Report	INDOTEL	The percentage increase in the broadband network under the Project
Retail price of internet services	<input type="checkbox"/>	Number	903.00	903.00	903.00	812.00	722.00	632.00	Annual	Operators / Regulators	INDOTEL	The price of

(per Mbit/s per Month, in DOP)										Report		access to the internet at an equivalent of 1Mbit/s per month
Number of services or applications created	<input type="checkbox"/>	Number	0.00	3	5	7	10	12.00	Annual	Open Innovation Hub	INDOTEL / Open Innovation Hub	Number of applications created in the Open Innovation Hub under the Project

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator, definition, etc.)
				YR1	YR2	YR3	YR4	End Target				
Length of Fiber Optic Network Built (km)	<input checked="" type="checkbox"/>	Kilometers	0.00	0.00	0.00	300.00	600.00	900 ²⁵	Annual	Operator Report	INDOTEL	The kilometers of fiber deployed in the country
Municipalities connected under Project	<input type="checkbox"/>	Number	0.00	0.00	0.00	4.00	8.00	12.00	Annual	Operator Report	INDOTEL	The number of municipalities that will be connected

²⁵ Length of Fiber Optic Network expected to be deployed with the US\$24 million public investment.

												under the Project
Direct Project Beneficiaries	<input type="checkbox"/>	Number	0.00	0.00	0.00	575,000.00	1,150,000.00	1,725,000.00 ²⁶	Annual	Operator Report/National Statistics Office	INDOTEL	The number of people who benefit from the Project
Of which female	<input type="checkbox"/>	Percentage	0.00	0.00	0.00	50.00	50.00	50.00	Annual	Operator Report/National Statistics Office	INDOTEL	
Number of people trained	<input type="checkbox"/>	Number	0.00	60.00	120.00	180.00	400.00	600.00	Annual	Open Innovation Hub	INDOTEL / Open Innovation Hub	The number of people trained in IT/ITES skills under the project.
of which female	<input type="checkbox"/>	Percentage	0.00	20.00	35.00	40.00	45.00	55.00	Annual	Open Innovation Hub	INDOTEL / Open Innovation Hub	
Number of head municipalities reached thanks	<input type="checkbox"/>	Number	0.00	0.00	0.00	1.00	2.00	3.0 ²⁷	Annual	INDOTEL	INDOTEL	The number of municipalities connected

²⁶The average population in 2020 in a head municipality in the Dominican Republic is 205,544.4.. For 2020 the Dominican Republic projections show that about 70% of the population will be between 10 and 60 years old. It has been assumed the same percentage to calculate the direct beneficiaries of the Project.

²⁷ The total number of municipalities expected to be covered by the Project are 15 (12 municipalities under the US\$24 million public investment and 3 from the PPP)

to private sector investment through the PPP												under the Project thanks to the private sector investment
----------------------------------------------	--	--	--	--	--	--	--	--	--	--	--	-----------------------------------------------------------

Annex 2: Detailed Project Description

DOMINICAN REPUBLIC: CARIBBEAN REGIONAL COMMUNICATIONS INFRASTRUCTURE PROGRAM (CARCIP) PROJECT

1. The CARCIP Program is structured as a Series of Projects (SOP) sharing a common project design that addresses specific issues that are faced by all participants but without any interdependency among individual projects. Multiple borrowers can participate in the SOP if they comply with the Program basic principles described below. Saint Vincent and the Grenadines, Saint Lucia, and Grenada took part in the first phase of this modular regional Program, with a total amount of US\$25 million. The Dominican Republic will be joining the Program through the proposed Project, to be financed by a US\$30 million loan. The Program will remain open to other regional countries willing to embrace its basic principles: (i) liberalized ICT Sector; (ii) country commitment; (iii) explicit request by the country authorities; (iv) guaranteed open and non-discriminatory access to the communications infrastructures developed under the Program; and (v) commitment to support the potential Public-Private Partnerships funded by the Program. The proposed Project in the Dominican Republic is a timely engagement that will allow sharing lessons learnt with the other countries participating in the First Phase, which is currently under implementation. These regional synergies will be enabled by the fact that the development objectives of the Project in the Dominican Republic are fully aligned with the overall Program goals: to increase access to regional broadband networks and advance the development of ICT-enabled services in the Dominican Republic and in the Caribbean Region. The proposed Project in the Dominican Republic will consist of the following three components: (i) Component 1: Regional Connectivity Infrastructure US\$25 million; (ii) Component 2: Open Innovation Hub (US\$3.5 million); and (iii) Component 3: Implementation Support (US\$1.425 million). The World Bank approved CARCIP Program in 2012.

2. **Component 1- Regional Connectivity Infrastructure (US\$25 million)** This component has two subcomponents: (A) Enabling Environment (US\$1 million); and (B) Connectivity Infrastructure (US\$24 million). Subcomponent 1A will provide technical assistance and capacity building for, among others: (a) the design and implementation of public private partnership (PPP) arrangements, including: (i) the provision of transactional advice and validation of design and costs for the fiber optic backbone network to be carried out under Part 1B below; and (ii) the carrying out of an impact assessment and awareness campaigns of the potential effects of grouping broadband public sector demand; (b) the revision and strengthening, as needed, of the legal and regulatory environment to provide effective regulation for the benefit of end-users, including infrastructure sharing and open access to the broadband network; (c) the carrying out of regional coordination activities with other CARCIP countries including, among others: (i) the participation in training activities; and (ii) the strengthening of C@ribNet's use for innovation and skills development activities; and (d) the implementation, monitoring and evaluation of the ESMF and RPF. Under subcomponent 1B the Project will establish a fiber optic backbone network to connect populated areas within the Dominican Republic to existing regional broadband networks and to increase national and cross-border.

3. **Subcomponent 1A: Enabling Environment (US\$1 million).** Technical Assistance and Capacity Building for (i) implementation support for the national broadband backbone network, considering different alternatives based on involving the private sector, as well as independent

verification of the deployed infrastructure, and impact assessment (with inter-institutional coordination actions as required) of the potential effects of aggregating public sector demand (US\$0.5 m); (ii) strengthening the legal and regulatory environment to harmonize it at the regional level (US\$0.3 m); (iii) support regional coordination activities under CARCIP (US\$0.1 m); and (iv) design of detailed environmental and social impact assessments and management plans, and monitoring of their effective implementation (US\$ 0.1m).

4. This subcomponent will support the commercial, legal and regulatory aspects for the successful implementation of the Project. The commercial aspects of this subcomponent will support organizing a public competitive bidding to award and negotiate the contract for designing, rolling-out, operating and maintaining the national broadband network. The actual PPP model will be decided at the first phase of the Project by technical criteria and according to the basic openness principles of CARCIP. This process could include, amongst others, collecting relevant sector information to support the bidding process, defining technical requirements, defining rolling-out phases and procedures, elaborating requests for proposals, and supporting the negotiations for the final agreement.

5. From the legal and regulatory point of view, this subcomponent will look at proposing modifications as required to ensure that the rights of all market and Project stakeholders are properly guaranteed, and that Project interventions are backed by the normative framework. INDOTEL, as both the Executing Agency for the Project and the Telecommunications Market regulator, guarantees first-hand institutional guidance.

6. The Project also foresees the possibility to catalyze the public sector's broadband demand. This will be done by organizing dissemination and coordination activities at the technical and/or political levels, to communicate the potential savings that could be achieved by aggregating broadband demand from public institutions. INDOTEL would take the lead role and interact with public sector institutions to raise awareness of: (i) the future deployment of the national fiber optic network, and the potential benefits from the effects of increased wholesale competition that the Project will trigger in the coming years; and (ii) the opportunities for ministries such as the Ministry of Public Health and the Ministry of Education, which have hospitals and schools country-wide, to benefit from a bulk broadband purchase agreement. A long-term contract to supply broadband services to such institutions could ensure a minimum sustained demand in the national fiber optic network. This could help attract private sector investment to expand the network beyond the financial limits of this Project.

7. In addition, the Project will support regional coordination activities under CARCIP. Some of these activities may include capacity building for INDOTEL; participation in a joint communications strategy under CARCIP; work on harmonization of the regional regulatory framework for telecommunications; or support through CKLN to leverage the use of C@ribNet for innovation and skills development.

8. **Subcomponent 1B: Connectivity Infrastructure (US\$24 million).** This component will support the reduction of broadband connectivity gaps between rural and poor areas, and urban and developed areas in the Dominican Republic, through the deployment of a National Fiber Optic Network. The infrastructure will enable the general population and the public sector to

have affordable high-speed connectivity in the Dominican Republic. The fiber optic network will reach interconnection points with regional backbone networks, as part of CARCIP's regional strategy.

9. The Project foresees involving private sector players in the broadband network deployment and operation. The public – private collaboration framework will be developed during the first phase of the Project, under the subcomponent 1A, through the design, advertisement and execution of a bidding process for the roll out of the infrastructure. However, as the private participation is a factor that is undetermined at this point, the Project has been designed to fully fund the public sector's participation and engage the private sector based on the recommendations and mechanisms elaborated in subcomponent 1A. The Project foresees rolling out the network using the US\$24 million allocated to infrastructure to leverage private sector funds, and expand the reach and impact of the network.

10. The National Fiber Optic Network will provide high-speed fiber optic connectivity to at least 12 head municipalities (under the first scenario), and support the creation of a PPP that could (under the second scenario) expand that connectivity to all 32 head municipalities, the National District, and a large percentage of the 155 municipalities in the country, which include the 32 above-mentioned. In both cases, the network scope will be determined as part of the competitive bidding process, and according to objective criteria that will take into account, amongst others, the amount of population impacted, the penetration rate of the impacted areas, and the poverty levels of those areas.

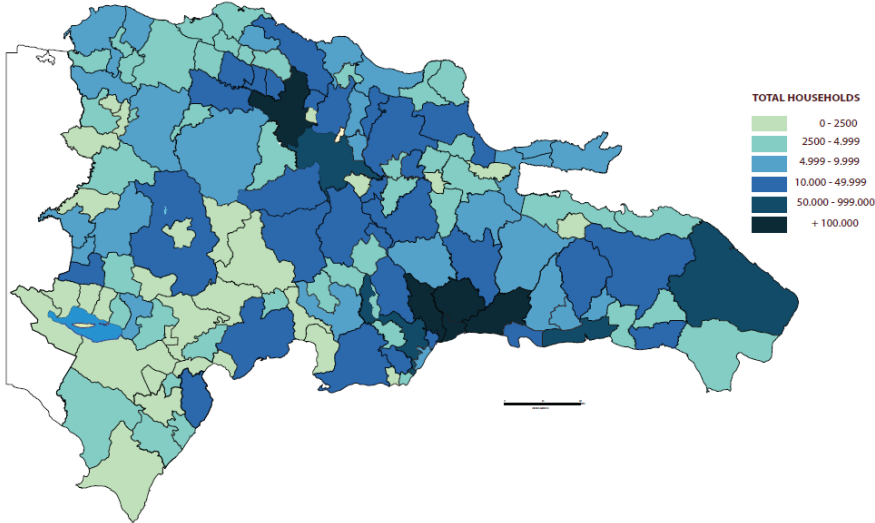
11. Although the final topology and scope of the connectivity network will be defined under subcomponent 1A and the bidding process, the bidding documents will ensure that the proposals received are aligned with the Project development objectives. Thus, it will be required that the technical equipment ensures durability and compatibility with foreseen mid-term technology developments and broadband traffic management requirements. Likewise, best efforts will be made so that the results and data generated under the different activities will be open, and therefore publicly available under certain circumstances. The openness principle may also translate into a “carrier of carriers” business model; and the awarded company will provide wholesale broadband services to other telecommunications operators.

