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BURKINA FASO TECHNICAL ANNEX

ON A PROPOSED

GRANT

IN THE AMOUNT OF

SDR 14.2 MILLION
(US\$23 MILLION EQUIVALENT)

TO BURKINA FASO

AS PART OF SDR 56.8MILLION (US\$92 MILLION EQUIVALENT)
FOR THE SECOND SERIES OF THE FIRST PHASE OF THE WEST AFRICA REGIONAL
COMMUNICATIONS INFRASTRUCTURE PROGRAM (WARCIP APL 1B)

May 25, 2011

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CURRENCY EQUIVALENTS

(Exchange Rate Effective 29 April, 2011)

Currency Unit =
SDR US\$1
0.616921=
US\$ = SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

\$	United States dollar, all dollars are US dollars unless otherwise indicated
ACE	Africa Coast to Europe Submarine Cable
AfDB	African Development Bank
AICD	African Infrastructure Country Diagnostic
APL	Adaptable Program Loan
ARCE	Autorité de Régulation des Communications électroniques (Regulatory Authority for Electronic Communications)
ARTEL	Autorité Nationale de Régulation des Télécommunications du Burkina Faso (National Regulatory Authority for Telecommunications in Burkina Faso)
BP	Bank Procedures
BPO	Business Process Outsourcing
BRVM	Bourse Régionale des Valeurs Mobilières (Regional Stock Exchange)
CAS	Country Assistance Strategy
DFIs	Development Financial Institutions
ECOWAS	Economic Community of West African States
EMP	Environmental Management Plan
ESMF	Environmental and Social Management Framework
FDI	Foreign Direct Investment
Gbit/s	Gigabytes per second
GDP	Gross Domestic Product
GLO-1	GlobaCom-1 Cable
GoBF	Government of Burkina Faso
GPT	General Purpose Technology
GSM	Global System for Mobile Communication or 2G
ICT	Information and Communication Technology
IDA	International Development Association
IsDB	Islamic Development Bank
IPO	Initial Public Offering
IRR	Internal Rate of Return

IRU	Indefeasible Right of Use
ISP	Internet service provider
ITU	International Telecommunication Union
IXP	Internet Exchange Point
Kbit/s	Kilobit per second
NPV	Net Present Value
Mbit/s	Megabytes per second
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
MEBF	Maison de l'Entreprise du Burkina Faso (Enterprise House of Burkina Faso)
MTPEN	Ministère des Transports, des Postes et de l'Economie Numérique (Ministry of Transport, Post and Digital Economy)
OD	Operational Directives
OM	Operational Manual
PAD	Project Appraisal Document
PIU	Project Implementation Unit
POP	Point of Presence
PPA	Project Preparation Advance
PPP	Public Private Partnership
PFMU	Project Financing Management Unit
RAP	Resettlement Action Plan
RESINA	Réseau Informatique National de l'Administration (National Computer Network Association)
RPF	Resettlement Policy Framework
SAT-3	South Atlantic Three cable
SCADD	Stratégie pour la Croissance Accélérée et le Développement Durable (Strategy for Accelerated Growth and Sustainable Development)
SNAT	Schéma National d'Aménagement du Territoire (Schematic National Planning)
SPV	Special Purpose Vehicle
STM	Synchronous Transport Mode
USTDA	United States Trade and Development Agency
VSAT	Very Small Aperture Terminal
WARCIP	West Africa Regional Communications Infrastructure Project
WBG	World Bank Group

Vice President:	Obiageli K. Ezekwesili
Director for Regional Integration:	Yusupha B. Crookes
Country Director for Burkina Faso:	Madani M. Tall
Sector Director:	Jose Luis Irigoyen
Sector Manager:	Philippe Dongier
Task Team Leaders for WARCIP APL 1B:	Boutheina Guermazi and Mavis Ampah
Task Team Leader for WARCIP-Burkina Faso:	Mavis Ampah

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I. Strategic Context

A. Country Context

- 1. Burkina Faso has experienced relative stability until recently, following adoption of a democratic constitution in 1991.** Burkina Faso's independence from France in 1960 was followed by decades of political instability and cyclical military coups which initially constrained the country's growth and development. In 1991 the country adopted a new constitution and economic policies to move towards a market economy. Political stability and increased economic competitiveness spurred national development with positive real growth rates averaging 6 % per year between 1994 about 2007, falling to 5.2% and 3.1% between 2008 and 2009.respectively. This deceleration was largely a result of the global economic/financial crisis. From all indications, the country's growth could be back on the upward trend, with estimated 2010 GDP growth rate back at the 2008 level of 5.2%, and expected to reach about 6% again by 2013. But the sustaining power of this growth trend will depend in part on a number of internal and external factors, including how successfully the Government of Burkina Faso (GoBF) is able to diversify and expand its sources of growth, as well as how it manages the growing political discontent which is threatening to paralyze economic and social activities in the country. This discontent follows the fourth multi-party presidential elections held on November 21, 2010 which gave a decisive victory to incumbent President Blaise Compaoré (80% of the votes), in power since 1987.
- 2. Macroeconomic stability has led to poverty reduction, with some challenges.** In the decade preceding 2007 poverty incidence declined from 54 % in 1998 to around 42 %.¹ However, Burkina Faso remains a poor, landlocked country that faces severe development challenges with a GDP per capita of US\$517 (2009), which is below the average for sub-Saharan Africa. The country has limited natural resources, an economy that is strongly dependent on cotton exports, and is vulnerable to both natural disasters and fallout from civil strife in the nearby West African countries. The population of Burkina Faso stands at 15.8 million (2009). The country continues to rank among the poorest countries in the world according to various measures (e.g. 161 of 169 countries in the 2010 UNDP Human Development Index ratings).
- 3. The GoBF is committed to a longer term vision of human security and poverty reduction through accelerated growth and job creation.** Through its 2009 National Zone Development Framework (Schéma National d'Aménagement du Territoire - SNAT), the GoBF has completed a comprehensive assessment of the country's social and economic challenges and used it as a basis for mapping out a strategy for the country's development. The SNAT underpins the recently adopted five-year Strategy for Accelerated Growth and Sustainable Development (SCADD 2011-2015 - Stratégie pour la Croissance Accélérée et le Développement Durable) which sets out a framework to diversify the economy, stimulate growth and reduce poverty in Burkina Faso. SCADD is based on four strategic pillars including: i) promotion of growth poles and reduction of economic vulnerability, ii) development of economic infrastructure, iii) investment in human development, and iv)

¹ World Bank IDA- 'Burkina Overcoming the Odds', July 2009.

promotion of sustainable development. The World Bank's 'Doing Business' 2009 report ranked Burkina Faso as one of the top ten reformers for 2008, and applauded the country's adoption of a labor code in May 2008 and changes to corporate tax rate (which dropped from 35% to 30%).

4. **Regional integration is critical for stimulating Burkina's economic growth.** The need for greater regional economic and infrastructural integration is obvious, especially for a landlocked country such as Burkina Faso which is physically cut off from accessing key resources, and the lack of regional infrastructure holds the country back from achieving greater economic growth and achieving the Millennium Development Goals (MDGs). The African Infrastructure Country Diagnostic (AICD) ² report posits that if West Africa's infrastructure could be upgraded to the level of the best performing country in Africa (Mauritius), the impact on per capita economic growth would be in the order of 5 percent. With six countries sharing its borders, Burkina Faso recognizes the importance of regional integration/ cooperation, and has therefore placed it high on its national agenda in order to take advantage of regional infrastructure, and benefit from growing regional trade and investment. Burkina Faso and the two other land-locked countries within the Economic Community of West African States (ECOWAS) community – Mali and Niger – together connect eight out of the 15 ECOWAS countries. These countries are central to West Africa's integrated connectivity agenda, and have the potential to provide a strong platform for completing international and regional connections.
5. **Burkina could benefit, in particular, from a well integrated regional telecommunications market to diversify and spur growth.** AICD also indicates that between 1995 and 2005, infrastructure improvements boosted West Africa's growth by about one percentage point per capita per year. The positive growth was almost entirely attributed to the Information and Communication Technology (ICT) revolution.
6. **The West Africa Regional Communications Infrastructure Program (WARCIP) will ensure that Burkina Faso is better integrated within the ECOWAS Community and with the rest of the World.** Landlocked countries suffer from their geographical positions but have the potential to be an important link in a regional connectivity network. The focus of WARCIP in Burkina Faso is to contribute to a comprehensive solution to address connectivity gaps in the country, focusing on international, national and regional connectivity to enable the creation of a fully integrated network which will eventually link Burkina Faso with the rest of the region and provide affordable high speed connectivity to the country.

B. Sectoral and Institutional Context

7. **Burkina Faso's Telecommunications Sector has experienced significant reforms since 1998.** Burkina's telecom sector restructuring program began in earnest with the passage of the 1998 Telecommunications Act which created an independent regulator- , l'*Autorité Nationale de Régulation des Télécommunications du Burkina Faso -ARTEL*, (Regulatory Authority for Electronic Communications) delineated the roles of the regulator and the

² Africa Infrastructure Country Diagnostic Report – ECOWAS's Infrastructure: A Regional Perspective, April 2010.

Ministry of Posts and ICT, (*Ministère des Transports, des Postes et de l'Economie Numérique*- Ministry of Transport, Post and Digital Economy since April 2011), and paved the way for sector competition and transparent regulatory oversight. In 2009 the incumbent regulatory body was reconstituted into *l'Autorité de Régulation des Communications Électroniques (ARCE)* (Regulatory Authority for Electronic Communications) with increased autonomy through a new law, and improved capacity for managing a licensing framework that facilitates market entry and promotes competition. Additional sector reforms included development of: i) the 2011-2015 sectoral policy/action plan for the MTPEN (this complements the 1999 Policy), which seeks to improve connectivity, diffusion and use of ICT in Burkina, and ii) a Universal Service Strategy which aims to provide public voice telephony service to an average of 70% of selected rural localities, 95% of selected localities to be within 5km of one public access point, availability of private service in rural areas with prices no more than 25% above published fixed and mobile tariffs, and Internet POPs in each provincial capital in the respective regions.