12. This component will support bridging connectivity gaps in two areas. The DR seeks to develop a high speed broadband network that: (i) can extend to all municipalities within the Dominican Republic to create a more inclusive knowledge-based society and also improve the delivery of public services; and (ii) can provide connectivity links with the regional backbones, such as C@ribNet (project managed by CKLN within the CARIFORUM framework), thus enhancing the overall resilience of the regional network. The two objectives sought are: (i) increasing access to broadband (the Dominican Republic's government aims to expand internet access to 60% of the population by 2020 and 80% by 2030 and broadband has been identified as a major lever); and (ii) contributing to connect more municipalities to regional networks to facilitate regional trade and synergies.

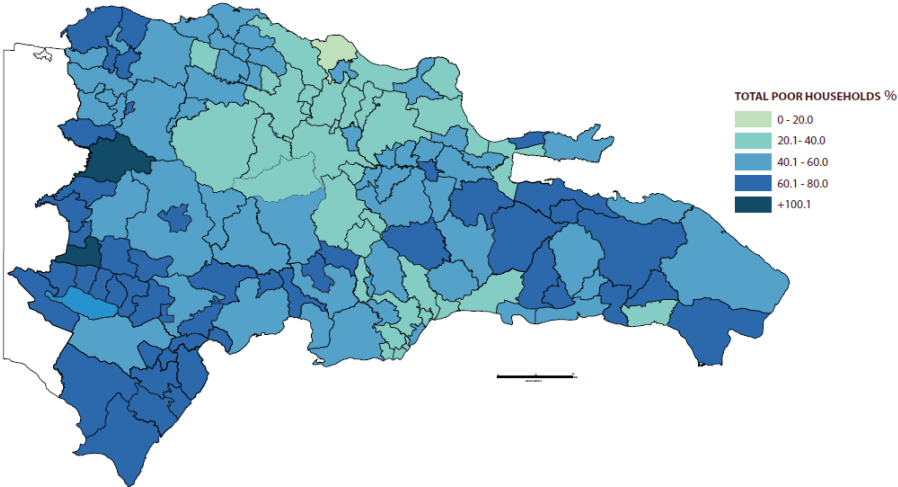
13. The Project design will take into consideration each location's characteristics (e.g. population size, poverty level, broadband penetration rate, etc.) to tackle the particular economic

and social cost for each of them. The maps below illustrate the current status of these dimensions in each municipality, and show that less densely populated areas tend to have lower internet penetration and bigger percentage of poor households; and vice versa:

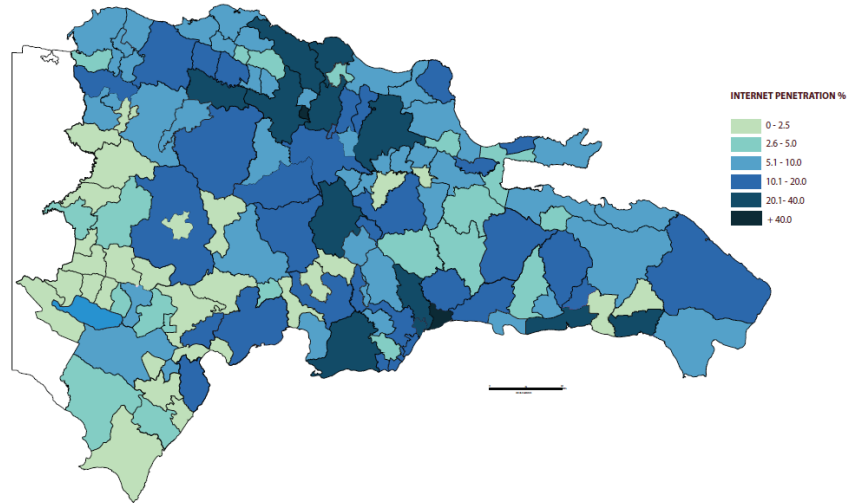
Graph 2: Total number of households by province



Graph 3: Percentage of poor households by province



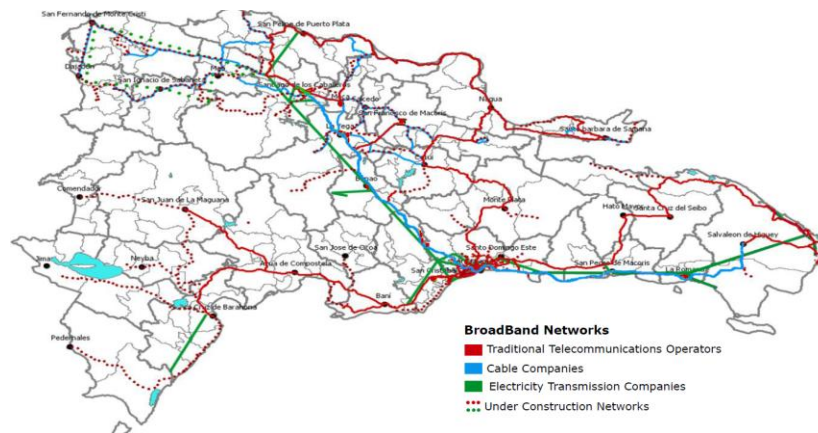
Graph 4: Percentage of internet penetration by province



14. Besides leveraging the loan to attract private capital to maximize the Project impact, in subsequent phases of CARCIP, the national network could be expanded to connect the remaining municipalities and/or municipal districts.

15. Much of the network assessment, coverage and feasibility work was financed through a grant of US\$250,000 from the Spanish Fund for Latin America and the Caribbean (SFLAC), for the preparation of the National Fiber Optic Network Project. INDOTEL executed the trust fund, which was in part used to hire a company (IDOM) to elaborate a feasibility study, completed in May 2012. Since Project preparation was interrupted in 2012; the study was updated in 2014 to reflect the sector's changes, and realigned to meet the objectives and funding resources of INDOTEL. One of the outputs of the feasibility study, which has been updated during the preparation of the Project and will be analyzed with further detail under component 1A, is the identification of existing and planned broadband networks in the country, as illustrated in the following map:

Graph 5: Planned and existing broadband networks by type of company



Component 2 –Open Innovation Hub (US\$3.5 million)

16. The Open Innovation component is designed to leverage the opportunities created by the new available infrastructure deployed in component 1. It will stimulate broadband adoption by implementing open innovation approaches to build ICT skills, as well as ICT enabled entrepreneurship and social innovation. This program will tackle two important barriers to broadband service adoption: lack of digital literacy and lack of perceived value of broadband connectivity by companies and public administration.

17. Broadband can be best thought of as an ecosystem of mutually dependent and reinforcing components: supply and demand. The supply of broadband network platforms is the first necessary condition (broadband infrastructure must be available). However, demand or usage of the broadband infrastructure is just as important in order to make substantial network investments worthwhile. Also needed is the ability of non-ICT sectors to use and create broadband-enabled services and applications, as this boosts demand and encourages further network deployments. Developing these synergies will largely determine the extent to which broadband affects the economy, serves as an enabling platform, and, ultimately, can act as an essential input in driving innovation and growth in all sectors.

18. However, supply and demand are not sufficient to guarantee that broadband can reach its full potential in the economy. For that to happen, broadband users must also have the “absorptive capacity” to understand, learn and apply the lessons learned about broadband’s benefits and capabilities across the economy and society. They need ICT skills.

19. The design and implementation of the Open Innovation Hub includes, among others:

(a) the establishment of the Open Innovation Hub, including, among others: (i) the development of an operational implementation plan for the establishment of the Open Innovation Hub which shall include, among others, proposed institutional arrangements, logistics and personnel needs; and (ii) the design and implementation of a communication strategy to inform relevant stakeholders about said Hub.

(b) the strengthening of ICT skills, including, among others, the design and implementation of mentorship and training programs on ICT and entrepreneurship skills;

(c) the promotion of an open innovation ecosystem, including, among others, the organization of co-creation competitions (including Hackathons), and other open innovation and entrepreneurship events to involve developers, students, start-ups and entrepreneurs in the creation of mobile applications and services; and

(e) the design and implementation of a platform to connect knowledge, business ideas and entrepreneurs with business incubators and business opportunities.

Table 1: Open Innovation Ecosystems and Social Innovation

Open Innovation Ecosystems

The concept of “innovation ecosystem” is used to describe the interaction between the main innovation actors that contribute to enhance competitiveness and generate growth and employment. In the context of the knowledge economy, beyond researchers, university faculty and industries; public administration, entrepreneurs, developers and investors are also considered important actors of the innovation ecosystem. Innovation ecosystems grow continuously with the increase of skilled persons capable of creating innovative products and solutions.

Henry Chesborough defines Open Innovation as ‘a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology’. This same concept can be translated to the way a government interacts with its citizens. For open innovation ecosystems, emphasis is placed on instruments such as Open Innovation Platforms, used to catalyze collaboration and spur innovation activities between public and private actors. In order to do so, community creation and community support activities to create awareness are crucial. These lead to new investments and new firms, as well as to the co-creation of new ideas, technologies, products and services.

Social Innovation

In general, social innovation can be defined as new responses to pressing social demands, which affect the process of social interactions. It is aimed at improving human well-being. According to a recent study of the European Commission²⁸, Social innovation can be defined as the development and implementation of new ideas (products, services and models) to meet social needs and create new social relationships or collaborations.

It represents new responses to pressing social demands, which affect the process of social interactions. It is aimed at improving human well-being. Social innovations are innovations that are social in both their ends and their means. Innovations that are not only good for society, but also enhance individuals’ capacity to act. They rely on the inventiveness of citizens, civil society organizations, local communities, businesses, and public servants and services. They are an opportunity both for the public sector and for the markets, so that products and services better satisfy individual, but also collective aspirations. Social innovation includes the social processes of innovation, such as open source methods and techniques, and innovations that have a social purpose, like microcredit or distance learning.

20. The main objective of this innovation component is to increase the impact of the investment in broadband infrastructure by promoting the demand side and absorptive capacity for broadband. It will do so by creating an ICT-enabled open innovation ecosystem through an Open Innovation Hub. The Hub will leverage existing infrastructure such as the Cultural Center for Telecommunications (Centro Cultural de Telecomunicaciones or CCT) of INDOTEL in Santo Domingo, as the Hub’s epicenter, and; the network of Telecenters from INDOTEL (currently a total of approximately 900 Salas Digitales, or Centros Digitales de Servicios Múltiples) ensuring a proper connection of the Hub to rural and most vulnerable communities.

²⁸ http://ec.europa.eu/bepa/pdf/publications_pdf/social_innovation.pdf.

21. There are four activities under this component: (i) Establish institutional arrangements for the Hub; (ii) Improve ICT skills, with a special emphasis on women and children from poorer communities; (iii) Promote the creation of an Open Innovation Ecosystem leading to ICT enabled products and services to address societal challenges; and (iv) Connect knowledge and entrepreneurs with incubators, investors and business opportunities.

22. The Hub will support ICT experts, businesses, and entrepreneurs, for the creation of innovative solutions to address the communities' most pressing problems, and fight poverty and inequality in vulnerable urban and rural communities in the Dominican Republic. This will lead to the creation of a set of Open Source and Open Data based applications and services addressing societal challenges. The solutions will be developed with a focus on cost-efficiency, ease of transferability and a possibility of scalability. Applications and services published as Open Source will be available for others to use, adapt, enhance and redistribute.

Do.In – Dominican Open Innovation Hub

23. The Open Innovation Hub will act according to four main building blocks, which incorporate a process leading to the creation of sustainable solutions for communities:

- Establish the Open Innovation Hub;
- Improve ICT skills with a special emphasis on women and children from poorer communities;
- Promote the creation of an Open Innovation Ecosystem in the Dominican Republic leading to ICT-enabled products and services that address societal challenges;
- Nurture a spirit of entrepreneurship: promoting the connection between knowledge, ideas with commercial potential or potential societal impact and the private and public sectors, business incubators or investors already existing in the Dominican Republic.

24. The Open Innovation Hub will be based on international successful experiences with innovation labs that leverage users and networks, such as living labs, adapted to the Dominican Republic reality.

Establishing the Hub

25. This activity will start by exploring possible institutional arrangements for the Hub, which will include the co-design of collaboration scenarios among the involved innovation stakeholders, such as universities, public administration, private sector and community based organizations; and defining the communication strategy for all the communication activities, which will play an important role in this component.

26. The funds will be used to:

- Develop the Open Innovation Hub strategy with the stakeholders;
- Develop the communication strategy for the Hub;
- Develop the operational implementation plan for the Hub, including definition of model, logistics and personnel needs.

Improving ICT skills

27. In order to improve ICT skills, the CCT will act as anchor for collaboration among the innovation ecosystem's stakeholders, and support and fund the following ICT-enabled activities directed to target audiences:

- Hands on training program and knowledge sharing between local developers and artists in specific ICT and entrepreneurship skills;
- Mentorship network and training programs with particular emphasis in supporting ICT-skilled women entrepreneurs;
- Coding and ICT skills programs for school populations in poor neighborhoods.

28. The Hub will leverage, encourage and support activities from local stakeholders already working with the aforementioned communities, giving them an important role in the definition of the agenda and the strategic guidelines for the Hub ICT-skills activities.

29. Developers Dominicanos and the Centro de Investigación para la Acción Femenina (Research Center for Feminine Action, CIPAF) organize periodic events with relevant importance in the aforementioned areas: Developers Dominicanos organized Google Developer Groups, DevFests, Bootcamps and several Android Development Hackathons with the objective of transferring knowledge and experiences among the developers' community in the Dominican Republic; whereas CIPAF has organized several activities such as the Gender Hackathon or ICT Girls Day, in cooperation with organizations like UNICEF.

30. Gender equality programs have the main objective of promoting equal access to ICT-driven careers and entrepreneurship opportunities to all genders. Community engagement activities based in successful models on increasing women ICT and entrepreneurship skills, such as Railsgirls²⁹ or Girls Who Code.³⁰ The aim of these programs is to give tools and a community for women to understand technology and create capacities to build their ideas. Existing experience from CIPAF has proven successful in increasing the number of girls to choose high education careers connected to technology and to ICT.

31. Programs with kids from most vulnerable areas have proven successful to create interest around kids which would not normally have access to ICT and computers in ICT-related aspects such as coding. Other examples of successful learning programs for school population from poor neighborhoods in the region, such as the experiences from Medellin or Quito will be taken into account. Examples like the Puntos Vive Digital in Colombia will be also taken into consideration as means to reach high impact next to vulnerable communities through spaces like telecenters. Facilitators of the telecentres will be trained, either through courses in Santo Domingo or through online learning platforms that will be used once the high speed fiber optic network is deployed.

32. This inclusive approach to innovation, which involves these specific targets that are most vulnerable and normally not involved in innovation activities, will contribute to further

²⁹ More information is available at <http://railsgirls.com/>

³⁰ More information is available at <http://girlswhocode.com/>

strengthen the alignment of the Project with the fighting poverty and achieving shared prosperity objectives: the creation of job opportunities and support to the entrepreneurship are concrete contributions to these objectives.

- 33.** The funds will be used to:
- Organize events around ICT-usage to create a community of developers in Santo Domingo, around the Centro Cultural de Telecomunicaciones.
 - Organize ICT courses addressing specific needs identified by the developers' community and by companies, in order to improve the overall quality of the local developers and the competitiveness of the ICT sector.
 - Organize ICT and Entrepreneurship events with the aim of increasing women participation in these domains.
 - Create periodic programs to support ICT usage in children from poor neighborhoods.

Promote the creation of an Open Innovation Ecosystem to address societal challenges

34. To promote social impact and engage local innovation stakeholders, the Open Innovation Hub will promote the creation of an Open Innovation Ecosystem to address societal challenges in the Dominican Republic.

35. Activities will be focused in establishing a conducive environment for innovation based in trust among stakeholders, and in an alignment of priorities according to the main societal challenges identified by the National Government and by the local communities.

36. The aim is to foster social innovation processes in local communities through the co-creation of ICT and broadband enabled services and applications, which will address problem statements that will be identified next to local communities, aligned with the Government's policies to reduce poverty and enhance the productive sector.

37. Activities to be organized include co-creation competitions on a national scale (e.g. Hackathons or App Competitions) aiming at the emergence of ICT-enabled services and applications for vulnerable communities in the Dominican Republic.

38. Co-creation events have been effective means to attract talent towards developing applications or services as well as fostering local entrepreneurship and innovation. The World Bank's recent experience with events like Water and Sanitation Hackathons and Co-Crea Colombia, which was organized simultaneously in the cities of Barranquilla, Cali and Manizales, shows the great potential of these tools.

39. These competitions for mobile app and ICT entrepreneurs have gained in popularity in recent years. They aim to provide opportunities especially for young innovators and technologists, for instance, offering cash, device, or incubation prizes. However, in places where ad hoc innovation competitions proliferated, they sometimes led to only temporary or no effects on innovative and entrepreneurial activity. For instance, competition fatigue and competition hopping are two worrying phenomena that the Project might need to take care of.

40. To tackle this issue, the main result of the co-creation events will be emergent product and service ideas as well as an active community of developers willing to support others and to implement their ideas in order to achieve real impact through their creations. The co-creation events will not be ad hoc competitions, but part of a coordinated strategy where all stakeholders are willing to collaborate in order to promote business and value creation by creating new jobs, new startups, new services and applications for the population and most importantly to the most vulnerable communities.

41. Additionally, participants in ICT courses will be encouraged to participate in innovation competitions (in the case of this Project, co-creation events or app competitions), thus having an opportunity to show the skills they acquired and promoting the quality of the courses next to the developers' and to the ICT companies' communities.

42. Finally, instead of offering cash, the prize for participation will be the opportunity to develop new skills (business models, marketing, communication, design thinking); to have access to a wide network of ICT stakeholders (which will be leveraged during the Project activities) and to solve concrete problems of the most vulnerable populations (events will be focused in finding solutions for vulnerable communities working within the territories of the Telecenters).

43. The funds will be used to:

- Organize regular Co-Creation Competitions (such as Hackathons or App Contests) and other open innovation and entrepreneurship events to involve developers, students, start-ups and entrepreneurs in the creation of mobile applications and services;
- Connect the best business models and business ideas with incubators or angel investors to create new businesses and jobs.

Connect knowledge, business ideas and entrepreneurs with business incubators and business opportunities

44. The Open Innovation Hub will focus on providing a suitable environment for the development of innovative products and services that better address social needs, the needs of public administration or a specific market, as a result of a structured process of interaction between various stakeholders. The promotion of entrepreneurship is therefore to be considered a key success factor.

45. The Hub will link to existing knowledge in Universities, business ideas and entrepreneurs with business opportunities, or business incubators in the Dominican Republic, promoting mentorship programs that will leverage on the capital of possible entrepreneurs and business ideas brought together by the Open Innovation Ecosystem. Likewise, the Hub will link to existing civil society organizations (e.g. foundations, developers, labs; many of them identified during the Project preparation) that can benefit from and/or add value to this ecosystem.

46. Connection between public sector, private sector and universities, will be established by an Open Innovation Platform based on previously existing experiences, such as mLabs and

mHubs implemented by the World Bank in countries like Vietnam, Kenya, and Armenia; or Demola, which was started in Finland and nowadays is scaling to other countries; or the Bank's Barcelona Urban Technology and Innovation Hub. This Platform will catalyze and facilitate links between needs, social or commercial challenges from the Public Administration or Private Companies, and existing skills in Universities. This will create business opportunities for university students and companies, promoting job creation and a spirit of entrepreneurship.

47. The challenges brought to the Platform might refer to societal issues addressed by the co-creation events identified through the network of Salas Digitales and Centros de Servicios Múltiples. Public services problems and others related to the Public Administration could be solved in the Open Innovation Platform or through co-creation events. This approach could enhance the quality of those public services. The commercial or industrial challenges addressed can improve the innovation ecosystem and the nation's private sector competitiveness.

48. This interaction among Universities and Public Administration or private companies generates benefits for all involved stakeholders, while promoting a new ICT-enabled innovation ecosystem: students gather experience by working in an interdisciplinary team and by exploring possible business/entrepreneurship opportunities; Universities are able to promote talent from their students and faculty staff and to adapt their courses to the skills that the market is demanding and companies create a new perspective towards the importance of Dominican-sourced creativity and innovation on their products and services. Furthermore, this component will look at leveraging domestic and regional funding vehicles and incubators, like MESCyT's National Entrepreneurship Program, INDOTEL's SMEs support program, or the incubator that is currently being planned in Jamaica with the support of the World Bank under the "Youth Employment in the Digital and Animation Industries Project".

49. Entrepreneurship support will consist in the creation of a follow-up process on previous activities, aiming at the selection of persons, teams and ideas most suitable to create a sustainable business model for a product that can achieve considerable impact in solving problems.

50. This initiative will build on existing policy initiatives implemented by the MESCyT (currently implementing the National Entrepreneurship Program); and by the Ministry of Industry and Commerce; by the OPTIC and by INDOTEL (currently implementing an SME support program).

51. The funds will be used to:

- Develop an Open Innovation Platform to connect Universities, Public Administration and Private Sector around productive collaborations to tackle specific problems, by creating innovative products and services;
- Support incubation of startups resulting from the Co-creation Competitions and from the Open Innovation Platform;
- Connect identified talent to existing Entrepreneurship support programs.

Component 3 – Implementation Support (US\$1.425 million)

52. Provision of support for: (a) the implementation, monitoring and evaluation of the Project's activities, including for: (i) the carrying out of Project audits; (ii) the design and implementation of strategies and other dissemination tools to inform Project stakeholders on the progress achieved during Project implementation; and (iii) the carrying out of impact evaluation surveys to evaluate the Project impacts; and (b) the carrying out of capacity building activities for the benefit of relevant policy and regulatory institutions.

53. This component will support the following activities:

- Establishment and hiring of core Project implementation staff, like a Project Coordinator, a Procurement Specialist, a Financial Management Specialist, a Project Accountant, and a Safeguards Specialist to support Project preparation and subsequent implementation.
- Logistic support for INDOTEL as needed (PCs, office equipment, operating costs, audits, and communication support).
- Monitoring and Evaluation (M&E) consultant and surveys to support indicator data collection for the various components.

54. This activity will develop a baseline study and a monitoring and evaluation framework in a multi-stakeholder evaluation approach, defining goals and success criteria for different actors and providing support to the local telecenters to define their own evaluation strategies, to support local governance and to monitor the impact of this component.

55. Indicators in addition to those in the M&E framework will be developed and will measure the impact of the Open Innovation Hub, in the population of different territories involved in the activities (e.g. rural livelihoods or urban environments). These impact indicators related to social impacts (living standards, jobs), social innovation processes (behavior changes), economic impacts, territorial attractiveness, etc.

Annex 3: Implementation Arrangements

DOMINICAN REPUBLIC: Caribbean Regional Communications Infrastructure Program (CARCIP) Project

i. Project Administration Mechanism

1. The Project Coordinator will be responsible for the effective and flexible coordination, management, and implementation of the Project. He/She will liaise effectively with selected Caribbean and the Dominican Republic focal points, and with all public and private stakeholders involved in the implementation of the Project.
2. A new PCU is in the process of being established under INDOTEL and will be in charge of the day-to-day management of the Project technical and logistical aspects, including the work program and coordinating with the relevant ministries and departments, procurement, financial management and monitoring and evaluation. The capacity of the PCU will be augmented under the Project to accommodate the additional work to be undertaken. The PCU will coordinate, at the regional level, with CTU, CKLN, and ECTEL. Given INDOTEL's existing fiduciary capacity in its own finance and administration department, it is expected that the PCU will remain small and will be supported by INDOTEL's own fiduciary systems, in respect to Financial Management and Disbursements. In terms of Procurement, the PCU's Procurement Specialist will interact with INDOTEL's current structures; further details are included in the Operations Manual.
3. At the national level, the Board of INDOTEL, which includes the Ministry of Economy, Planning and Development, will serve as the Project's steering committee to ensure adequate participation of the various government agencies involved in Project implementation.

ii. Subsidiary Agreement

4. To facilitate carrying out of the Project, the Borrower, the Ministry of Finance shall on-lend the proceeds of the Loan to INDOTEL under a subsidiary agreement (Subsidiary Agreement) to be entered between the Borrower and INDOTEL, under terms and conditions approved by the Bank. The signing of said Agreement is an Effectiveness Condition.

iii. Financial Management, Disbursements and Procurement

(a) Financial Management

5. With 16 years in operation, INDOTEL was created in 1998 by the Telecommunications Law 153-98, promulgated on May 27th, 1998. Since August 2000 INDOTEL has had full financial autonomy thanks to the introduction of the Telecommunications Development Contribution (TDC), mainly a 2% over total revenues reported by operators.