8. **A decade of sector reforms has resulted in significant improvements in Burkina Faso's connectivity.** The country has created a relatively competitive environment for telecommunication services, and has been one of the leading countries in the region in terms of adopting ECOWAS ICT policies and adhering to the supplementary acts. The GOBF has also chalked a few notable successes during the last decade. In 2006 it privatized the incumbent Onatel (51% sale to Maroc Telecom) Burkina Faso, with support from the IFC and the World Bank. In January 2009 the government raised about US\$58 million from the further sale of 20% shares in Onatel through an Initial Public Offering (IPO), the first of any company in the country, and also first in the region. The shares were listed on the West African Regional Stock Exchange (Bourse Régionale des Valeurs Mobilières -BRVM) in Abidjan. Recently, in May 2010, the GoBF renegotiated 10-year Unified Licenses for two of the mobile operators for renewal fees of US\$55million each. An additional license was offered shortly after but it did not attract any investors. Carrier-to-carrier wholesale service licenses have been made available at no cost, and Globacom, the Nigerian second network and submarine cable operator has recently obtained one, which it is expected to use to provide capacity to its landing station in Accra. Non-discriminatory access to services and interconnection by all public operators is enforceable by law, and a universal service fund is in place with about US\$20million accumulated. The sector is awaiting the finalization of a new framework and institutional arrangements to manage the fund.
9. **The improved competitive environment has resulted in an impressive increase in access, in particular for mobile penetration which has increased from 5.5% in 2005 to about 37.2% in 2010.** Coverage extends across virtually the entire country (with a footprint of roughly 90% and covering 60% of the population), provided by the three GSM operators - Airtel (Bharti Group), Telmob (Onatel) and Moov (previously Telecel, now owned by Etisalat).
10. **Despite the notable reforms, connectivity at the national level still lags behind the sub-region.** The fixed market, dominated by Onatel, has developed at a slow pace. Even with its moderately extensive backbone between major cities and a metropolitan area

network in Ouagadougou, the national fixed line network continues to be largely underdeveloped. Fixed line and Internet service uptake is relatively low, partly due to the low penetration of broadband infrastructure. Internet penetration stands at 1.1%, compared to a sub-Saharan Average of 8.7%, and broadband penetration stands at 0.04%.³ Internet usage is hampered by a number of factors including physical limitations of the telephone network; frequent interruptions to the power supply; high cost of access; and high illiteracy. Monthly packages with Onatel are US\$120 for 512 Kbit/s and US\$428 for 2048 kbit/s representing 25 to 89 % of GNI per capita. Poor telecommunications services constrain social and economic development. The combined effect of lack of access to low price and high quality telecommunications services is a factor that limits the potential of the country to create jobs, expand production of goods and services, and trade competitively with the rest of the world.

- 11. The country's landlocked status also contributes to unreliable and high international connectivity prices.** As a landlocked country, Burkina Faso will always depend on the cooperation of its neighbors for international access, and has high bandwidth prices of about US\$4,500 for 1 Mbit/s (compared with about, US\$200 in the US, and approximately US\$400 in East Africa⁴). Onatel has the largest network and has built a national fiber backbone of 1,100-km connecting to the neighboring countries of Côte d'Ivoire, Mali⁵ and Togo. The company is using all of these cross border links to access approximately 800Mbit/s of international capacity in total, mainly through the Togo link, which in turn provides onward access to Benin's backbone and South Atlantic Three fiber cable (SAT-3) landing station. A recent reduction in Benin's capacity quota of SAT-3 has resulted in disruption of communication in Burkina and Togo. Extension of Burkina Faso's backbone to the border with Niger is underway and is expected to be completed by 2012. Preliminary feasibility assessment indicates that with the appropriate price and further sector reforms, Burkina Faso could use approximately 1.656 Gbit/s of bandwidth.
- 12. WARCIP Burkina Faso provides a unique opportunity to improve international connectivity by increasing competition and providing multiple access routes to international capacity.** The high charges levied by Onatel, combined with reliability problems, indicates that relying solely on a single infrastructure provider is unlikely to be the most viable option for improving international connectivity. Burkina is also increasingly positioning itself as a champion of innovative applications in the region. Improved and affordable connectivity is critical first step to effective deployment and use of such applications
- 13. WARCIP is aligned with Burkina Faso's 2010-2012 Country Assistance Strategy (CAS) which seeks to assist Burkina Faso to deepen economic transformation and identify new drivers of growth.** The Project would support CAS objectives through better

³ ITU Telecommunications Database (2010).

⁴After landing of the Seacom submarine cable in Kenya in July 2009, spot short-term pricing terms for 1 Mb were in the range of \$400 - \$600/Mb while longer term (e.g. 15-20 year IRU basis) pricing terms were as low as \$150 – 200/Mb. The Mombasa to London segment alone was estimated to be within the \$50-\$70/Mb price range.

⁵ Mali has access to submarine cable via Senegal.

access and use of ICT to improve delivery of public services, lower the cost of doing business, new investments in the ICT sector and improved access to markets.

14. **Readiness for WARCIP:** Burkina Faso satisfies the readiness triggers set out in the umbrella WARCIP Program Appraisal Document. These triggers include (i) government commitment to liberalization and open access principles, (ii) existence of Public Private Partnership (PPP) framework (or willingness to formulate one as part of preparatory activities), and (iii) government commitment to increased sector competition as evidenced by pro-competitive policy and regulatory frameworks. The GoBF has made impressive efforts to liberalize the sector and break the monopoly of the incumbent operator, developed a licensing regime that ensures non-discriminatory access to infrastructure, and has ongoing efforts to develop PPP frameworks and structures, including to manage the yet to be developed national backbone.

C. Higher Level Objectives to which the Project Contributes

15. **A full connectivity solution to promote cheaper access to communications and facilitate global integration.** WARCIP Burkina Faso proposes to contribute to a full connectivity solution, building on new and existing communications opportunities. The Project is expected to focus on catalytic financing for additional links to international and national infrastructure (where gaps exist that cannot be addressed by the private sector, and where there's clear evidence of positive externalities). By gaining additional access to international cables, Burkina Faso will have better and cheaper access to communications and be able to connect more effectively with the rest of the world.
16. **Intensification of broadband networks stimulates investment and economic growth.** The contribution of broadband networks to economic growth is much more pronounced than that of narrowband networks. Additional studies have suggested that a 10% increase in the penetration of broadband in developing countries equates to a 1.4 % increase in GDP per capita.⁶ New businesses in the ICT and IT enabled services sector often result from improved access to broadband.
17. **WARCIP Burkina Faso will increase access, lower costs and improve quality of ICT services.** By addressing connectivity bottlenecks, the project will support Burkina Faso in obtaining better and shared access to ICT services with improved quality and reduced cost, allowing improved communications and information dissemination, better access to limited public resources which could in turn facilitate more effective distribution of limited resources and stimulate longer-term development shared growth. By providing technical assistance to help the GoBF create an enabling environment for the ICT sector and by providing resources to improve connectivity, WARCIP Burkina would also leverage the sector as a key driver of growth, competitiveness, and improved governance.
18. **The Project will also support increased bandwidth which will provide the opportunity for Burkina Faso to develop e-government applications.** Although the project does not

⁶ *Information and Communications for Development 2009: Extending Reach and Increasing Impact.*

address e-Government specifically, it will provide the opportunity to obtain needed bandwidth to stimulate development of innovative applications for use in government institutions. Ultimately better access to ICT will also support Government goals of rebuilding core state functions and institutions, and improving governance and accountability.

19. **In allowing businesses to communicate more efficiently WARCIP Burkina Faso will increase private business productivity and profitability.** The telecommunications and ICT sectors have been proven to improve business productivity and profitability. This in turn has the potential to increase revenues for private businesses and generate more tax revenues for the government. In this context, policy makers and regulatory officials in Burkina Faso will need to be well equipped to provide the most conducive environment for the Private sector to invest and use ICT.
20. **The proposed operation is fully in line with the March 21, 2010 Regional Integration Assistance Strategy (RIAS) Update “Partnering for Africa’s Regional Integration and the West Africa Implementation Action Plan (2010).** The RIAS seeks to create economies of scale, facilitate intra-regional trade and exports and connect landlocked countries to regional and global trade routes by reducing barriers to movement of goods and services between countries and improve the regional business environment. Helping Burkina Faso connect to the global high speed Internet Networks very much support these objectives. In addition WARCIP is featured as a flagship project in the RIAS Update.
21. **The proposed operation is fully in line with the March 2011 Africa Strategy “Africa’s Future and the World Bank’s Support to It.** By facilitating cheaper access to internet and supporting the development of national and regional communications infrastructure, WARCIP Burkina Faso will promote sustainable employment (Competitiveness & employment) and will create a critical building block for ICT applications (Governance & Public sector capacity). The program also focuses on partnerships (a key element of the Africa Strategy) by leveraging private sector investment in the connectivity components.

II. Project Development Objectives

A. PDO

22. **The project development objective (PDO) of WARCIP-Burkina Faso is to increase the geographical reach of broadband networks and reduce costs of communications services in the territory of Burkina Faso.**⁷
23. **WARCIP has three main components, and has the ultimate aim to reduce Burkina Faso’s economic isolation.** WARCIP Burkina Faso seeks to contribute to lowering the cost and improving quality of connectivity within Burkina Faso and between Burkina and the rest of the world. In order to reach this objective, the project proposes an integrated approach focusing on three components: (i) Improved International Connectivity and

⁷ All the other countries that will be covered by the following APL phases will use the same PDO.

Regional connectivity through competitive access to international bandwidth via a virtual landing point (VLP), and cross-border infrastructure to the nearest border respectively, (ii) Creation of an enabling environment and institutional strengthening to remove existing bottlenecks for private sector participation in both national and regional infrastructure development, and iii) implementation support. The ultimate objective of the project is to reduce isolation of Burkina Faso's economy and support its participation in the regional and global economy.

i. Project Beneficiaries

- 24. WARCIP will benefit the citizens of Burkina Faso.** All over Africa, businesses, governments, teachers, doctors, and farmers, are using ICTs to communicate, share information, improve productivity and service delivery, find better prices, improve access to markets, and increase their bargaining power. The situation is the same in Burkina Faso. The proposed project will therefore benefit the entire population of the country including telecommunications operators, telecommunications users, universities, schools, hospitals, banks, corporate users, and GoBF ministries and departments. However, for the purpose of M&E, the Project Implementation Unit (PIU) will define Direct Project Beneficiaries in a more restrictive way (e.g. internet users, or active mobile users). See Annex 1 for more details.

ii. PDO Level Results Indicators

Outcome Indicators	At closing of the project
▪ Volume of international traffic (Kbit/s per person)	74
▪ Access to telephone services (%)	62%
▪ Access to internet services (%)	0.6%
▪ Average monthly price of wholesale international E1 capacity link from capital city to Europe	<\$2500
▪ Number of direct project beneficiaries, of which female	11.32m (51%)

III. Project Description

A. Project components

- 25.** WARCIP in Burkina Faso will have the following three components: Component 1: support to connectivity (US\$17.3million), Component 2: creating enabling environment for connectivity (US\$3.68 million), and Component 3: Project implementation (US\$1.26 million).
- 26. A price contingency of US\$0.760million is included in the budget** for unexpected increases in the price of the services to be obtained during the course of the project.