6. INDOTEL implemented a US\$12.3 Million IBRD Loan 45050-DO – Telecommunications Regulatory Reform Project, approved on July 6, 1999 and closed on September 30, 2006.

7. In calendar year 2012-13 the Bank performed financial and risk management assessments of INDOTEL: as part of the First Phase of the Caribbean Regional Communications Infrastructure program (P114963). A simplified financial management risk assessment for INDOTEL was conducted to assess its capacity to implement TF No. TF099933 (US\$250,000) supporting the preparation of the proposed Project. In April-May 2014, the Bank performed a financial management and risk assessment of INDOTEL to implement the proposed Project. The Project does not contemplate sub-loans/grants, neither has unique or complex features having a direct impact on its financial management operations. Other public and private entities will be engaged in technical aspects of the Project; however, INDOTEL is the fiduciary agent for the Project, and, as such, the only entity responsible for handling its Financial Management and disbursement aspects.

8. The Bank deliberated with the entity the feasibility of using Bank preferred approach of strengthening and using country systems where appropriate and feasible. INDOTEL's decision was to ring-fence Project operations with a PCU, similar to the entity's previous experience handling Bank-Financed operations. The entity took into account that there are some Project specific considerations such as staffing levels, to cope with increased workload, and country specific limitations, such as the use of external audit firms for external audits. Another element to consider that although there has been recent improvements: the capacity of the Court of Audits to cover all public entities is rather limited to perform this task.

9. The Project will have standard requirement in the FM clause of the Loan Agreement, mainly semiannual interim unaudited financial reports and annual external audit reports. It will follow Bank FM, Disbursement and Anti-Corruption Guidelines, plus the Operations Manual with detailed FM considerations. In order to manage, monitor and control Project's costs INDOTEL/PCU will prepare the Annual Operative Plan to be approved by the Bank, and additionally will submit Interim Unaudited Financial Reports (IFRs) with sufficient detailed information on expenditures made by project activities by component. Moreover, several supervision and monitoring activities, plus internal control measures will be put in practice according to specific procedures to be described in the Operations Manual. Furthermore, the Project will follow country and INDOTEL FM arrangements, when applicable, including:

1. Entity's FM Manual, dealing with the entire FM circuit.
2. The DR Government Financial Guidelines, in the current legal framework.
3. The DR regulations concerning the labor code, taxes and social security.
4. Country's Ethics Code for public servants.
5. The DR Access to Information Law, in line with the Bank policy, including transparently displaying the audit report at INDOTEL's webpage www.indotel.org.do, and at the Court of Audits' webpage www.camaradecuentas.gob.do.

- **Financial Management Risk Ratings and Risk Mitigating Measures are below:**

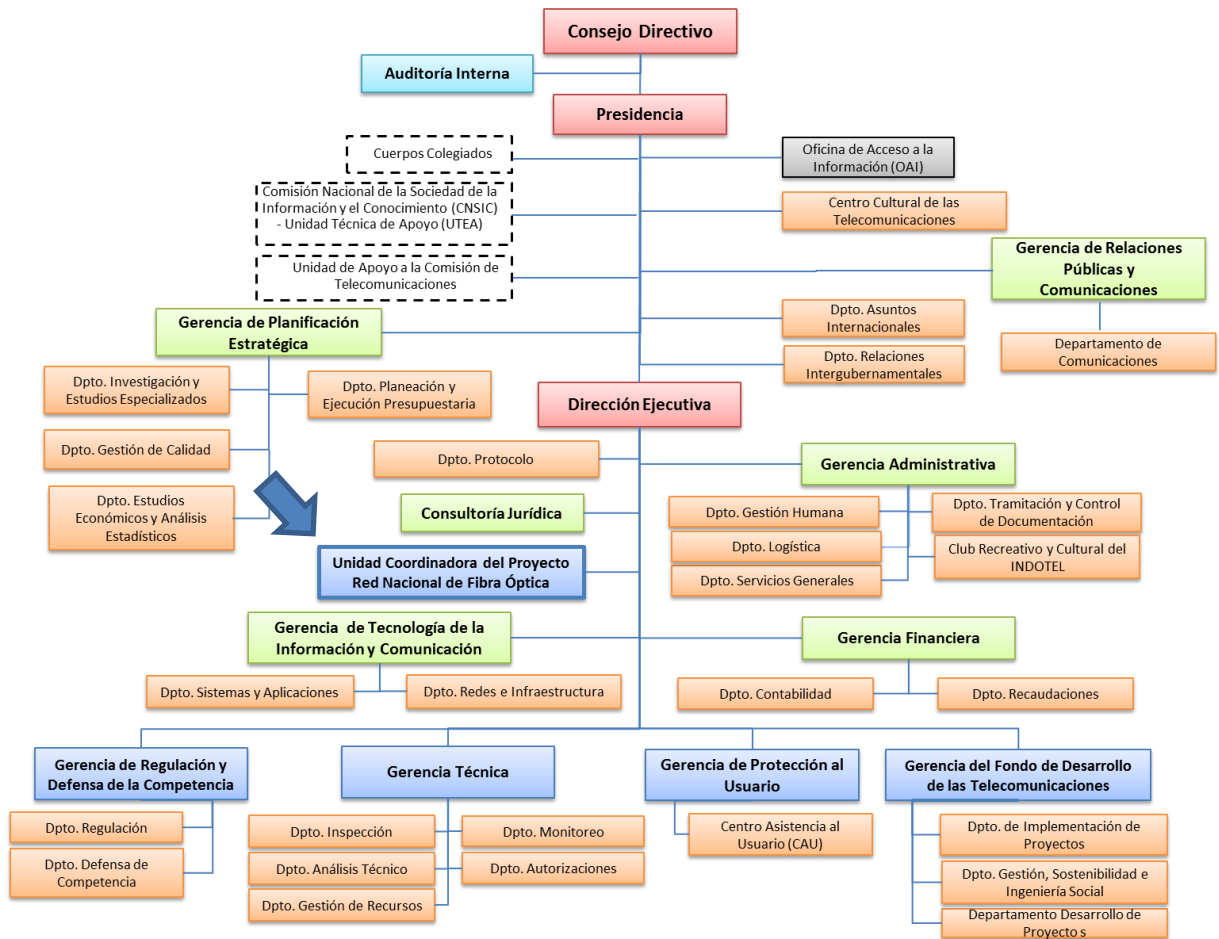
Risks	Risk Rating	Risk Mitigating Measures	Residual Risk
Inherent Risk			
1. Country	H	The Government scored low in last 2012 PEFA Report and 2013 Transparency International Indicators. The Government is closely following-up to efficiently address weaknesses identified in the report in a coordinated manner.	MI
2. Entity Level	MI	Experience implementing Bank-financed operations. Organizational structure in Graphic 6 below.	MI
3. Project	MI	No complex implementation structures & features.	L
Overall Inherent Risk	MI	Overall Inherent Risk High impact, low likelihood, driven by country circumstance (MI)	MI
Control/Capacity Risk			
4. Staff	MI	Although INDOTEL has seasoned accountants in its FM Unit, the Bank will ascertain that the Specialists appointed meet all the necessary requirements. Staff qualification and requirement will be included in the Operations Manual.	MI
5. Budgeting	MI	INDOTEL is an autonomous entity. As such, annual budget allocation in the past has been uneventful.	MI
6. Accounting	MI	The Government integrated financial management country systems (UEPEX), which uses funds accounting, to be implemented, adjusting Project line items. It still shows end-of year accounting issues.	MI
7. Internal Controls	MI	Internal controls are adequate, with due attention to segregation of duties, and minor adjustments to be considered in the OM to support Project operations. Ex-ante internal reviews are performed by the Comptroller's Office, potential cause for delay.	MI
8. Funds Flow	L	Per flowchart below –Graph 7 below.	L
9. Financial Reporting	L	Format of semiannual reports will be included in the OM.	L

10. Auditing	H	The entity is not yearly audited. Standard clause of separate annual audits of the Project financial statements, to be transparently posted at the entity's webpage, will be set in Loan Agreement. Audit reports to the DR Court of Audit (Supreme Audit Institution).	MI
Overall Control/ Capacity Risks	MI	<i>Overall Control/Capacity Risks, and Overall FM Risk are rated as Medium (MI) High Impact/Medium/Low Likelihood)</i>	MI
Overall FM Risk	MI		MI
Medium- (MI- High Impact/Medium/Low Likelihood)High Impact/high Likelihood); High (H-High Impact/High Likelihood); Low (L- Low Impact/Low)			

Strengths and weaknesses of the FM environment:

10. Strengths. Key strengths that provide a basis for reliance on the recipients' financial management systems are summarized as follows: (i) **Simple Project.** Although the Project is relatively complex from the technical perspective, having INDOTEL with a ring-fenced PCU answering directly to the Executive Director handling Bank proceeds shows simple design structures and features in terms of financial management arrangements; (ii) **Adequate structure.** Although INDOTEL has an adequate structure, it was adjusted to include the ring-fenced PCU, responding directly to the Executive Director under the current organizational chart is in graphic 6 below; (iii) **Budgeting, Accounting, reporting, recording and filing in place.** The entity has a robust and automated off-the shelf accounting software in place; however, it will use the country automated FM software which has funds accounting, plus soft and hard controls embedded into the system. The entity keeps adequate records for budget execution and financial transactions. Its accounting and supporting documents are retained in a defined system that allows authorized users easy access. Such records include an up-to-date cash book, bank statements and bank reconciliation statements; (iv) **Staffing arrangement and internal controls:** Qualified staff is already on board, with due consideration to segregation of duties in its FM manual.

Graph 6: INDOTEL's Organization Chart



10. Weaknesses. Critical FM weaknesses and related mitigation measures: (i) **Potential political interference due to elections scheduled in 2016.** The DR will be immersed in a long presidential electoral campaign shortly, and this, normally intensive and hectic period, has the potential of slowing down Project implementation. Irrespective of the winning party, risk of turn-over of Project staff increases. This is outside the Project's span of control; (ii) **Potential disbursement delays.** Lengthy prior review processes performed by the Controller's Office of the DR can originate delays. Mitigation measures are engaging with high level authorities to resolve these delays. In addition, retroactive financing is foreseen, that will allow launching some activities before Project effectiveness; (iii) **Audit.** The entity has not been yearly audited. The Court of Audit has scheduled to audit it in this calendar/fiscal year 2014; although due to budget and staffing constraints, this may be delayed. Annual audits will be required for the Project.