Component 1 – Supporting connectivity (US\$17.3 million):

27. This component will support International connectivity for Burkina Faso through several inter-related subcomponents which together will ensure increased availability to cheaper broadband access. Details include:

International Connectivity (US\$11.3 million)

- a) **Supply of Bulk International bandwidth capacity to all licensed operators for approximately US\$10 million.** To ensure that international capacity is available to the country at the lowest cost and highest quality, WARCIP Burkina will provide resources for the launch of a competitive tender or tenders to purchase high capacity bandwidth, preferably in the form of Indefeasible Right of Use (IRUs)⁸. This will be from neighboring coastal countries and will be delivered at a designated Point of Presence (POP) or Virtual Landing Point within Burkina. Among the coastal countries, Accra, Ghana may offer the shortest distance to Ouagadougou. It is also possible that the Ghana route may be the most competitive, with several fiber cables landing in the country.⁹ However, in order to ensure maximum competition, a competitive tender is expected to be issued allowing for bids via all available routes. To supply bandwidth capacity the selected operator = would be required to: i) negotiate passage on a wholesale basis with operators in adjacent countries for reaching the designated physical landing points in Burkina Faso, ii) negotiate directly with international cable operators for access and onward connectivity. Interested parties for this tender could be: i) international submarine cable operators, ii) existing telecom operators in Burkina Faso or neighbouring countries, or iii) new operators/bandwidth capacity suppliers based in Burkina Faso or one of the neighbouring countries. A number of submarine cable operators and bandwidth suppliers have already expressed interest in participating in this opportunity.
- b) **Establishment of VLP/ Internet Exchange Point (IXP), including maintenance costs – (US\$1.3 million):** Support for equipment and construction of a VLP. The VLP is expected to be used as the point of access and interconnection for operators in Burkina to the bulk bandwidth capacity to be provided as discussed above. The VLP is expected to be essentially passive infrastructure with limited multiplex and switching equipment aimed at guaranteeing fair and unfettered physical access on transparent and equal terms. In essence the VLP is simply a standard “Carrier Neutral Data Centre” which reduces the cost for the local operators to connect to international infrastructure by just having one place to connect. The infrastructure also creates a more fluid open market for capacity, because local operators can easily switch between suppliers in seconds, (or change the volume of capacity obtained from each of their suppliers) simply through a configuration change on the router or changing a cross-connect cable on the fiber switchboard. The VLP could also help the national regulator monitor the activity of suppliers to ensure a sufficiently competitive market for broadband. The project will establish an IXP at the cost of approximately US\$100,000 which will co-locate with the VLP. The IXP and data

⁸ IRU (Indefeasible Right of Use) is defined as the long term lease of portion of capacity on international cable, often specified in channels of a given bandwidth.

⁹ Current Submarine landing in Accra include Sat 3, Glo-1, Main One, and WACS.

centre aspects would simply add additional provisions for a layer 2 switch, rack-space, air-conditioning and redundant/backup power. VLP costs would also include estimated some maintenance costs and management fees.

Regional Connectivity (US\$6 million)

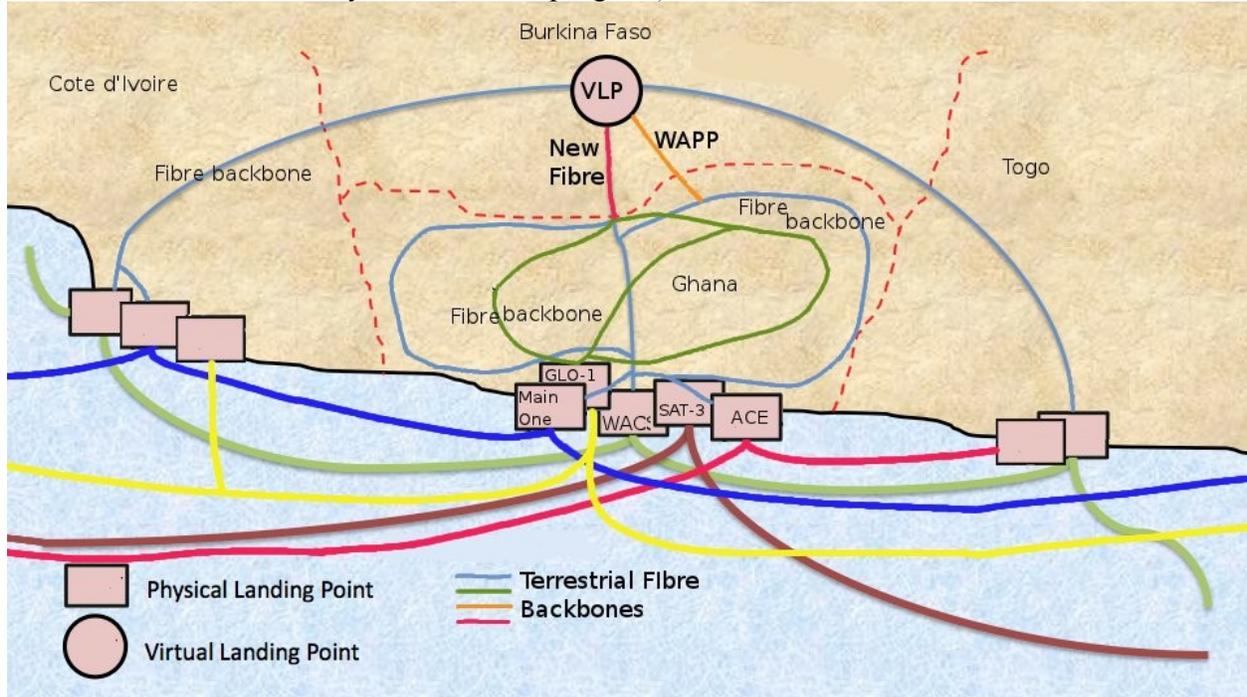
- c) **Build out of the missing connectivity links from Ouagadougou to the closest border point -Ghana. (US\$5million):** The experience gained from similar World Bank Projects indicate that it is difficult to run a tender for capacity purchase if there is no network already in place (operators are too cautious to commit to providing capacity if they don't already have access to a network either in place or almost in place). In order to effectively supply the bulk international bandwidth to be supplied by competitive tender as discussed above, there will be need for additional infrastructure between Ouagadougou and the closest border point. This missing link would provide redundancy, security and wider access to low cost capacity and will provide competition to Onatel's existing infrastructure. The GoBF is requesting funding under the project to develop a 72 pair fiber link from its capital city Ouagadougou to Paga, on the border of Ghana. This represents the shortest route to any of its neighboring countries and preliminary analysis which considered a variety of options concluded that to build a new cable from Ouagadougou to the Ghana border provides the lowest cost solution in the longer term. The MTPEN will procure Technical Advisory Service to assist in the design, tendering and Audit of this sub-component (Details of Technical Advisory Service under Component 2 below)
- d) **Roll-out of limited national infrastructure to improve access (US\$1 million).** While international fiber links will provide the potential for massively improved access to communications in Burkina Faso, the full benefits of this cannot be achieved without some strategic investments in national infrastructure. This will both stimulate demand by reducing costs and improving the range of services to the end user through increased competition. The project will provide support for equipment and installation of a high speed government virtual private network for selected priority Ministries, Departments and Agencies (MDAs).

28. **Use of PPPs and Competition.** Involving the private sector in the ownership and management of the connectivity infrastructure is crucial for a number of reasons, including ability i) to contribute investment resources so the government is not required to pay the full cost of the investment, ii) to ensure effective and efficient management of resources, and iii) to ensure that the increased supply of bandwidth will have a positive impact on the sector by ensuring access to it on equal terms and competition in the supply of bandwidth. This makes PPPs a cost-effective way for Burkina to obtain access to international infrastructure. For the International Connectivity component, the Project is providing resources for GoBF to explore and establish appropriate PPP Arrangements for owning and/or managing the Connectivity Infrastructure where feasible, with support of Transaction Advisers which are expected to be procured through the Project. Preliminary assessment indicated that several PPP options exist for: i) landing the international bulk capacity at the designated VLP and selling or distributing capacity to end users, ii) owning and managing the VLP and iii) developing the transmission infrastructure to the country's

border. The structure of the PPP(s) will be determined by the Transaction Advisers in consultation with the GoBF. The Transaction Advisers will structure operation and governance of the PPP(s), ensuring that the two following guiding principles be incorporated into the design: i) the open access principle (ability for all existing and new operators to have unfettered and non-discriminatory access to the infrastructure at reasonable prices), and ii) in the case the public element of the PPP structure reflects some form of an ownership, equity or controlling interest an incentive system or divestiture mechanism will be designed to ensure an orderly and appropriate divestiture. Resources from WARCIP Burkina will finance the initial costs for the Selected Operator (defined as the Operator selected per an international competitive bid/tender that may own and/or operate the VLP and/or bulk international bandwidth capacity)

29. **The project will guarantee open-access to the International Bandwidth and Connectivity Infrastructure.** Access to bottleneck facilities such as submarine cable landing stations and bandwidth has been a major issue in the past in many parts of the world. If this access is controlled by one operator and is not adequately regulated, then the international evidence shows that this will restrict the impact of new supplies of international connectivity on the market. The project will guarantee that this does not happen by ensuring that the VLP and any infrastructure financed is controlled in a way which does not allow control by one or more parties. Detailed feasibility studies to fine-tune the business and ownership models as well as support for the tendering process for both the bandwidth and the VLP will be carried out with resources from the Project. Additional transaction and legal advisory work will also be included as part of the main project under Component Two, the enabling environment component.

Figure 1: VLP approach for Burkina Faso. (This will be similar for the other landlocked countries covered by the WARCIP program).



Component 2- Enabling Environment for connectivity (US\$3.68 million)

30. This component will support the following activities:

- a) **Due Diligence of the Regulatory Environment (US\$100,000):** This activity will provide support to the design and implementation of the project by reviewing and providing an analysis of the legal/regulatory and enabling environment necessary to support project activities and objectives, including review and analysis of the (i) sector law, regulations and licenses, (ii) cyber-security (including access to and freedom of information, data protection and privacy, e-transactions and authentication, cybercrime and related issues), (iii) competition, (iv) private sector participation, and (v) PPP laws.
- b) **Support to optimize the governance, ownership and financing issues related to the operation of the Virtual landing station and management of the bandwidth emanating from the International connectivity (US\$750,000).** This component will provide support for Technical Assistance and capacity building necessary for the successful implementation of Component 1 of the project. Specifically, support will include the definition of the framework for the management and distribution of the bulk capacity, possible integration with the VLP, and establishment of the PPP structure(s) as required. As part of this support, Consultants will also validate current capacity and interest of the private operators in Burkina to invest in international connectivity, and a competitive pricing structure. Consultants will also support the various stages of the bidding processes for the VLP and the International Connectivity, including preparation of the tender documents and technical support during the bidding processes

- c) **Assessment of Government Connectivity Needs (US\$100,000):** The GoBF has already initiated some pilot projects to connect a number of the key government agencies in the capital Ouagadougou and some agencies outside of the capital. The Government's program to extend this connectivity would be underpinned by an assessment to identify remaining gaps and institutional needs. It is expected that the World Bank funding will be based on the results of this assessment.
- d) **Support to Provide Advisory Service, Tender Design and Audit Services for Fiber Cable: (US\$150,000)** – This activity will provide support to the GoBF to structure the tendering process for the fiber optic cable between Ouagadougou and Paga, Ghana. The tender documents will reflect environmental issues raised in the Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) documents prepared. The consultancy will also support the GoBF to audit and confirm the construction milestones.
- e) **Environmental studies (US\$100,000).** This activity will fund the development, consultation and disclosure of environmental studies and subsequent environmental and resettlement action plans. Because the locations for the VLP and connectivity infrastructure (in particular the link to Ghana) are not yet known, an ESMF and RPF have been prepared, consulted upon, and disclosed in May 2011. Relevant environmental management plans will be developed as required.
- f) **Strengthening policy making capacity of MTPEN: (US\$1.180million)** This component will provide Advisory support, studies and technical capacity building assistance and training to the MTPEN which is the primary agency of government responsible for the Transport, ICT, and Digital Economy sectors. The technical Advisory assistance will support the creation of: i) Broadband and Universal Access Strategy and Implementation Plan (US\$300,000), ii) Strategy and Action Plan for Digital Economy (US\$200,000), and iii) Review of Taxation Policies and Implications on Access (US\$100,000). It will also provide Technical and Legal Advisory support to the MTPEN.
- g) **Strengthening regulatory capacity of ARCE (US\$1.3 million).** This component will provide technical capacity building and assistance to ARCE. The component will support a range of activities and studies designed to assist ARCE improve the overall competitive market and regulatory environment for the ICT sector. Key areas of focus will include studies, technical assistance and secondary legislation to facilitate number portability, domain name registration, electronic transactions, and VOIP. It will also support development of regulatory instruments/studies to ensure broadband/open access, improve information security and support a training program designed and implemented during project implementation.