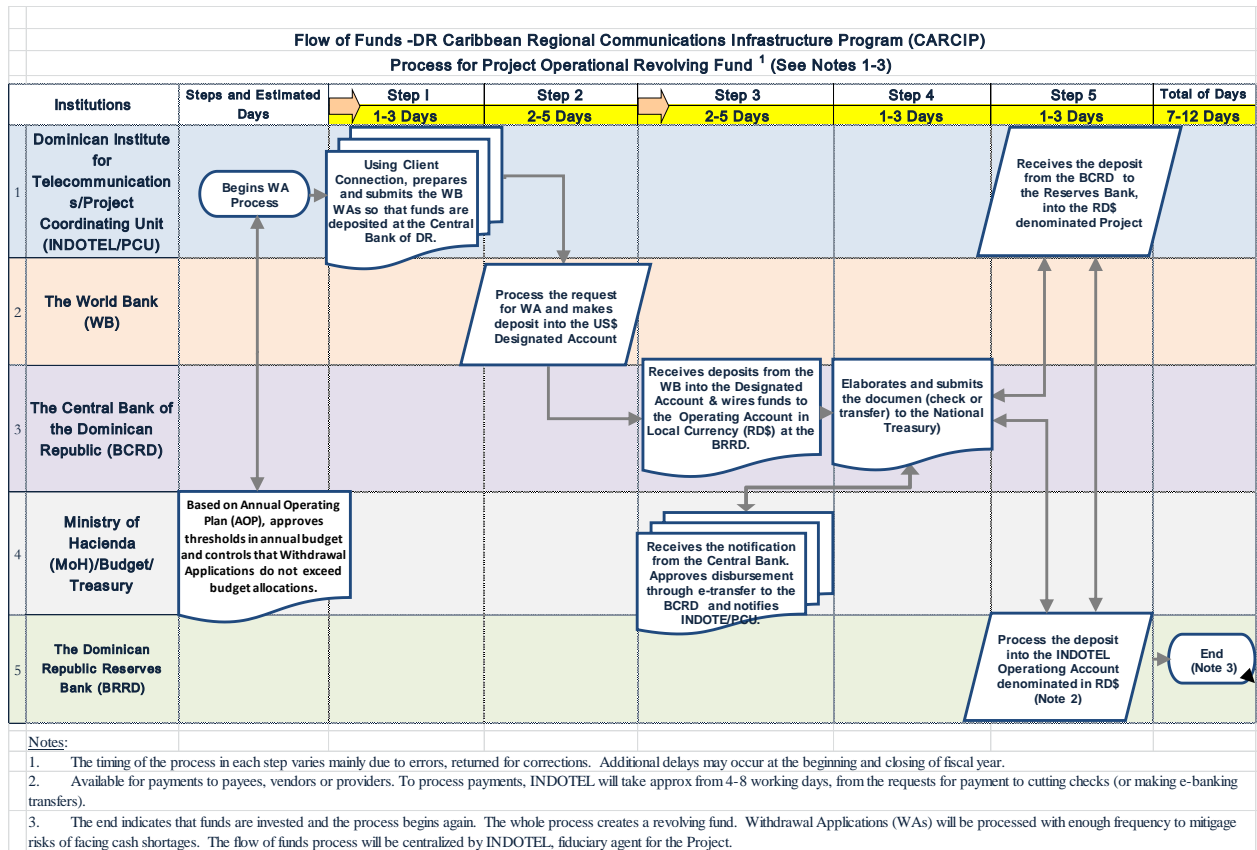
11. Disbursement and flow of funds arrangements. The flow of funds is in the graphic 7 below. Other fund flow arrangements for supporting documentation requirements and timing of documentation submission will be included in the Disbursement Letter. Disbursement methods will be advance, reimbursement and direct payment. The Minimum Application Size for

Withdrawal application is set to US\$200,000. Expenditures will be submitted on the basis of Statement of Expenditures (SOE) without supporting documentation, except for works under contracts exceeding US\$3,000,000, goods and non-consulting services under contracts exceeding US\$250,000 equivalent and services under contracts with consulting firms and individual consultants above US\$100,000 equivalent. The PCU will send Withdrawal Applications to Bank together with Statement of Expenditures with supporting documents, as required, accounting for the use of funds from the Bank. INDOTEL will open 2 bank accounts for the Project: a Designated Account for the Project denominated in US Dollars (US\$), at the Central Bank of the Dominican Republic to receive advances up to a ceiling of US\$1 million; an Operating Account, denominated in RD Pesos (RD\$). Retroactive financing will be allowed up to US\$2 million, as of the April 25th 2014. It is defined a standard disbursement date or grace period of 4 months. The allocation of loan proceeds by disbursement category and the percentage of expenditures to be financed for eligible expenditures is shown in below Table:

Category	Amount of the Loan Allocated (expressed in USD)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, Non-consulting Services, consultants' services, Training and Operating Costs for the Project	29,925,000	100%
(2) Front-end Fee	75,000	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
(3) Interest Rate Cap or Interest Rate Collar Premium	0	Amount due pursuant to Section 2.07 (c) of this Agreement
TOTAL AMOUNT	30,000,000	

12. FM risk-based implementation support strategy. Intervals at which the missions are set to be carried out will be one at Project inception, along with customized training, and at least one per year thereafter until Project closing. The scope of the financial management implementation support missions is defined as comprehensive, including full on-site supervision and desk reviews covering all FM areas. A time-bound action plan was defined and included below. The Bank team will provide INDOTEL close support to address pending items, mostly linked with specific Project features and Bank requirements. By effectiveness INDOTEL need to define if the workload added by Project activities warrant them to select or hire FM staff. Irrespective of this decision, the Bank will provide training during the Project launch and INDOTEL would need to deploy UEPEX as soon as the loan agreement is signed.

Graph 7: Flow of Funds



13. Conclusions: The Bank concludes that INDOTEL has the capacity to handle loan proceeds. A new PCU will be the fiduciary agent, and, as such, responsible for FM and disbursement arrangements. The flow of funds will be similar to those in place for the in the current DR portfolio, taking advantage of streamlined processes, plus the use of the country integrated financial management country system (UEPEX).

14. Overall Inherent, Control and FM performance Risks are rated as high impact, Medium likelihood (MI), driven by country circumstances. The scope of the risk-based FM implementation support missions will be comprehensive, with customized training during the start-up phase, and full on-site supervision plus desk reviews at least once a year thereafter until Project Closing Date.

Table 1. A Time-Bound Financial Management Action Plan is in the table below:

Action	Responsible Party	Completion Date
Install Sub-System for financial management information (UEPEX).	Ministry of Finance/INDOTEL	Effectiveness
Adapt accounts classification to reflect Project structure.	MoF/INDOTEL	Effectiveness
Update the Financial Managements aspects on the manual.	INDOTEL/WB	Signing

Agree with the WB on a sample format of the IFRS for reporting and disbursement purposes.	INDOTEL/WB	Signing
Designate/Hire and train the FM specialist for the Project.	INDOTEL/WB	Effectiveness

(b) Procurement

15. General. Procurement for the proposed Project will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011, as revised in July 2014, and the IDA Anticorruption Guidelines dated July 1, 2005 and as amended through October 15, 2006; and the provisions stipulated in the Legal Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Loan, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

16. Procurement of Works: Minor works procured under this Project could include refurbishing of existing offices/buildings to accommodate ICT equipment and any small ancillary mechanical, electrical or air conditioning installation. The procurement will be carried out through minor civil works (Shopping) by comparing at least three quotations, as long as the contracts are within the threshold for this method.

17. Procurement of Goods and Non Consulting Services (NCS): Goods and Non Consulting Services procured under this Project would include: (i) ICT Hardware and Software; (ii) office equipment; (iii) printing materials; and (iv) office furniture. For large Goods contracts, the procurement will be carried out by using Standard Bidding Documents (SBDs) for Goods or Supply and Installation for all International Competitive Bidding (ICB). All NCB will be carried out as per National SBD agreed with or satisfactory to the Bank. Procurement through shopping will be carried out by comparing at least three quotations.

18. Selection of Consultants: Consultants will be selected for: (i) Implementation support for national broadband backbone and verification of deployed infrastructure; (ii) creating enabling regulation for infrastructure sharing and open access; (iii) technical assistance, capacitation and facilitation for the activities under Component2; and (iv) implementation support, development and associated training. Consultant services to be financed from the Loan would be selected in accordance with the methods foreseen in the Bank Guidelines, including: (i) Quality and Cost Based Selection (QCBS); (ii) Selection based on Consultants Qualifications (CQ); (iii) Fixed Budget Selection (FBS); (iv) Least Cost Selection (LCS); (v) Individual Consultants (IC); and (vi) Single-Source Selection (SSS). Short lists of consultants for services estimated to cost less than US\$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant

Guidelines. Selection of consultants for services estimated to cost over US\$300,000 should be advertised in: (i) Development Business (online version); (ii) in local media (one newspaper of national circulation or the official gazette); and (iii) an electronic portal of free access (INDOTEL website) for expressions of interest. A short list of six firms would be drawn from among the qualified interested parties.

19. Where teams of consultants are not required, individual consultants will be hired in accordance with the provisions of Part V of the Consultant Guidelines to provide specialized advisory services, training, and services to support Project implementation and monitoring. Consulting assignments meeting the requirements and conditions pursuant to the provisions of paragraph 5.6 of the Consultant Guidelines may be procured using single-source procedures.

20. Training. Procurement training for PCU staff and consultants will be conducted in accordance with a training program that will be submitted to the Bank for its agreement before implementation.

21. Operating Costs: Operating Costs will be procured using the implementing agency's administrative procedures which were reviewed and found acceptable to the Bank.

22. Prequalification: Prequalification will be required for the procurement of fiber optic broadband network.

23. Particular Procurement Provisions Methods for Public Private Partnerships (PPPs): PPPs will be utilized, if successful, to support the reduction of broadband connectivity gaps between rural and urban areas, and poor and developed areas in the Dominican Republic, through the deployment of a National Fiber Optic Network. Subcomponent 1A will provide technical support to design the PPP competitive bidding process to promote leveraging the Project funds with private sector investment. Procurement under PPP arrangements will be conducted in accordance with paragraphs 3.14 and 3.15 of the Procurement Guidelines. PPPs will be procured following ICB.

24. The procurement procedures and SBDs to be used for each procurement method, as well as model contracts for works and goods procured, are presented in the Project Operations Manual approved by the Bank.

25. Thresholds: Thresholds for the use of the procurement methods specified in the Project procurement plan are identified in the table below, which also establishes the notional thresholds for prior review. The agreed procurement plan determines which contracts will be subject to Bank prior review.

Table 2. Procurement Methods based on the expenditure category and the contract value

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts Subject to Prior Review / Estimated Total Value Subject to Prior Review
	US \$ thousands		
1. Works	>3.0	ICB	All
	250-3.0	NCB	First contract of each year
	<250	Shopping	First contract
2. Goods and Non Consulting Services			
	>250	ICB	All
	50-250	NCB	First contract of each year
	<50	International & National Shopping	None
	Pursuant to 3.6 of the Consultant Guidelines	DC	All
3. Consulting Services			
-3.A Firms	>200	QCBS	All
	<200	QCBS, QBS, FBS, LCS, CQ, SSS	First contract of each year and later TOR only
-3.D Individuals	>50	Comparison of 3 CV	All
	<50		ToR only as specified in the PP.
	Regardless of the cost	Single-Source Selection	All

26. Assessment of the agency’s capacity to implement procurement. Procurement activities will be implemented by INDOTEL’s PCU. The PCU will be staffed with a Procurement Specialist with relevant experience in Bank’s Procurement and Consultant Guidelines.

27. An assessment of the capacity of INDOTEL to implement procurement actions for the Project was carried out in July 2011 and February 2012 and updated in May 2014. The assessment reviewed the organizational structure for implementing the Project.

28. Although INDOTEL successfully implemented a Bank financed Project, which closed in 2006, since then procurement capacity has been limited to local procurement processes. Procurement processes in INDOTEL follow the provisions of Law 340-06, the Department in charge of procurement is the Department of Logistics, which reports to the Administrative and Human Resources Manager. Given the lack of experience in Bank procurement, the overall Project risk is SUBSTANTIAL. The mitigating measures proposed include:

- Prior to negotiations, the PCU appointed a Procurement Specialist with relevant experience in Bank and IT procurement, to be dedicated full time to the Project. TORs of the proposed specialist and CV were submitted to the Bank’s approval before negotiations.
- Submission to the Bank of a preliminary Procurement Plan to cover the first 18 months of the Project. Due for approval by negotiations.
- Training in procurement will be provided by the Bank to the PCU as soon as the Project is declared effective. Further training to be provided during the first year of implementation.
- Preparation of an operations manual with a specific chapter on procurement, detailing all the procedures and channels of responsibilities and flow of documentation.
- Conducting a Project launch workshop by the Project effectiveness.