Component 3: Project implementation and Contingency (US\$1.26 million)

31. This component will support the following activities:

Capacity strengthening to ensure effective implementation. The MTPEN will coordinate the project. The Agency responsible for implementing the Project will be an existing PIU attached to the MTPEN and the Ministry of Infrastructure. The PIU is headed by a Project Coordinator with support from key fiduciary, environment and M&E consultants. Project

implementation assistance will also include some operational support to a Steering Committee which will provide policy guidance and ensure that the PDO is achieved. To accelerate project preparation, the GoBF made a request to have the PPA implemented by the *Maison de l'Entreprise du Burkina Faso* (MEBF) on an interim basis. This will be transferred to the existing PIU upon Project effectiveness (result of the merger of the ICT and Transport Ministries). Limited support has therefore been provided to the MEBF for the fiduciary support. A projected resettlement cost of US\$50,000 is also included in the event that temporary compensation needs to be provided during construction of fiber link between Ouagadougou and Paga.

- 32. A price contingency of US\$0.760million is included in the budget.** This contingency is designed to cater for unexpected increases in the price of the services to be obtained during the course of the project.

B. Project Financing

i. Lending Instrument

- 33. Lending will be via an Adaptable Program Loan** The lending instrument is an Adaptable Program Loan (APL) which allows countries to join the program based on their interest and readiness, and upon meeting triggers as indicated above. The objectives of WARCIP Burkina Faso are fully in line with the objectives of the WARCIP program.

ii. Project Financing Table (US\$)

Activities	Total
Component 1: Improving Connectivity	17,300,000
Supply of Bandwidth (International Capacity Purchase)	10,000,000
Fiber optic link Ouaga-Paga	5,000,000
VLP/IXP Deployment (Including Maintenance and Training Cost)	700,000
Estimated maintenance cost on link above	100,000
Initial Operating Cost for PPP Operator	500,000
High Speed Govt Network	1,000,000
Component 2: Enabling Environment	3,680,000
Legal and Transaction support for VLP and competitive tender for International Bandwidth	500,000
Framework for Open Access VLP	250,000
Social and Environmental studies	100,000
Due diligence of legal and regulatory environment	100,000
Assessment of Govt Connectivity Needs	100,000
Support for structuring, tendering and audit of fiber link	150,000
Policy making activities/studies and capacity building for MTPEN to support broadband access	1,180,000
Regulatory instruments/studies to ensure open access and strengthening of regulatory capacity	1,300,000
Component 3: Project implementation, communications, and M&E	1,260,000
PIU operating expenses and operational support for Steering Committee	1,000,000
Communications, M&E and PIM	180,000
Initial Support to MEBF (Implementation of PPA)	30,000
Estimated Resettlement Costs	50,000
Contingency	760,000
Total	23,000,000

C. Lessons Learned and Reflected in the Project Design

- 34. Country commitment to the proposed project is important.** The proposed project draws on lessons learned from previous and ongoing World Bank-financed projects in ICT and from ongoing efforts in countries in similar situations as Burkina Faso. Broad global experience in ICT project implementation indicates that an ICT project success is primarily contingent on strong country commitment to implementation. The proposed project design has been guided by the telecommunications sector national policy. The GoBF actively sought support from the Bank to connect to new or existing fiber-cable systems.
- 35. Providing support for regulatory capacity building.** Regulatory capacity is necessary to enable fair competition as problems can and will develop over time. Building such capacity takes time. At the same time, Burkina Faso could benefit from the extensive experience of other countries in this area.
- 36. There is a need for limited funding for infrastructure to improve access to ICT where the market fails.** For most developing countries, a major obstacle to the adoption of ICT remains the lack of adequate access to ICT infrastructure. A lack of investment in ICT infrastructure and access networks coupled with inefficient provision of services are the most important factors undermining the development of networked economies. Public funding for infrastructure development is justified in infrastructure market segments that fail to attract private investment. Funding for open access VLP and facilitating access to cheaper bandwidth from coastal countries is key to complementing limited private sector funding in Burkina.
- 37. Providing alternative solutions to the use of satellite capacity can ensure sustainability.** While the proposed project could finance long term purchase of satellite capacity, this would not be sustainable in the long run, given the associated high prices of such service. The proposed project therefore builds on the fiber opportunity provided by existing or new fiber cable systems in the West Africa region. The due diligence confirms that the decision to connect to a fiber system through a VLP compared to options such as buying satellite capacity is the best for Burkina Faso. The due diligence also confirms that the option selected is by far the most economical and commercially viable for the Burkina Faso (For more details see Annex 7).
- 38. The project builds on general lessons learned in the ICT sector.** Key lessons learned and applied to the project design are: (1) project development objectives should be realistic, focused and achievable in the country and sector; (b) project components should support country priorities and have broad ownership among stakeholders; (c) project design should be flexible to adapt to a rapidly changing environment; and (d) implementation support should be included in Project activities with a focus on retaining staff to ensure continuity and an accumulation of capacity within the implementing agency. The Project builds also on specific lessons learned in preparation of WARCIP APL 1A, in particular on safeguard issues related to formulation of tailored PPP arrangements and open access principles.

IV. Implementation

A. Institutional and Implementation Arrangements

- 39. The MTPEN will coordinate the project.** The Agency responsible for implementing the Project will be a project implementation Unit attached to the MTPEN and the Ministry of Infrastructure. The PIU exists already and is headed by a Project Coordinator with support from key fiduciary, environment and M&E consultants. To ensure that the Project receives maximum policy guidance and support, the Ministry is also facilitating the establishment of a Steering Committee which will provide policy guidance and ensure that the PDO is achieved. The PIU will also coordinate the activities projected to support the Ministry itself, the Regulatory Agency (ARCE) and all the activities in the project, including the VLP and the Selected Operator who is expected to manage the VLP and/or the International Bandwidth.
- 40. Responsibilities of the PIU.** The PIU is being assisted by a core project team composed of a Procurement, FM, M&E, and Environment Specialists, and an Accountant. The PIU is already implementing three World Bank financed Projects and will take on the additional responsibility of WARCIP Burkina Faso. Activities include:
- (i) Managing the day-to-day activities under the project, in particular, procurement and monitoring activities;
 - (ii) coordination with the other entities responsible for project implementation;
 - (iii) preparation of annual work programs, budgets, and procurement plans under the project;
 - (iv) preparation, in consultation with MTPEN and ARCE technical teams on TORs for activities
 - (v) dissemination of internal and external audit reports; and
 - (vi) implementation of their recommendations.

B. Results Monitoring and Evaluation

- 41. The PIU will monitor and evaluate the project.** The PIU will bear the primary responsibility for project Monitoring and Evaluation (M&E) of both project progress and project outcomes, 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. The PIU will submit to the Ministry, World Bank and key stakeholders, the M&E quarterly report that will include the updated Results Framework and the Action Table, listing the corrective actions to be implemented with deadlines and persons responsible clearly identified.
- 42. The views of direct beneficiaries will be brought into the monitoring and evaluation process.** Comprehensive M&E reporting will be needed to monitor the results and performance of the proposed project. It will involve mainly the direct beneficiaries of project activities, but will be extended to other beneficiaries such as telecommunications operators and private ICT firms, which ultimately are the main beneficiaries of the proposed project's outcomes. The PIU will review and validate the reports on performance

indicators and recommend corrective actions if necessary. There will be focal points as to who will be responsible for providing relevant information and monitoring progress, using relevant performance indicators.

43. **Specific, Measurable, Achievable, Relevant and Timebound (SMART) indicators will be used as an initial monitoring guide.** An M&E system will be set up within the PIU to keep track of and evaluate implementation progress of the proposed IDA project within the broader context of the institutional framework for the telecommunications sector. Although improved ICT and telecommunications services at the operator level remains the hallmark of success of an enabling environment, the proposed project's M&E system will seek first to measure results that are closely associated with project activities.

C. Project Implementation Support

44. **Implementation support missions will be conducted at least twice a year.** The GoBF, through the PIU, may perform evaluations jointly with the World Bank team and conduct supervision or implementation support missions at least twice a year. Mission objectives will be based on the latest quarterly implementation and financial monitoring reports prepared and submitted by the PIU.
45. **A mid-term review will be conducted within 30 months grant effectiveness (or earlier once the connectivity component has disbursed).** It will assess progress and make recommendations, if necessary, for any changes in Project Development Objective, the content of components, resource allocation, and performance indicators.
46. **The PIU, in consultation with MTPEN will prepare a complete project review upon closure of the proposed project.** The completion report will document the project's achievements and results and drawing lessons for future interventions. The completion report will in part be based on the project's technical, economic, social, and environmental impact survey studies, as well as an assessment of beneficiaries' satisfaction.

D. Sustainability

47. **The GoBF is very committed to the sustainability of the project.** The GoBF is very committed to the proposed project and continues to make efforts to place ICT at the center of its new growth strategy. Additional commitment to telecommunications reform is clear in the GoBF's adoption of the revised telecommunications law in 2008 which further strengthen the regulatory agency ARCE and provides it with authority to renew licenses for mobile operators and issue new ones.
48. **Legal and regulatory reforms are expected to have sustainable impact.** Predictability and transparency of the legal and regulatory framework that is conducive to private sector participation and competition will increase the demand for affordable quality ICT services, including advanced applications. Given that a number of private operators already exist in the market and that there is potential for additional players beyond the wireless sector, it is likely that the regulatory authority will have sufficient resources and capacity through

license and regulatory fees to become a self-funded institution and sustain the required regulatory capacity to supervise the sector development.

- 49. Local capacity will be strengthened through training and technical assistance.** The proposed project will make significant investments in capacity-building efforts through training and technical assistance to build technical expertise, social capital, and knowledge. With the focus on building sustainable capacity in key institutions such as the MTPEN and ARCE the benefits of the proposed project are expected to last far beyond project completion as such capacity will support the creation of ICT policy and regulatory know-how to guide sector growth and applications in the future.