29. Procurement Plan. The Borrower has developed a procurement plan for Project implementation, which provides the basis for the procurement methods. This has been agreed between the Borrower and the Bank during Negotiations and will be available at the PCU. It will also be available in the Project’s database and in the Bank’s external website. The Procurement Plan will be updated in agreement with the Bank annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity. The Bank team believes that the dates indicated in the procurement plan are realistic and the PCU will adhere to the dates.

30. Frequency of Procurement Supervision. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended at least one post-review mission per year, when not less than 1 in 10 contracts should be reviewed.

31. Details of the Procurement Arrangements Involving International Competition: Goods, Works, and Non Consulting Services. The following table contains the list of contract packages to be procured following ICB and direct contracting.

Ref. No.	Contract (Description)	Estimated Cost (USD)	Procurement Method	Pre-Qualification	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Expected Bid-Opening Date
1.1.2	Procurement and installation of fiber optic broadband network	24,000,000	ICB	Yes	No	Prior	1/27/2016

32. ICB contracts estimated to cost above US\$3,000,000 for works and US\$250,000 for goods per contract and all direct contracting will be subject to prior review by the Bank. The first NCB contract for works and goods each year in the life of the Project will be subject to prior review by the Bank. The first contract for small works will also be subject to prior review by the Bank.

33. **Consulting Services.** The following table contains the list of consulting assignments with short-list of international firms:

Ref. No.	Description of Assignment	Estimated Cost (US\$)	Selection Method	Review by Bank (Prior / Post)	Expected Proposal Submission Date
2.1.1	Creation of technical specifications and implementation support for broadband network deployment	500,000	QCBS I	Prior	05/01/2016
2.1.3	Support to the review of the legal and regulatory frameworks	300,000	QCBS I	Prior	011/04/2015

34. Consultancy services estimated to cost above US\$200,000 per contract and all single source selection of consultants (firms) will be subject to prior review by the Bank.

iv. Environmental and Social (including safeguards)

35. The activities being financed under the Dominican Republic proposed Project are not expected to have any major negative social and environmental impact. Nevertheless, appropriate safeguards instruments have been prepared to ensure that all Project activities meet the requirements of the relevant national legislation and international conventions to which the Dominican Republic is a signatory, as well as World Bank Group environmental and social safeguard policies. A part time resource will be hired to help the PCU address safeguards related issues, and other short term staff can be hired, when needed, during the Project implementation to support the review of mitigation measures and the adequate execution of safeguards policies.

36. The exact locations of the backbone network have not been determined, and it is therefore premature to undertake a site-specific Environmental and Social Impact Assessment (ESIA). Consequently, these will form part of the Environmental and Social Management Framework (ESMF) (consistent with national laws, and OP 4.01) and a Resettlement Policy Framework (RPF) consistent with OP 4.12, which have been drafted. Prior to Project appraisal, the draft ESMF and RPF have been reviewed by the World Bank and publicly disclosed in country, on May 22nd 2014 as well as on the World Bank website, on May 22nd 2014. The purpose of the frameworks is: (i) to provide as much information as possible about potential environmental and social impacts (including possible land acquisition and resettlement) at the Project’s current state of preparation; (ii) to inform the Project planning and design process by comparing the potential impacts of alternative locations, configurations, and construction techniques that are under consideration; and (iii) to describe the procedures for subsequent

assessment of impacts and development of the appropriate impact management instruments (including associated mitigation measures) when the details of the Project become available. These management instruments are likely to be an Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP).

37. The physical components of terrestrial connectivity to be financed under the Program will likely include construction of ducts, poles and deployment of earthed and unearthed cables, to form networks at the national, governmental, and rural levels. The most cost-effective option identified for the land-based National Optical Fiber Backbone Infrastructure is the adaptation of existing capacity, such as in the country's national electricity transmission company, ETED (Empresa de Transmisión Eléctrica Dominicana). Use of the existing land network would also minimize environmental and social impacts by reducing the need for excavation and construction of new cable segments; however, emplacement of new buried cables would still be necessary where the existing infrastructure does not extend. Most of the cables would be located along existing rights-of-way and/or roadways, which again would serve to minimize environmental and social effects. There are existing cables across the island, reaching the western border of the Dominican Republic with Haiti at several points. Expansion of the system to reach new areas may occur in future phases of the project. Trenching activities will require environmental management for runoff control, traffic safety, dust control, vegetation clearing, laydown areas and access points, and other standard environmental provisions. Additional construction or rehabilitation works may include communications centers or other buildings, landing stations, and towers.

38. Several existing submarine cables extend from Landing Stations on the north, east, and south coasts, near Puerto Plata, Punta Cana, and Santo Domingo respectively, and reach landing points which are already existing and in operation, therefore any civil works in coastal areas will be excluded. The cost of new submarine cables is considerable, therefore existing cable capacity will be utilized and no new submarine cables will be constructed

39. Given the nature of the planned investments (new construction and rehabilitation) small-scale land acquisition is anticipated in the project. OP/BP 4.12 (Involuntary Resettlement) is therefore triggered. The exact nature and extent of acquisition is unknown during project preparation since the specific project sites have not yet been determined. A Resettlement Policy Framework (RPF) has been prepared to guide the implementation of land acquisition during the lifetime of the project. Although no land acquisition will be financed by the proposed Project, any land acquisition in the context of the Project must follow the RPF. During implementation, land acquisition will be assessed on a sub-project specific basis. When involuntary land acquisition and/or resettlement is confirmed, and specific program areas are known, Land Acquisition and Resettlement Plans will be prepared, according to the guidelines set out by the Involuntary Resettlement Framework, and submitted to the Bank for no objection prior to sub-project financing. Major impacts are not anticipated given that facilities are expected to follow existing rights of way, especially roads; however, irregularities in land titling or rights-of-way may require land acquisition and/or title regularization, particularly along rural roads

40. Screening and scoping of proposed project areas indicates that Indigenous Peoples with the four characteristics outlined in OP/BP 4.10 are not located within the project area, and thus

cannot benefit or be adversely affected by the Project. The Indigenous Peoples Policy is therefore not triggered.

41. The Program is expected to have positive social impacts by improving access to communications; the development of ICT enabled services, and improved government decentralized service delivery. Particularly, the program is expected to: (i) enable ICT to become a driver for sustainable economic growth; (ii) increase employment opportunities through the development of ICT-based services; (iii) enable the government to use ICT to provide decentralized services; (iv) improved access and quality of ICT services for the population, business, and government; (v) reduce isolation and enhance economic activities in rural areas; and (vi) create additional opportunities for women entrepreneurs to develop ICT-related careers.

42. Extensive stakeholder consultations have taken place during project preparation. Stakeholders consulted include telecommunications operators, Public Administration (at the central and local levels), universities, private firms, and NGOs. The proposed Project will connect and leverage existing initiatives and public spaces to increase project sustainability. The existing strong collaboration environment, including citizens as main actors, can also support sustainability of Project initiatives under Component 2. ICT companies are well organized and have created initiatives to increase competitiveness and to promote the development of skills in the ICT sector, such as Camara TIC. Academia and other research institutions are well connected to the MESCyT and have a coordinated agenda in terms of entrepreneurship and innovation. There is currently an active set of NGOs and Community Based Organizations (CBOs) working in the areas of ICT, particularly in the area of Gender Equality and in fighting the Digital Gap. These organizations have organized Hackathons and other initiatives which already triggered the creation of an innovation community. INDOTEL's network of Salas Digitales is by itself a strong network of CBOs, since these Telecenters are run by local communities, whereas incubators can still be considered in an early stage of development.

v. Monitoring & Evaluation (M&E)

43. The PCU will monitor and evaluate national projects, collecting all the necessary inputs needed for the Project's outcome and results indicators. They will bear the primary responsibility for Project M&E, and, as such, will establish standard formats and guidelines for data collection and reporting, and will organize training sessions for Project stakeholders in their use. In addition, a number of the proposed indicators are already collected on a regular basis by INDOTEL or at the national level by ENHOGAR.

44. In case of insufficient capacity for collecting data, INDOTEL will strengthen it by recruiting or designating a person responsible for M&E, based on the capacity assessment immediately after effectiveness. This person will liaise with all the Project's stakeholders to gather relevant information and data regularly.

45. Regional institutions are being leveraged to evaluate progress and share lessons and best practice, to ensure that the data collected reflects the Project's effectiveness.

46. Implementation support missions will be conducted at least twice a year. INDOTEL may perform evaluations jointly with the World Bank team and conduct supervision or implementation support missions at least twice a year. Missions will be based on the latest quarterly implementation and financial monitoring reports prepared by different governments.

Annex 4: Operational Risk Assessment Framework (ORAF)

Dominican Republic: Caribbean Regional Communications Infrastructure Program - Dominican Rep. (P147483)

Project Stakeholder Risks						
Stakeholder Risk	Rating	Moderate				
Risk Description: Opposition from the private sector to communications infrastructure funded by the Project	Risk Management: The Project will fund through sub component 1A: 1) awareness raising activities on the benefits of the new infrastructure to expand on the consultations conducted during preparation with the relevant stakeholders; and, 2) a thorough study of the legal framework that will support the PPP, to structure the PPP in such a way that is resilient to possible challenges.					
	Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
	Both	In Progress	Implementation	<input checked="" type="checkbox"/>		Yearly
Implementing Agency (IA) Risks (including Fiduciary Risks)						
Capacity	Rating	Moderate				
Risk Description: Overall capacity in INDOTEL is reasonable, since they have teams implementing ICT projects with INDOTEL's budget. However, the number of staff in INDOTEL with experience in Bank or other multilateral organizations projects, in particular on specific aspects of World Bank rules for financial management, procurement and safeguards, has decreased in the last two years.	Risk Management: INDOTEL given the previous successful experience with the creation of a Project Coordination Unit (PCU) for the implementation of the Project, and the fact that it's current staff working on procurement and financial management are already over stretched, has indicated its decision to create a new PCU for the implementation of this Project. The Bank agreed and made recommendations to strengthen this PCU. It will be under the Executive Direction, and its Coordinator has already been hired. . The PCU has been strengthened with the hiring of a Procurement Specialist, , with relevant experience in Bank's Procurement, Consultant Guidelines, financial management and disbursement guidelines, among others. Additional procurement staff may be needed based on					