V. Key Risks

- 50.** While the design of the WARCIP Program is technically simple, the Burkina Project is a little more complex given the overland nature of the connection to international connectivity and the need to issue at least two competitive tenders (one for supply of bandwidth, and one for construction of the Ouagadougou -Paga fiber link). The project will benefit from International Technical Advisory services, and the fact that it will be implemented by a PIU which is very experienced in implementing projects financed by World Bank and other Donor Projects. Potential risks and Mitigation measures are summarized in the Operational Risk Assessment Framework (see Annex 4). The overall project risks are rated Medium Impact. Risks identified are manageable and mitigation measures are in place or will be put in place during project execution.

Key risks and Mitigation Measures

Main risks	Mitigation measures
Inadequate interest from both Private and Public sector to finance connectivity through PPPs	Transaction Advisers funded through PPA to advise on flexible and innovative PPP structures that will make it attractive for private and public sector to partner for investment in the sector. Private sector already signaled that there could be interest if transparent conditions existed. Terms of reference has been developed and Advisory work expected to be launched by Sept. 2011
Limited institutional capacity to implement fairly complex transactions	Transaction Advisers funded to assist critical activities. TA provided to PIU, MTPEN and ARCE to build requisite capacity
Project commercially not viable due to insufficient demand for bandwidth	Early results of traffic assessment confirm suppressed demand and interest of Private Operators to capitalize on potential reduced bandwidth prices
Potential monopoly risks for the VLP and Transmission Infrastructure	The VLP is designed to be carrier neutral which would guarantee all users equal and impartial access on transparent and fair terms. It could be run by coop or any flexible PPP structure to be determined by Transaction Advisers. Transaction Advisers will also provide guidance on appropriate structure to ensure open access on Transmission Infrastructure.
Delays in agreeing to PPP model or models to manage all aspects of the International Connectivity	Transaction Advisers will be hired quickly through the Project to begin the dialogue with both government and the private sector on appropriate structures. The World Bank already completed initial feasibility study which provides inputs from private and public sectors on how they wish to engage.

VI. Appraisal Summary

A. Economic and Financial Analysis

- 51. Fiber-connectivity is the most economically efficient connectivity option for Burkina Faso.** International capacity to London at the Burkina Faso border could be obtained for less than US\$250/Mbit/s/month today. Bringing that capacity to Ouagadougou is feasible for a cost of US\$10-50/Mbit/s/month, depending on the exit border, route and capacity purchased. With the 800Mbit/s of international capacity being purchased at present, this represents an annual saving of over US\$21million, when compared to current costs of about US\$4500/ Mbit/s/month (US\$2.88m vs US\$43.2m) at the retail level. Significant savings are expected to be made even at US\$500/Mbit/s.
- 52. Burkina Faso likely to see investment breakeven between 2016 and 2018.** Overland fiber connection for Burkina Faso will see the project breakeven between 2016 and 2018, with a Net Present Value (NPV) for the first 10 years (to 2022) of US\$8.38million. The IRR is 28% assuming an average bandwidth sale price of US\$100/Mbit/s/month, and an IRR of 41% assuming a US\$20/Mbit/s/month for capacity on the link to the Burkina border. For Burkina Faso final breakeven year will depend on actual capacity uptake and the wholesale price of bandwidth. However, by 2018 at the latest, the project would be cash-flow positive and substantial revenues would be made if these wholesale pricing levels are maintained.

B. Technical

- 53. WARCIP recognizes that infrastructure and policy environment bottlenecks need to be dismantled to ensure better communications access.** Technical design of the project reflects lessons learned in earlier Bank projects for ICT sector in general and landlocked countries in particular. The main lessons derived from Burundi, Rwanda and Malawi which are also landlocked and similar to Burkina is that creating a predictable legal and policy environment is key to improving investor confidence and restoring trust for both private and public sectors. The project will seek to create innovative and flexible PPP frameworks for international connectivity which reflect both private and public interests. The project will establish an enabling institutional and regulatory environment to help attract and sustain investment in the telecommunications sector.

C. Financial Management

- 54.** The Burkina Faso component of the West Africa Regional Communications Infrastructure Program will use the same financial management and disbursement frameworks that are currently in place under the three Bank financed projects¹⁰ managed by the Coordination Unit of the Transport Sector Project Second Phase, PST II. To this end, in accordance with the Financial Management Manual issued in March, 2010., the financial management arrangements of PST II which implements three Bank financed projects and one European Union project, have been reviewed to determine whether it is acceptable to the Bank. For

¹⁰ Among them the West and Central Africa Air Transport Safety and Security Project is closing this fiscal year.

the assessment purpose the Bank's financial management team has reviewed the financial management supervision performed in December 2010 of PST II that was rated moderately satisfactory¹¹. After reviewing the financial management capacity PST II, and as per the modalities described in the Bank Economic Sector Work on Burkina PFM system¹², the proposed financial management arrangements for the Burkina Faso component of the West Africa Regional Communications Infrastructure Program are considered adequate to meet the Bank's minimum fiduciary requirements under OP/BP10.02.

55. The overall FM risk at preparation is considered low. PST II has adequate financial management arrangements (experienced staff, updated manual of procedures detailing budget, accounting and reporting processes, accounting software with multi projects version, internal auditor recently recruited, and external auditor acceptable to the Bank) in place and well functioning. Thus reliance will be placed on these existing arrangements. The risk of excessive work load will be mitigated by the redeployment of the accountant of one of the Bank financed projects managed by PST II and closing this fiscal year. Details of the financial management arrangements are described in Annex 3.

D. Procurement

56. Procurement for the proposed Project would be carried out 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, and the provisions stipulated in the Financing Agreement. For each contract to be financed by the Grant, the procurement plan will define the appropriate procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, the prior review requirements, and the time frame. The procurement plan was formally approved during negotiations. The Procurement Plan will be updated at least annually, or as required, to reflect the actual project implementation needs and improvements in institutional capacity.
57. The procurement procedures, thresholds and other detailed procurement information are found in Annex 3. The procurement capacity assessment found that PST2, who is in charge of procurement activities, is staffed with a Procurement Specialist who has been working in the PIU for more than seven years. He has a strong experience in the Bank procedures. However, it is important to note that the PST2 has no technical experience in IT, and the Procurement Specialist has no significant experience in Procurement of Information Systems. It was recommended: to (i) the nominate a focal point to take care of technical aspects and the preparation of TORs and technical specifications, (ii) provide additional training for the Procurement Specialist and the Focal points on Procurement of Information Systems.

¹¹ The weaknesses in the internal audit arrangements explained this rating. It is worth noting that during the course of the preparation of the latest Bank financed project managed by PST II, the recruitment of an internal auditor was completed and the selected candidate is on board.

¹² **Burkina Faso: Country Systems review for project Financial Management, Next Steps and Ways to move forward**, April 2010.

E. Social and Environment

- 58. Overland Connection to a fiber optics cable system is not expected to have a large environmental and social impact.** The terrestrial connectivity is expected to follow the major roads already in place between Ouagadougou and neighboring countries. As the precise route and civil works are still to be determined, an Environmental and Social Management Framework (ESMF) has been prepared, consulted upon and disclosed on May 13, 2011 in Burkina Faso and at *Infoshop*. The impact of laying the additional fiber optic cable along these routes will be very minimal. Environmental and social impacts of the project are likely to come mainly from the laying of the fiber (excavation and crossing of human settlements, farms, the Kabore Tambi National Park¹³, rivers, etc.) and may lead to: soil erosion; the pollution of soil and water; loss of vegetation; the disruption of living environment and socio-economic activities and livelihoods located on the right-of-way (workshops, garages, shops, etc.); the disruption of the traffic, noise, dust, and/or risk of accident; and the generation of solid and liquid wastes; the acquisition of all or part of some private land; potential destruction of crops and/or woodlands; and, also the risks of vandalism and the frustration when the local workforce is not employed. In addition to OP 4.01 (Environmental Assessment), the Project triggers OP 4.04 (Natural Habitats) as the cable is being laid along a road that goes through a national park and other areas, and OP 4.11 (Cultural Resources), as there is a possibility that the cable may be laid in areas where cultural assets exist. The ESMF addresses both impacts and includes proposed mitigation measures. An Environmental and Social Management Plan will be prepared as and when necessary during project implementation. It should be noted that the project connection at the border with Ghana will not lead to social conflicts because the borders between the two countries have been clearly delineated and materialized. Moreover, the VLP will be located in a vacant land belonging to the Government that should be secured and not currently occupied, and which will be made available to the project. From this point there should be no risks for social impacts. The land may be developed later by private telecom operators. The project is rated as a Category B project.
- 59. The project is expected to have positive social benefits and impacts.** The main social impacts of the project are the increased possibility of better access to ICT services for the population and improved government service delivery. The project will (i) enable ICT to become a driver for sustainable economic growth; (ii) enable the Government to use ICT to provide decentralized services; (iii) improve access and quality of ICT services for the population, businesses, and the Government; (iv) reduce isolation and enhance economic activities in rural areas; and (v) create additional opportunities for women entrepreneurs to own ICT-related SMEs.
- 60. There may be some temporary and/or permanent displacement of Project-Affected Peoples (PAPs) as a result of the cable connectivity activities.** The cable is expected to follow Rights of Way for existing roads and/or transmission lines and involuntary

¹³ WARCIP Burkina will benefit from a Park Management Plan which is being prepared under the World Bank financed WAPP project.

resettlement is expected to be minimal. Temporary displacement in urban areas may involve larger numbers of PAPs. A Resettlement Policy Framework (RPF) has been prepared, consulted upon, and disclosed before appraisal in Burkina Faso. A Resettlement Action Plan (RAP) will be prepared as and when necessary during implementation.

F. Grant conditions and covenants

61. Effectiveness conditions: Adoption of the Project Implementation Manual in form and substance satisfactory to the Association

62. Disbursement conditions:

No withdrawal to finance the Lease of Capacity under component 1.a, until and unless:

(i) (A) the Selected Operator has been duly created, registered and made operational in the territory of the Recipient, including through the appointment of its manager and the adoption of its shareholders' agreement and its by-laws, in form and substance satisfactory to the Association; and (B) there shall be furnished to the Association an opinion satisfactory to the Association of counsel acceptable to the Association showing that the Selected Operator has been duly created, registered and made operational in the territory of the Recipient and is legally authorized to operate in accordance with the laws of the Recipient;

(ii) (A) the Contractual Arrangement, in form and substance satisfactory to the Association, has been entered into between the Recipient and the Selected Operator; and (B) there shall be furnished to the Association an opinion satisfactory to the Association of counsel acceptable to the Association showing that the Contractual Arrangement has been duly authorized or ratified on behalf of the Recipient and the Selected Operator, and executed and delivered on their behalf, and is legally binding upon the Recipient and the Selected Operator in accordance with its terms; and

(iii) the Capacity Purchase Contract, in form and substance satisfactory to the Association, has been entered into between the Selected Operator and the operator selected for the delivery of the bandwidth to be supplied under component 1.a of the Project.

63. Legal covenants:

1. The Recipient shall:

(a) ensure that neither the construction of the Virtual Landing Point under component 1.b of the Project nor the development of the fiber link from the city of Ouagadougou to the city of Paga under component 1.c of the Project commence until and unless: (i) the Association shall have approved the ESIA, ESMP, and/or the RAP, as the case may be, and the same documents have been consulted upon and disclosed as approved by the Association; and (ii) it shall have verified, through its own staff, outside experts, or existing environmental/social institutions, that the activities under components 1.b and 1.c of the Project meet the environmental and social requirements of appropriate national and local authorities and that they are consistent with the Association's applicable

environmental and social assessment and safeguard policies and comply with the environmental and social review procedures set forth in the Project Implementation Manual;

- (b) take all measures required on its behalf to carry out, or to ensure that the Selected Operator carry out, the ESIA, ESMP, and/or the RAP, as the case may be, in accordance with the provisions of the ESMF and the RPF; and
- (c) ensure that the relevant mitigation and monitoring provisions of the ESIA, ESMP, and/or RAP, as the case may be, are appropriately implemented and that adequate information on how any potential negative impact under Parts 1.b and 1.c of the Project has been minimized is suitably included in the Project Reports to be prepared pursuant to the provisions of the Financing Agreement.

VII. The Recipient shall, not later than three (3) months after the Effective Date: (A) employ the existing external auditor of the PIU on the basis of terms of reference satisfactory to the Association; and (B) redeploy to the PIU one of the accountants employed by the Recipient under the Association-financed West and Central Africa Air Transport Safety and Security Project (Credit No. 4163-BUR).

Annex 1: Results Framework and Monitoring

BURKINA FASO WARCIP 1B

The project development objective (PDO) of WARCIP-Burkina Faso is to increase the geographical reach of broadband networks and reduce costs of communications services in the territory of Burkina Faso												
PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	
				YR 1	YR 2	YR3	YR 4	YR5				
Indicator One: Volume of international traffic: International Communications (Internet, Telecoms, and Data) bandwidth per person	<input type="checkbox"/>	impact Kbit/s per person	28 [Dec. 2010]	32	40	49	60	74	Annual	Operators/Regulator	ARCE/PIU	
Indicator Two: Access to internet services (number of subscribers per 100 people)	<input checked="" type="checkbox"/>	Number per 100	0.2 [Dec. 2010]	0.2	0.3	0.4	0.5	0.6	6 months	Operators/Regulator	ARCE/PIU	
Indicator Three: Access to telephone services (fixed mainlines plus cellular phones per 100 people)	<input checked="" type="checkbox"/>	Number per 100	37.2% ¹⁴ [Dec. 2010]	42%	50%	55%	60%	62%	6 months	Operators/Regulator	ARCE/PIU	
Indicator Four: average monthly price of wholesale international E1 capacity link from capital city to Europe	<input type="checkbox"/>	US\$/month/2Mbit /s	\$9000 [Dec. 2010]	\$8000	<\$7000	<\$4000	<\$3000	<2500	Annual	Operators/Regulator	ARCE/PIU	
Indicator Five: Direct project beneficiaries, of which female ¹⁵	<input checked="" type="checkbox"/>	Number, %	4.594 million 51% [Dec. 2010]	6.812 million 51%	8.361 million 51%	9.482 million 51%	10.665 million 51%	11.3 26m 51%	Annual	Survey ¹⁶	ARC/PIU	
INTERMEDIATE RESULTS												
Intermediate Result (Component One):												
<i>Intermediate Result indicator One:</i> Volume of available international capacity: International Communications (Internet, Telecoms, and Data) bandwidth	<input type="checkbox"/>	In Gbit/s	0.78 ¹⁷ [Dec. 2010]	1.71	1.88	3	4.8	7.7	Annual	Operator/Regulator	ARCE/PIU	
<i>Intermediate Result indicator Two:</i> Retail price of internet services (per Mbit/s per Month, in US\$)	<input checked="" type="checkbox"/>	US\$/month	\$2,500 [Dec. 2010]	\$2,000	\$1,500	\$800	Less than \$500	Less than \$500	Annual	Operators	ARCE/PIU	
Intermediate Result (Component Two):												
<i>Intermediate Result indicator One:</i> Impact on Telecom sector of World Bank technical assistance (composite score)	<input checked="" type="checkbox"/>	1-low impact to 5 –high impact	0 [Dec. 2010]	1	2	3	3	4	Annual			

¹⁴ Source ARCE

¹⁵ Number of active fixed and mobile subscribers (internet subscribers not accounted to avoid double counting). Assumes % female on a pro-rata basis using publicly available ratio in the total population for YR1 till YR5: 51%

¹⁶ The Direct Project Beneficiaries survey will be coordinated by MTPEN and will use different stakeholders of the ICT sector to collect information from a representative sample of beneficiaries.

¹⁷ Estimated at 800, 1200, 1920, 3072 and 4915 Mbits respectively

Annex 2: Detailed Project Description

BURKINA FASO WARCIP 1B

1. **WARCIP in Burkina Faso will have three main components** and will include (i) Infrastructure to improve connectivity (ii) Technical Assistance to improve enabling environment, and (iii) Technical Assistance to support implementation.

Component 1 – Supporting Connectivity (US\$ 17.3 million)

2. **The main focus of the project is to connect Burkina Faso to bulk international bandwidth capacity through a Virtual Landing Point (VLP).** Improving international connectivity via a competitive tender for connection to an existing or new submarine cable is the main focus of WARCIP Burkina Faso. Other connectivity priorities are treated as a secondary focus.
3. ***Supporting international connectivity (US\$11.3 million)***
 - (i) **Supply of bulk international bandwidth capacity to all licensed operators for about US\$10 million.**

Providing an opportunity for Burkina to have competitive access to a submarine cable capacity via one or more of the country's neighbouring landing stations could substantially reduce the cost of international connectivity, increase capacity and provide more effective redundancy. The high cost of international connectivity is very much a core concern for operators in Burkina Faso. A high level feasibility study estimates price for a 1 year lease of an STM-16¹⁸ as US\$5.7 million, which works out at less than US\$200/Mbit/s/month. However, considering that additional landing stations on the West Coast – Africa Coast to Europe (ACE), WASC, Glo-1 etc. - could push prices down substantially, it could be anticipated the price may be reduced to about 25%, i.e. US\$1.4million / year for an STM-16. If we apply the rule of thumb that a 15yr IRU is equivalent to about 50 months of leasing, then it is possible that Burkina would be able to secure a 15yr IRU for about US\$10 million or less.

This works out very favorably for most of the operators who depend on Onatel's terrestrial services or expensive satellite links for the provision of high bandwidth services and currently pay about US\$4500/Mbit/s/month. The range of fiber optic routes from Burkina Faso to the nearest submarine landing stations was examined and it was found that connections via Cote d'Ivoire, Ghana, Benin and Nigeria all offer potential to lower the current cost of capacity in the country. Accra however provides the shortest distance from Ouagadougou, and the highest level of competition between submarine cables (SAT-3, Glo-1 and MainOne). Currently, the incumbent Onatel is the only

¹⁸ Synchronous Transport Modules (STM). STM-1 (155 Mbit/s), STM-4 (622 Mbit/s), STM-16 (2.5Gbit/s or 2488.320Mbit/s), and STM-64 (10 Gbit/s).

operator which has built a national fiber backbone of 1,100-km connecting to the neighboring countries of Côte d'Ivoire, Mali and Togo and is using all of these cross border links to access about 800Mbit/s of international capacity in total, mainly through the Togo link, which in turn provides access to Benin's backbone and SAT-3 landing station. The high charges levied by Onatel, combined with reliability challenges, indicates that use of its infrastructure is unlikely to be the most desirable option for improving international connectivity. A number of private operators have discussed building additional fiber links to coastal landing stations, but there are still no solid plans for realization. Furthermore, there is little guarantee that the tariffs on the Burkina Faso side related to the planned infrastructure, will be cost-based, especially as these links will be in the hands of private operators. In addition, Globacom/Airtel/MainOne, if they are to go ahead with their connectivity plans, may take more time than is desirable to build the infrastructure to the Ghana border.

- (ii) To ensure that international capacity is available to the country at the lowest cost, WARCIP Burkina will provide resources for the launch of a competitive tender to access bandwidth from neighboring countries to be delivered at a designated Point of Presence (POP)/Virtual Landing Point.** Although Accra may offer the shortest distance to Ouagadougou, and the route could possibly be the most competitive, a competitive tender is expected to be issued allowing for bids via all available routes.

In the short term, with the arrival of ACE and WASC, in addition to the recently launched Glo-1 and MainOne, there are expected to be over 60 submarine landing stations on Africa's West coast alone, and there is likely to be a bandwidth 'glut' for some years to come until domestic demand builds up. In this environment submarine cable operators are giving attractive offers for longer term commitments to capacity and are highly responsive to price changes from their competitors. This argues strongly for Burkina Faso to ensure route diversity to different neighboring countries (to play domestic backbones against each other) and to different submarine cables. The selected operator for the delivery of the bandwidth would be required to negotiate passage on a wholesale basis with operators in adjacent countries for reaching the designated physical landing points and also to negotiate directly with international cable operators for access and onward connectivity. Interested parties for this tender could be: i) international submarine cable operators, ii) existing telecom operators in Burkina Faso or neighbouring countries, or iii) new operators/bandwidth capacity suppliers based in Burkina Faso or one of the neighbouring countries. A number of international submarine cable operators and bandwidth capacity suppliers have already expressed some interest in bidding for such an opportunity.

- (iii) Establishment of Virtual Landing Point/Internet Exchange Point – VLP/IXP (US\$ 1.3 million).** Establishment of one or more Virtual Landing Points (VLPs) or Point of Presence in Ouagadougou or elsewhere within the country with access to submarine landing stations in one or more coastal countries could provide connection points for international connectivity that are more or less identical to the coastal landing points for a submarine connection. Funds will be provided to establish and maintain a carrier neutral VLP in Ouagadougou or location to be identified as suitable. The VLP will be linked initially to at least one open-access fiber link, most likely, to the Ghana border (details of this below). The VLP would essentially be an open access passive infrastructure with multiplex and switching equipment aimed at guaranteeing fair and unfettered physical access on transparent and equal terms. The presence of the VLP, which will include an IXP, will attract other international operators as well as content providers, to land their fiber infrastructure and data servers there, as the most cost effective place to meet, peer, and trade capacity. In essence the VLP is simply a standard "Carrier Neutral Data Centre" which reduces the cost for the local operators to connect to international infrastructure by just having one place to connect with, and creates a more

fluid open market for capacity in a transparent manner. This is because local operators can switch between suppliers in seconds, (or change the volume of capacity obtained from each of their suppliers) simply through a configuration change on the router or changing a cross-connect cable on the fiber switchboard. The IXP and data centre aspects would simply add additional provisions for a layer 2 switch, rack-space, air-conditioning and redundant/backup power. Offshore ISPs and content providers would need to be able to lease capacity/access hosting facilities at the VLP/IXP/Data Centre without requiring a local license (except to follow the existing simple declaration rules as for local ISPs). The funding for the IXP would likely cost about US\$100,000 and could include the hosting of shared time-servers, local Domain Name Service (DNS) servers and caching servers. VLP costs would also include estimated maintenance costs for one year and management fees. It is expected that the VLP would be self-financing beyond the initial year, and would be able to pay for additional maintenance costs as required.