	<p>the workload. Further, the PCU’s capacities may need to be strengthened by adding some more financial management experts to accommodate the additional work to be undertaken, and maintain segregation of duties in key FM processes to keep a solid internal control environment. In addition, the PCU will also hire a safeguards specialist, at least part time, and complement with consultants on a need basis.</p>						
	<table border="1"> <tr> <td data-bbox="890 423 1010 532">Resp: Bank</td> <td data-bbox="1010 423 1182 532">Status: In Progress</td> <td data-bbox="1182 423 1409 532">Stage: Implementation</td> <td data-bbox="1409 423 1583 532">Recurrent: <input checked="" type="checkbox"/></td> <td data-bbox="1583 423 1755 532">Due Date:</td> <td data-bbox="1755 423 1944 532">Frequency: Continuous</td> </tr> </table>	Resp: Bank	Status: In Progress	Stage: Implementation	Recurrent: <input checked="" type="checkbox"/>	Due Date:	Frequency: Continuous
Resp: Bank	Status: In Progress	Stage: Implementation	Recurrent: <input checked="" type="checkbox"/>	Due Date:	Frequency: Continuous		
Governance	Rating Moderate						
<p>Risk Description:</p> <p>Regarding the possible grouping of the demand for fixed internet from public institutions, there may not be ownership, and it is possible that vested interests and administrative hurdles, may work against it.</p>	<p>Risk Management:</p> <p>Component 1A will fund and impact assessment, with inter-institutional coordination actions and awareness raising activities, of the potential effects of aggregating public sector demand. This will include organizing dissemination and coordination activities at the technical and/or political levels, to communicate the potential savings that could be achieved by aggregating broadband demand from public institutions. INDOTEL would take the lead role and interact with public sector institutions to raise awareness of: (i) the future deployment of the national fiber optic network, and the potential benefits from the effects of increased wholesale competition that the Project will trigger in the coming years; and (ii) the opportunities for ministries such as the Ministry of Public Health and the Ministry of Education, which have hospitals and schools country-wide, to benefit from a bulk broadband purchase agreement. A long-term contract to supply broadband services to such institutions could ensure a minimum sustained demand in the national fiber optic network. This could help attract private sector investment to expand the network beyond the financial limits of this Project.</p>						
	<table border="1"> <tr> <td data-bbox="890 1230 1010 1369">Resp: Both</td> <td data-bbox="1010 1230 1182 1369">Status: In Progress</td> <td data-bbox="1182 1230 1409 1369">Stage: Implementation</td> <td data-bbox="1409 1230 1583 1369">Recurrent: <input type="checkbox"/></td> <td data-bbox="1583 1230 1755 1369">Due Date: 31-Dec-2015</td> <td data-bbox="1755 1230 1944 1369">Frequency:</td> </tr> </table>	Resp: Both	Status: In Progress	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 31-Dec-2015	Frequency:
Resp: Both	Status: In Progress	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 31-Dec-2015	Frequency:		
	Risk Management:						

		INDOTEL and the Bank will supervise the bidding design and execution, which will follow the World Bank procurement guidelines.			
Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
Both	In Progress	Implementation	<input checked="" type="checkbox"/>		Semi-Annually
Project Risks					
Design		Rating	Moderate		
<p>Risk Description:</p> <p>Project Complexity and Institutional Capacity of participating institutions to coordinate across Ministries / agencies involved.</p>		<p>Risk Management:</p> <p>The proposed program will include substantial support for capacity building, following international good practices in ICT, project management and monitoring and evaluation. The Project team will strive to reduce complexity by approaching the program in phases, applying existing working models by keeping the program aligned on clear measurable outcomes, full stakeholder involvement, implementing a communication strategy, and by learning from experiences and sharing knowledge in roll-out throughout the sub-region.</p>			
Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
Both	In Progress	Both	<input checked="" type="checkbox"/>		Yearly
<p>The design of the open innovation component is new to the country. Therefore it could trigger doubts on its efficiency, impact, and on the inability of trained people to find a job.</p>		<p>Risk Management:</p> <p>Component 2 activities have been discussed with the main Project stakeholders, including Ministries, universities and civil society. Moreover the open innovation component design includes linking with existing open innovation efforts in the country, and activities to help entrepreneurs create their own start-up to attain sustainability.</p>			
Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
Both	Not Yet Due	Both	<input type="checkbox"/>	31-Dec-2019	
Risk Management:					

<p>There might be the possibility of low private sector response to the PPP. Once the bid for the PPP has been awarded, there could be insufficient demand for broadband services to cover the costs of the private operator of the PPP.</p>	<p>Under component 1A, consultants will raise awareness amongst the private sector to increase interest in the PPP and in using the future carrier of carrier services; and there will be support for the public sector to group the demand for broadband services, which would guarantee a substantial demand for the PPP services.</p> <p>Moreover, the Appraisal Package included a study of the possible demand for the Project and an Economic Study. Interviews have been carried out with the conclusion that there is enough interest from small and medium operators to satisfy the demand of the public sector, residential market, and small entrepreneurs. During the preparation of the Project it has been recommended to the main broadband demand drivers of the Public Sector not to sign long term commitments with telecommunications service providers because due to this Project, there will be a wider and more affordable offer in the short term.</p>					
	<p>Resp: Client</p>	<p>Status: Not Yet Due</p>	<p>Stage: Both</p>	<p>Recurrent: <input type="checkbox"/></p>	<p>Due Date: 31-Dec-2015</p>	<p>Frequency:</p>
<p>Social and Environmental</p>	<p>Rating</p>	<p>Moderate</p>				
<p>Risk Description: While the exact locations of infrastructure are not known at this point, it is expected that potential social and environmental impact of activities proposed will be minimal and reversible. There is risk that implementing teams will not have the requisite capacity to monitor any potential risk, however, minimal, during the entire duration of the Project.</p>	<p>Risk Management: Draft Regional ESMFs and a RPF for the Dominican Republic have been prepared and have been consulted and disclosed prior to appraisal. Additional ESMP/RP will be prepared as needed during Project implementation and before construction of any infrastructure begins. The PCU is continuing to build its capacity to manage safeguard issues in view of the region’s vulnerability and the related projects, which require effective management of social safeguards. Additional capacity will be added as required.</p> <p>A safeguards coordinator should be hired or appointed by INDOTEL. This coordinator will be the link between the focal points in the Dominican Republic and all the stakeholders from the public and the private sector with interests in the Project.</p>					

	The necessity to establish an Environmental Unit in INDOTEL will be taken into consideration for the management of the social and environmental aspects. This unit will work as coordinator and as a link between INDOTEL and the national environmental authorities.					
	Resp: Both	Status: In Progress	Stage: Both	Recurrent: <input type="checkbox"/>	Due Date: 31-Dec-2015	Frequency:
Program and Donor	Rating	Low				
Risk Description: Complexity of regional coordination activities.	Risk Management: CARCIP has identified a series of mechanisms and actions to support regional coordination activities and knowledge sharing, and identified national and regional champions (PCUs with experience in implementation of Bank projects, CTU and CKLN). In addition, the Dominican Republic can benefit from the experience in this field of other countries already in CARCIP.					
	Resp: Both	Status: In Progress	Stage: Preparation	Recurrent: <input type="checkbox"/>	Due Date: 31-Dec-2019	Frequency:
Delivery Monitoring and Sustainability	Rating	Moderate				
Risk Description: Limited capacity within the PCU for monitoring Project development, including the PPP arrangements and implementation.	Risk Management: The PCU will hire a technical specialist to help monitor the Project developments, including the PPP.					
	Resp: Both	Status: Not Yet Due	Stage: Implementation	Recurrent: <input type="checkbox"/>	Due Date: 31-Dec-2016	Frequency:
Overall Risk						
Overall Risk:	Rating	Moderate				
Risk Description:						

The overall risk is based on: (i) the complexity of the regional coordination is mitigated through identification of national and regional champions (PCUs with experience in implementation of Bank projects, CTU and CKLN) to coordinate activities; (ii) the limited experience in management of ICT projects is mitigated by the experience in implementation of World Bank financed projects in general, and strengthened with additional support structures to improve capacity; (iii) only low or minor social and safeguard issues are expected; (iv) financial needs from governments and donors and engagement with the private sector have been identified up front; and (v) upfront assessment of PPP options.

Annex 5: Implementation Support Plan

COUNTRY: Caribbean Regional Communications Infrastructure Program Project

Strategy and Approach for Implementation Support

1. The Implementation Support Plan (ISP) focuses on helping to manage the risks identified in the ORAF, and aim at making implementation support to the client more flexible and efficient. It also seeks to provide the technical advice necessary to facilitate achievement of the PDO (linked to results/outcomes identified in the result framework), as well as identify the minimum requirements to meet the Bank's fiduciary obligations.

- **Procurement.** Implementation support will include: (a) providing additional staff and training as needed to the PCU; (b) reviewing procurement documents and providing timely feedback to the PCU; (c) providing detailed guidance on the Bank's Procurement Guidelines to the PCU; and (d) monitoring procurement progress against the detailed Procurement Plan.
- **Financial management.** Implementation support will include: (a) reviewing of the Project financial management system of the PCU at INDOTEL, including but not limited to, budgeting, accounting, reporting and internal controls; (b) Providing training to the PCU on financial management aspects of Bank financed operations during Project launch, or as needed; ; and (c) reviewing submitted unaudited financial and audit reports and providing timely feedback to the PCU, providing guidance and support to address recommendations issued by the external audit team.
- **Environmental and Social Safeguards.** The Bank team will supervise the implementation of the agreed Environmental and Social Management Frameworks and Plans and provide guidance to PCU and the Dominican Republic government.
- **Other Issues.** Sector level risks will be addressed through policy dialogue with the government's Ministries and Regulatory Authorities.

Implementation Support Plan

2. While the Dominican Republic has adequate experience in implementing World Bank Projects, and despite the Bank's own experience in preparing similar projects, the relative complexity of structuring PPPs and ensuring the enabling environment exists for open and competitive access to communications infrastructure will require fairly intensive supervision, especially during the first two years of implementation. The Bank team members will be based either in Washington DC, or in the Dominican Republic Country Office, and will be available to provide timely, efficient and effective implementation support to the client. Formal supervision and field visits will be carried out three to four times annually in the first 2 years, with possibility for annual visits in later years of the Project. These will be complemented with monthly video conferences to discuss Project progress. Detailed inputs from the Bank team are outlined below:

- **Technical, Policy and legal/Regulatory inputs.** Technical, policy and legal/regulatory related inputs will be required to review bid documents to ensure fair competition, sound

technical specifications and assessments, and confirmation that activities are in line with Government's ICT and growth strategies.

- **Fiduciary requirements and inputs.** Training will be provided by the Bank's financial management and procurement specialists as needed to the PCU. The Bank team will also help identify capacity building needs to strengthen financial management capacity and to improve procurement management efficiency. Financial management and the procurement specialists will be based in both Washington DC and the country to provide timely support. Formal supervision of financial management will be carried out semi-annually or annually, while procurement supervision will be carried out on a timely basis as required by the client.
- **Safeguards.** Inputs from environment and social specialists will be provided as needed.
- **Operation.** The Task Team will provide day-to-day supervision of all operational aspects, as well as coordination with the clients and among Bank team members. Relevant specialists will be identified as needed.

3. The main focus of implementation support is summarized below:

Time	Focus	Resource Estimate (Annual)
Project Duration	Team leadership, technical, legal and procurement review of the bidding documents and Institutional arrangement and Project supervision/coordination	ICT Policy Specialist 10SWs ICT Legal Specialist 2SWs
	Procurement training	Procurement Specialist 10SWs
	FM training and supervision	FM Specialist(s) 10SWs
	Environmental and Social Issues	Social Specialist(s) 1Sw Environmental Specialist(s) 1Sw

Note: SW-Staff Week

4. Staff skill mix required is summarized below:

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leaders	10 SWs annually	Fields trips as required	DC or the Dominican Republic CO based
Procurement	10 SWs annually	Fields trips as required	DC or the Dominican Republic CO based
FM Specialist	10 SWs annually	Fields trips as required	DC or the Dominican Republic CO based
Social Specialist	1 SW annually	Field trip as required	DC based
Environment Specialist	1 SW annually	Field trip as required	DC based
Legal Specialist	1 SW annually	Field trip as required	DC based

Annex 6: Economic Analysis

DOMINICAN REPUBLIC: Caribbean Regional Communications Infrastructure Program Project

1. Improving Broadband Connectivity in the Dominican Republic has the potential to rapidly advance Growth. Broadband infrastructure is expected to have a strong link with GDP growth, and has the potential to transform social and economic development. It has the potential to promote a fundamental restructuring of the economy and contribute to virtually every sector in the economy through productivity gains and generate employment.
2. The cost-benefit analysis performed for CARCIP assesses the broad impact of national connectivity and focuses on the potential contribution to GDP, comparing the situation with CARCIP to that without the Program, with specific emphasis on the infrastructure investments and the potential economic returns based on projected traffic. Although this macroeconomic analysis captures the overall benefits for the economy, specific positive network effects and spillovers that will be derived from the CARIFORUM connectivity are difficult to quantify, and are therefore summarized in qualitative terms. The analysis also concentrates on the two key components of CARCIP Phase 1 – (i) Regional Connectivity; and (ii) ICT-Led innovation. Subsequent phases of the program will revise the analysis based on new information.