4. Supporting regional connectivity (US\$6 million)

- (i) Build out of the missing connectivity links to Ghana (US\$5 million):** In order to supply the bulk international bandwidth effectively, there will be need for additional infrastructure along the route both on the side of Burkina and beyond its borders. This missing link would provide redundancy, security and wider access to low cost capacity. The Government of Burkina is requesting funding under the project to develop a 72 pair fiber link from its capital city Ouagadougou to Paga, on the border of Ghana. This represents the shortest route to any of its neighbouring countries. Preliminary assessment indicate that options for such access could range from: a) Onatel's existing links (with a wholesale price determination to ensure cost-based pricing) to Cote d'Ivoire or Togo (or within a few months to Ghana, b) through SITARAIL to Abidjan, c) through the WAPP link to the border with Ghana, or d) via a new fiber optic cable from Ouagadougou to the Ghana border. While the SITARAIL and Onatel options provide immediate solutions, the latter option d) to build a new cable provides the lowest cost solution in the longer term. If some of the routes could use the electricity transmission grid, this cost could possibly be halved. However, the West Africa Power Pool Project¹⁹ has experienced some delays and is not expected to be ready at the time of the Project. On the Ghana side, the National Communications Backbone Company of Ghana (NCBC – Subsidiary of Vodafone) is already located in Paga, so there may not be need for additional fiber to reach Accra, and by the time the cable is built, Globacom and Main One are likely to have their own connections to from Accra to Paga.

The results of the study indicate a need for GoBF to establish a PPP for the ownership, operation and implementation of the backbone to ensure the technical and financial viability of the proposed network. The PPP/SPV being proposed under this project will consider leveraging existing efforts if found viable.

The connectivity component of WARCIP- Burkina will take into account progress made for the backbone study and coordinate efforts with the United States Trade and Development Agency (USTDA), as well as the Islamic Development Bank (IsDB) and IFC to ensure a full connectivity solution which is interoperable, under common technical standards, and seamless to the extent possible for the benefit of the country.

- (ii) Roll-out of national infrastructure to improve access (US\$1 million).** While international fiber links will provide the potential for massively improved access to communications in Burkina Faso,

¹⁹ A Project to integrate the national power system operations of West Africa into a unified regional electricity market. A number of the Power Transmission lines also carry fiber optic cables which can be leveraged for telecommunications.

the full benefits of this cannot be achieved without even greater investments in national infrastructure. This will both stimulate demand by reducing costs and improving the range of services to the end user through increased competition.

USTDA has already provided support for the development of a detailed feasibility study for a national backbone to link all major towns and national borders. The proposed 4700km network covers all 45 districts and the total cost is estimated to be about US\$160 million. The GoBF is in the process of sourcing funds from both private and public sectors for the development of this network. There are indications that the IsDB and IFC may be interested in supporting this investment.

The GoBF has also expressed interest in the development of a high speed government virtual private network to improve uptake and delivery of service. The use of ICTs within the Government of Burkina is relatively advanced. It operates its own Intranet and fiber MAN to link most of the civil service institutions in the capital, known as Réseau Informatique National de l'Administration -RESINA - (National Computer Network Administration), which is expected to be extended to all regional headquarters. In addition there are a variety of plans to improve the use of ICTs amongst the public and to support government, health, education, electronic commerce and rural development.

- 5. Use of PPPs and Competition.** Involving the private sector in the ownership and management of the connectivity infrastructure is crucial for a number of reasons, including ability to contribute investment resources so the government is not required to pay the full cost of the investment. This makes PPPs a cost-effective way for countries to obtain access to international infrastructure. Secondly, the telecoms sector in Africa is largely a privately owned and operated one. Private companies have demonstrated, almost without exception, that they are more capable of operating networks and delivering services to customers than public-owned entities. Having private partners involved in the project is therefore essential if it is to be operated effectively. Finally, ensuring that the increased supply of bandwidth will have a positive impact on the sector requires all parties being able to access it on equal terms and for there to be competition in the supply of bandwidth. For the international Connectivity components, the Project is providing resources for GoBF to explore and establish appropriate PPP Arrangements for owning and/or managing the Connectivity Infrastructure where feasible, with support of Transaction Advisers which will be funded through the Project. Preliminary assessment indicate that several PPP options exist for: i) landing the international bulk capacity at the designated VLP and selling or distributing capacity to end users, ii) owning and managing the VLP and iii) developing the transmission infrastructure to the country's border. The structure of the PPP(s) will be determined by the Transaction Advisers in consultation with the GoBF. The Transaction Advisers will structure operation and governance of the PPP(s) ensuring that the two following guiding principles be incorporated into the design: i) the open access principle (ability for all existing and new operators to have unfettered and non-discriminatory access to the infrastructure at reasonable prices), and ii) in the case the public element of the PPP structure reflects some form of an ownership, equity or controlling interest an incentive system or divestiture mechanism will be designed to ensure an orderly and appropriate divestiture. Resources from WARCIP will finance the initial costs of the Selected Operator (defined as the Operator selected per an international competitive bid (tender) that may own and/or operate the VLP and/or bulk international bandwidth capacity). The Selected Operator will be responsible for signing and possibly managing the bulk capacity purchase contract.

Regarding the VLP, the facility could be run ideally by the SPV/PPP created to purchase the international bulk capacity or a Cooperative of Users. Other options could be considered based on the advice of the Transaction Advisors who will be hired under the enabling environment component

The development of the fiber link between Ouagadougou and Paga will be through a PPP approach with the government issuing a competitive tender for the construction and maintenance of the link.

6. **The project will guarantee open-access to the VLP and International Bandwidth.** Access to bottleneck facilities such as submarine cable landing stations and bandwidth has been a major issue in the past in many parts of the world. If this access is controlled by one operator and is not adequately regulated, then the international evidence shows that this will restrict the impact of new supplies of international connectivity on the market. The project will guarantee that this does not happen by ensuring that the VLP and any infrastructure financed is controlled in a way which does not allow control by one or more parties. Detailed feasibility studies to fine-tune the business and ownership models as well as support for the tendering process for both the bandwidth and the VLP will be carried out with resources from the Project. Additional transaction and legal advisory work will also be included as part of the main project under the enabling environment component.

Component 2- Creating an Enabling Environment for improved connectivity (US\$3.68 million)

- (i) **Due Diligence of the Regulatory Environment (US\$ 100,000):** This activity will provide support to the design and implementation of the project by reviewing and providing an analysis of the legal and regulatory enabling environment necessary to support project activities and objectives, including review and analysis of the (i) sector law, regulations and licenses, (ii) cyber-security (including access to and freedom of information, data protection and privacy, e-transactions and authentication, cybercrime and related issues), (iii) competition, (iv) private sector development, and (v) PPP laws.
- (ii) **Support to optimize the governance, ownership and financing issues related to the operation of the Virtual landing station and management of the bandwidth emanating from the International connectivity (US\$750,000).** This component will provide support for Technical Assistance and capacity building necessary for the successful implementation of Component 1 of the project. Specifically, support will include the definition of the framework for the management and distribution of the bulk capacity, possible integration with the VLP, and establishment of the PPP structure(s) as required. As part of this support, Consultants will also validate earlier high level assessment of capacity and interest of the private operators in Burkina to invest in international connectivity. Consultants will also support the GoBF in the various stages of the bidding process for the VLP and the International Connectivity, including preparation of the tender documents and technical support during the bidding process. Under this component legal and financial advisory services will be procured to put in place the structure for the SPV and the VLP. Activities will include : (i) Detailed analysis of costs (capital and operating expenditures) and development of the business case (ii) Ownership and management arrangements for the VLP and International connectivity (including any physical infrastructure leading to the VLP (iii) designing and negotiating instruments and contracts and related stakeholders agreements, (iv) defining the rights and obligation of different stakeholders, (v) defining appropriate risk sharing and commensurate financial rewards and penalties between parties, (vi) Defining licensing requirements for potential bidders for PPP contract for the international connectivity as required, and (vii) Defining open

access regime for both national and international backbone funded through this project and legal regulatory instruments for fostering such competitive access to essential facilities.

(iii) Support to Provide Advisory Service, Tender Design and Audit of Fiber Cable: (US\$150,000)

– This activity will provide support to the GoBF to structure the tendering process for the fiber optic cable between Ouagadougou and Paga, Ghana. The tender documents will reflect environmental issues raised in the Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) documents prepared. The activity will also include support to confirm and audit the construction milestones.

(iv) Environmental studies (US\$100,000). This activity includes funding for preparation, consultation and disclosure of environmental and social frameworks, and the related management plans. Because the locations for the VLP and connectivity infrastructure (in particular the link to Ghana) are not yet known, only the ESMF and RPF have been prepared and disclosed as of May 2011. Once the locations are confirmed, the ESMP and RAP will be prepared as required.

(v) Assessment of Government Connectivity Needs (US\$100,000) The GoBF has already initiated some pilot projects to connect a number of the key government agencies in the capital Ouagadougou and some agencies outside of the capital. The Government's program to extend this connectivity would be underpinned by an assessment to identify remaining gaps and institutional needs. It is expected that the World Bank funding will be based on the results of this assessment.

(vi) Strengthening policy making capacity of MTPEN: (US\$1.18 million). This component will provide technical capacity building and assistance to the MTPEN which is the primary agency of government responsible for ICT sector. The technical capacity building component will support a range of activities designed to assist MTPEN in improving the overall competitive enabling environment for the ICT sector. Anticipated activities include taxation and broadband studies, universal access and digital economy studies. Additional resources will be provided for Training, Technical and legal Advisory services in the areas of digital economy, infrastructure and applications/content development. Key activities will include:

a. Broadband and Universal Access strategy and Implementation Plan (US\$300,000)

This activity will support the Government to have a comprehensive policy to promote broadband use in Burkina Faso to facilitate uptake of demand and applications using the capacity that will be available to Burkina following the improved access to International connectivity. The policy and strategy will propose regulatory actions for broadband development, and priority areas where applications are likely to pick up including through government network and applications. The component will also support update of a universal access strategy and provide support to operationalize a Universal Access Fund, including institutional arrangements for managing the funds.

b. Strategy and Action Plan for Digital Economy (US\$200,000) Strategy and Action Plan.

Following the merger of the ICT and Transport Ministries, and the renewed emphasis on leveraging the potential of ICT to accelerate Burkina Faso's economic and social development, the new Ministry of Transport, Post, and Digital Economy would assess the current level of ICT penetration and contribution to the development of various economic sectors. The Ministry will carry a study to develop a strategy and action plan for digital economy in line with the government defined vision for national development. The strategy will highlight the benefits and other impacts of a digital economy enabled by the increased access to cheaper broadband. The strategy and action plan will focus on achieving sustainable development of ICT sector and mainstreaming in the key sectors including

health, agriculture, education, and government service delivery to improve economic development.