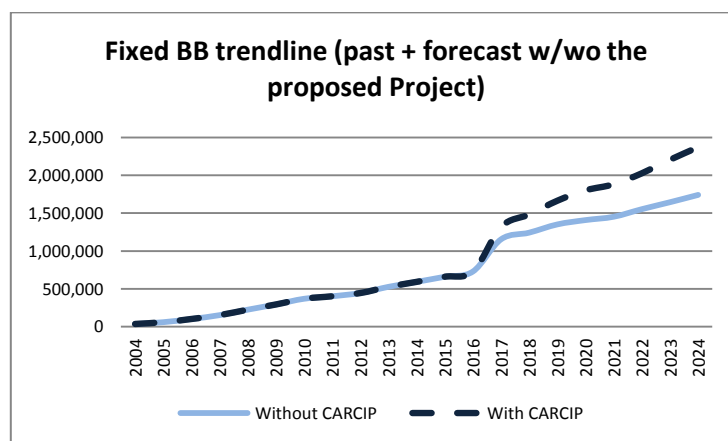
Connectivity

3. The proposed Project's connectivity has the potential to contribute to the Dominican Republic's economic growth. The analysis shows that this growth could be up to US\$ 0.024 billion in present value, which also represents an economic internal rate of return (EIRR) of 29 percent. The Project is expected to move toward an overall fixed broadband penetration of percent by 2024 19.07%, which corresponds to about 2.37 million fixed broadband subscribers. This represents a 14.86 percent Cumulative Average Growth Rate (CAGR) in terms of subscribers (the Dominican Republic currently has 0.51 million fixed broadband subscribers) and 13.5 percentage points increase in fixed broadband penetration for the period 2015-2024. The EIRR best captures the viability of the connectivity program, and it is defined as the interest rate at which the Net Present Value of a project is zero. A project is worth investing in if the EIRR is greater than the rate of interest. The progressive increase in penetration following the investment translates into US\$0.024 billion increase in the GDP, in present value and 29 percent in the program EIRR.
4. The analysis assumes a capital expenditure (CAPEX) of US\$25 million for the first phase, which was taken from a prefeasibility study conducted in the Project preparation phase. The Operating Expenditure (OPEX) was assumed to be 10 percent of the CAPEX based on industry practice. The Cash Flows considered for the calculation of the Program EIRR was based on the difference between the impact in the GDP (Cash Inflow) and the CAPEX/OPEX (Cash Outflow). The economic assessment is based on a conservative³¹ 10-year scenario (until 2024),

³¹ Qiang *et al.* (2009), World Bank: 10 percent increase in broadband penetration yielded an additional 1.38 in GDP growth. Data for the period 1980-2002 for 120 low and middle income countries.

assuming a flat growth rate after the period (in reality, the broadband penetration would be expected to continue growing after 2024). It has also been assumed that the proposed Project will start to have an impact in 2017. The yearly net economic benefit was calculated and then discounted to calculate the net economic benefit in present value. The discount rate used (16.19 percent) was estimated using the Capital Asset Pricing Model (CAPM).

Graph 1: Number of subscribers with and without the proposed Project



5. To see the impact of the proposed Project in the GDP³² it has been assumed that the GDP will grow at the average rate that it has grown in the last two decades, between 4.5 percent and 5 percent. For the analysis it has also been assumed that the broadband penetration without the proposed Project would be 14%, taking into consideration past data³³ and future projections. Finally for this analysis it has been assumed a reduction in price, taking into consideration the GNI fixed broadband³⁴ sub basket in different countries³⁵ and past data from the Dominican Republic.

Table 2: Outputs from the proposed Project

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP forecast (US\$ billion)	65.092	68.419	71.846	75.445	79.225	82.99	86.93	91.06	95.38	99.92
growth (%)		5.11%	5.01%	5.01%	5.01%	4.75%	4.75%	4.75%	4.75%	4.75%
increase Fixed_BB	0.00%	0.00%	1.46%	2.11%	2.70%	3.36%	3.60%	3.92%	4.57%	5.07%

³² GDP Data until 2019 from the IMF Database

(<http://www.imf.org/external/pubs/ft/weo/2014/01/weodata/index.aspx>)

³³ BB penetration and BB subscribers from ITU database (<http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>)

³⁴ GNI fixed broadband sub basket from ITU database (<http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>)

³⁵ Countries used in the analysis: Argentina, Chile, Colombia, Brazil, Mexico, CARICOM countries, Netherlands, Norway, Denmark, Sweden, Iceland, Finland and Korea.

penetration										
Total increase in GDP (US\$ billion)	2.302	3.327	3.427	3.599	3.78	3.76	3.94	4.13	4.33	4.53
Yearly Increase in GDP (US\$ billion)	0	0	0.007	0.011	0.015	0.018	0.021	0.023	0.029	0.033
CAPEX	-0.0250									
OPEX	-0.0025	-0.0025	-0.0025	-0.0025	-0.0025	-0.0025	-0.0025	-0.0025	-0.0025	-0.0025
Yearly net economic benefit	-0.0275	-0.0025	0.0047	0.0085	0.0123	0.0158	0.0180	0.0209	0.0261	0.0307
Terminal Value										0.19
Cumulative yearly economic benefit	-0.0275	-0.0300	-0.0253	-0.0168	-0.0045	0.0113	0.0293	0.0502	0.0763	0.1070
NPV_GDP_increase (US\$ billion)	\$0.024									
discount rate	16.19%									
EIRR (%)	29%									

6. The broadband connectivity is likely to lead to the creation of up to 0.75 million jobs in the Dominican Republic (cumulative in a 10 years horizon). The proposed Project will boost direct and indirect job creation thanks to the broadband connectivity expansion. The Dominican Republic's citizens will have better access to information, gain ICT skills to increase competitiveness or start own businesses in the ICT/ICT enabled industry. The estimate of the number of jobs created is based on the study conducted by Katz³⁶ estimating the effect of increase in broadband penetration on employment rates.³⁷ For the proposed Project, the estimate is conservative and assumes that an 8 percent increase in broadband penetration could result in 2 percent increase in the employment rate.

Open Innovation Hub

7. Previous World Bank experiences and other successful cases, show that implementing the basis for an ICT-enabled innovation ecosystem, within the approach of component 2, generates a set of direct and indirect benefits.

³⁶ Raul L. Katz. "The Role of ICTs in Development"

³⁷ Countries include Argentina, Brazil, Chile, Colombia, Ecuador, El Salvador, Mexico, Nicaragua, Panama, Peru, Venezuela and Uruguay.

8. The economic analysis provided below will mainly focus on direct benefits from Component 2 activities, taking in consideration reports from pre-existing initiatives³⁸ which, with similar budget, duration and similar pre-existing conditions, achieved considerable success on the following aspects:

- Number of generated startups;
- Expected increase in income for developers trained under Component 2's developer courses.

Entrepreneurship support program – Generation of Startups

11. For the purpose of this analysis, the country, sectorial, and easiness of doing business context in the Dominican Republic have been taken in consideration.

12. The economic assessment introduces a conservative hypothesis taking in consideration results from other international initiatives, similar in purpose and results to those expected of this component. The number of startups generated per year is 21 for the optimistic scenario, 15 for the neutral scenario, and 8 for the pessimistic scenario. The revenue per startup³⁹ per year also varies from the scenario being US\$ 23,000, US\$ 21,562.5, and US\$ 17,250 respectively. Finally the assumed number of jobs created per startup is the following: 105 in the optimistic scenario, 60 in the neutral scenario, and 24 in the pessimistic one.

13. The assessment introduces a second conservative hypothesis; no startups will be created in the first year of the Hub, as activities for supporting the creation of them will be carried out.

14. New startups generated as part of the Project will follow different growing paths, depending on their revenues and different probabilities because it has been assumed that some companies will be more successful sooner than others.

Developer Courses – Increase in salaries due to improvement of ICT-skills

15. The improvement of ICT-skills leads to higher employability of trainees and can consequently lead to an increase in salaries. Consultations with local stakeholders⁴⁰ show that the employability of ICT-skilled professionals is high, and that there is an important demand for specific skills that currently are lacking in the country. From these consultations, the average monthly salary of an ICT developer is US\$1,000.

³⁸ Such as infoDev's mobile application labs (m-Labs) deployed in five different countries in Africa, in the context of the Creating Sustainable Businesses in the Knowledge Economy trust fund established by the government of Finland

³⁹ Assumptions: the 12 startups in m-Lab South Africa generated a total revenue of US\$345,000 in 2 years (US\$28,750 per startup in 2 years on average), and most of the revenue has been generated the second year (75% of the revenue).

⁴⁰ Consultations include CamaraTIC, a national NGO that represents companies from the ICT sector, entrepreneurs, Universities and other stakeholders

16. It has been assumed that the number of developers trained is the same in the three scenarios and that in Y5 there will be 360 developers trained. It has been also assumed that in a 10 year horizon the developer's salary would increase on average twice during the period. In addition, it is important to consider that these courses might lead to new job opportunities that can considerably impact the person's salary.

Taxes Revenue

17. In addition to the economic benefits to society presented above, this component also brings economic benefits to the government. The services sold by the new startups, are subject to the consumer tax, ITBIS, which generates revenue for the government. Also, the salaries from the new jobs created are subject to a different tax (Impuesto sobre la renta). For the salaries from new startups' workers, the assumption is that they earn an annual salary of US\$12,000.

18. The analysis on tax revenue for the government is a conservative one, and does not take into account taxes over startups' benefits, taxes from the increase in salaries of developers trained and, finally, taxes over possible external investments raised by startups.

Other benefits

19. It is important to consider that this economic analysis is able to measure some of the direct benefits from the component activities, but cannot forecast the value to constituents and positive externalities, which can already be predicted but not, measured:

- Increased number of ICT trained professionals and spillover of knowledge and skills to other industries or economic sectors;
- Direct benefits for users of created applications and services;
- Benefits of applications and services that will address societal challenges;
- Benefit from the increased usage of ICT and Internet by communities nowadays affected by the digital divide, and in particular increased usage by poor children involved in the Hub's ICT-skill training activities;
- Indirect job creation by applications and services;
- Job opportunities for participants created by visibility in co-creation events;
- Revenue originated by innovation products coming from the Open Innovation Platform that connects Universities, Businesses and Public Administration.

Net Present Value

20. The yearly net economic benefit was calculated and then discounted to calculate the net economic benefit in present value. The discount rate used (15.14 percent) was estimated using the CAPM for the following three scenarios:

Table 3: Summary Net Present Value

Scenarios	Startup Creation	Increase in Salary	Taxes	Total NPV
Optimistic	\$ 2,638,072.64	\$ 1,510,005.58	\$ 526,923.57	\$ 4,675,001.79
Neutral	\$ 2,410,689.49	\$ 1,092,421.66	\$ 445,740.29	\$ 3,948,851.48
Pessimistic	\$ 1,899,978.51	\$ 372,054.55	\$ 402,097.63	\$ 2,674,130.69

21. The terminal value calculated for this component is from the startup creation, from the increase of the developer's, and from the taxes generated from the startups and the new jobs created. The following table summarizes the net present value for the three scenarios:

Table 4: Terminal Value

		Optimistic Scenario	Neutral Scenario	Pessimistic Scenario
Startups	NPV	\$3,490,287.06	\$ 3,265,356.72	\$2,922,100.15
Increase of Salaries	NPV	\$1,008,496.60	\$805,294.84	\$ 929,157.86
Taxes	NPV	\$707,173.53	\$641,521.99	\$533,940.22
Total	NPV	\$ 5,205,957.19	\$ 4,712,173.55	\$ 4,385,198.08

22. The result above show, from an economic perspective, and with the assumptions and hypothesis included in the present model, that component 2 has a positive economic value.