- c. **Review of Taxation Policies and Implications on Access (US\$100,000).** The tax regime in the telecommunications sector (including import duties, license fees, airtime tariffs etc) can have a significant impact on the business model of telecommunication operators, as well as on individual and business end-users. While this can generally be a good source of income for governments, the GoBF would like to assess the impact and to develop a more coherent tax regime for the ICT sector.

(vii) Strengthening regulatory capacity of ARCE (US\$1.3 million). This component will provide technical capacity building and assistance to ARCE. The technical capacity building component will support a range of activities and studies designed to assist ARCE improve the overall competitive market and regulatory environment for the ICT sector. Key areas of focus will include studies, technical assistance and secondary legislation to facilitate number portability, domain name registration, electronic transactions, and licensing for VOIP. It will also provide technical support to ARCE on establishment of a National Emergency Response system for cyber security and a training program will be designed and implemented during project. Specific Activities will include: i) Review and Development of New Regulatory Procedures and secondary legislation for Electronic Communications (US\$350,000), ii) Study on Number Portability (US\$200,000), iii) Study on Domain Name Registration (US\$200,000), Regulatory Instruments to facilitate licensing of VOIP (US\$200), and iv) Establishment of a National Computer Incident Response Team (CIRT) as a central coordination point of contact for cyber-security, aimed at identifying, defending, responding and managing cyber threats. (US\$150,000).

Component 3: Project implementation (US\$1.26 million)

- i) **Capacity strengthening to ensure effective implementation. The MTPEN will coordinate the project.** The Agency responsible for implementing the Project will be an existing PIU attached to the MTPEN. The PIU is headed by a Project Coordinator with support from key fiduciary, environment and M&E consultants. This component will support the establishment of a Steering Committee which will provide policy guidance and ensure that the PDO is achieved. To accelerate project preparation, the government made a request for the PPA to be implemented by the Maison de l'Entreprise du Burkina Faso (MEBF) on an interim basis. The implementation arrangements and will be transferred to the established PIU on Project effectiveness. Limited support has been provided under this component to the MEBF for this fiduciary support. A projected resettlement cost of US\$50,000 is also included in the event that temporary compensation needs to be provided during construction of fiber link.
- ii) **Contingency - A price contingency is included in the budget (US\$0.76 million).** This contingency is designed to cater for unexpected increases in the price of the services to be obtained during the course of the project.

Annex 3: Implementation Arrangements

BURKINA FASO WARCIP 1B

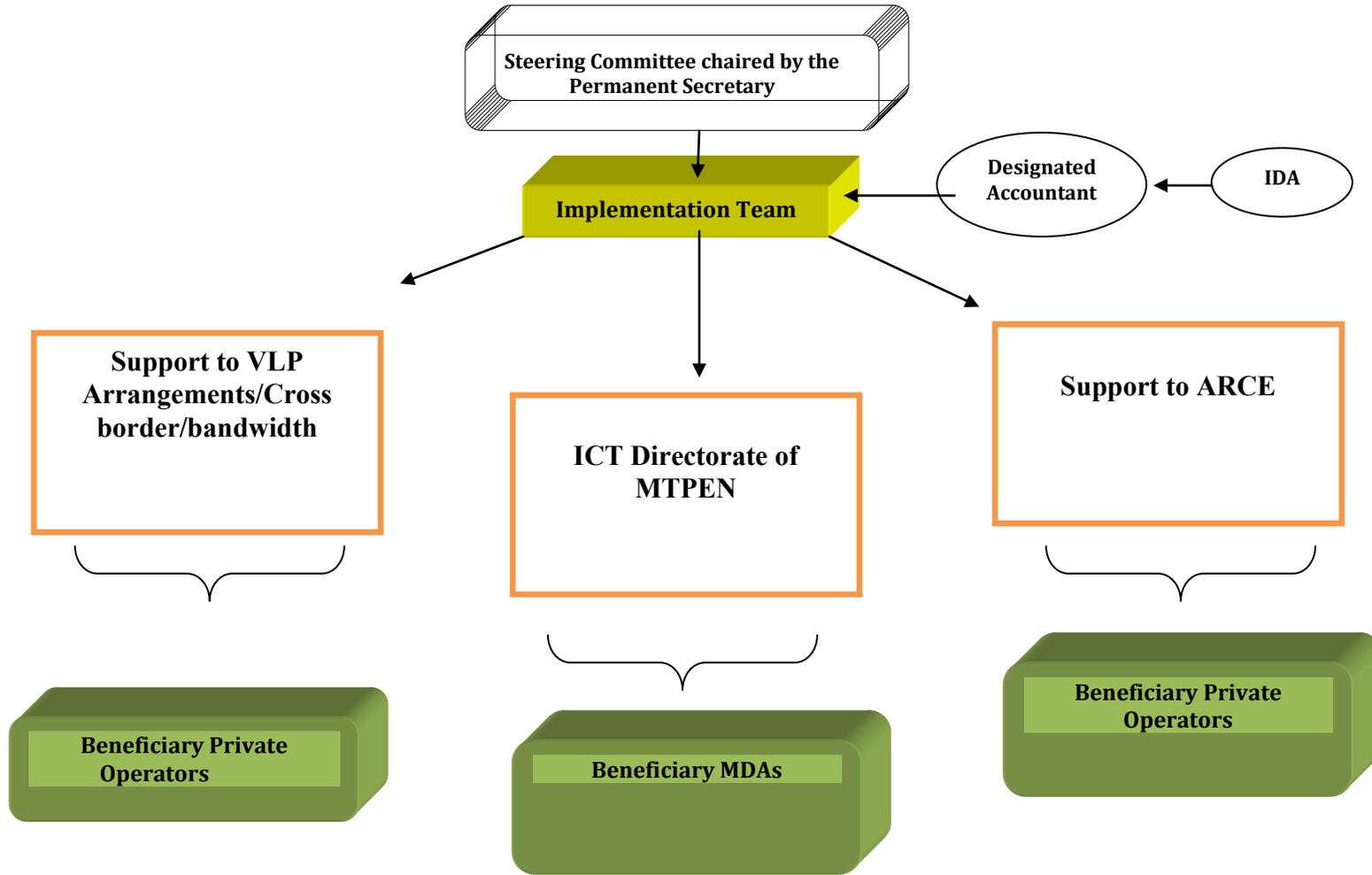
I. Project Administration Mechanisms

- 1. The proposed project will be implemented by a PIU which is attached to the MTPEN and the Ministry of Infrastructure.** The PIU is already managing a number of projects financed by the World Bank and European Union. The PIU will be responsible for the overall coordination, implementation, and supervision of the proposed project, provide support to the Selected Operator who is expected to manage the VLP and/or the International Bandwidth. The PIU already has a Project Coordinator who, will manage WARCIP related activities and will be supported by a full team of Financial Management, Procurement and Monitoring and Evaluation, and Environment Specialists.
- 2.** To ensure that the Project continues to receive priority GoBF attention and receives requisite Government support and oversight, the MTPEN will facilitate the establishment of a Project Steering Committee which will provide strategic guidance to the MTPEN and ensure effective coordination across the various MDAs and relevant private sector. The Committee will be chaired by the Permanent Secretary and consist of selected public and private officials. It is expected that the Committee will include members such as CEOs or senior officials from relevant MDAs associated with the Project, ARCE, as well as key private sector representatives and the Project Coordinator. The Committee will be responsible for ensuring that the Project Development Objectives are achieved, and will take key decisions to ensure smooth implementation of the project. The PIU, in coordination with the focal points from ARCE and ICT Directorate of the MTPEN, will report on implementation progress to the Steering Committee which will meet at least four times a year (at the end of every quarter) to guide and maintain the progress of the project and make relevant high-level decisions that facilitate project performance.

Funds from the Project are expected to complement the resources already being provided for the PIU from other World Bank-financed Projects. It is expected that WARCIP Burkina will assume agreed costs following the completion of the World Bank-financed Projects in 2014.

- 3.** The PIU will be in charge of running the proposed project that include (i) day-to-day activities under the project, in particular, procurement and monitoring activities; (ii) preparation of annual work programs, budgets, and procurement plans under the project; (iii) preparation of Terms of Reference for various project activities, (iv) dissemination of internal and external audit reports, (iv) interact with the Bank for obtaining the requisite no objections.
- 4. Hiring of technical and legal advisors.** Because of capacity constraints on technical and legal aspects of the proposed project, it is also proposed that international technical and legal advisors are hired to support the MTPEN.

WARCIP Burkina Implementation Arrangements



II. Financial Management, Disbursements and Procurement

Country PFM situation and Use of Country System

1. Overall, the Bank has reviewed implementation performance of the PFM reform program (Stratégie de Renforcement des Finances Publiques or SRFP) to date and Government's commitment to PFM improvements as exemplary. SRFP is supported by most donors providing budgetary support, and is a core element of the MoU for budget support. To assess progress made so far after 4 years of SRFP implementation, the Government has performed a repeated PEFA. Outcomes from this PEFA, completed on June 2010, have confirmed progress made so far by Burkina Faso in the PFM area. Improvements are noted on budget credibility. Confirmation of adequate arrangements has been highlighted for the remaining indicators (comprehensiveness and transparency, policy based budgeting and predictability and control in budget execution). Improvements remain in the areas of mobilization of fiscal revenues, control over payroll, and scope of the internal and external control. Meanwhile, the Ministry of Economy and Finance is working on several initiatives on PFM area. Among them (i) new sectoral strategy (Stratégie Sectorielle du Ministère de l'Economie et des Finance) aiming at merging both SRFP and PRGED (*Programme de Renforcement de la Gestion de l'Economie et du Développement*) and ensuring a smooth transition towards the implementation of the WAEMU PFM Directives recently issued and (ii) the new Integrated Circuit for Donors-financed Projects (*Circuit Intégré des Financements Extérieurs*, CIFE).

2. CIFE went live on April 1st, 2011 following the final approval by the Council of Ministers held on March 2nd, 2011, is built on a computerized system and aims at applying the country PFM system at the projects level by involving key players of country system in project monitoring (Directorate of Budget, Directorate of Finance Control, and Directorate of Public Treasury...). CIFE has six modules; two are already being utilized since 2010. They relate to project identification and financing agreement monitoring. The four remaining cover budget monitoring as well as internal controls and accounting arrangements in line with the national PFM system. All modules are interfaced with the country Integrated Financial Management Information Systems (IFMISs). CIFE allows for donor funds after review by the key players above mentioned, to be fully integrated into the budget, accounting, reporting and treasury systems, yet remain earmarked for a specific use. It includes flexibility to use a standalone project implementing unit or a fully integrated unit within a Ministry. As it is currently, CIFE is only opened at central level not yet decentralized at projects level. The proposed project will be channeled through CIFE as per the recommendation of the ESW on Burkina PFM system since all Banks' recommendations²⁰ identified in the said ESW are met. Policy dialogue will be pursued with the aim to decentralize CIFE in the projects in order to make it fully operational.

3. The overall risk rating at preparation is deemed **Low** as evidenced by the existence of an adequate financial management arrangements. Very few actions required to improve implementation.

Strengths

4. PST II coordination unit has a track record in managing three Bank-financed projects.

²⁰Test and switch to production status of the remaining modules (ii) clarification of the roles and attributions of each stakeholder (Directorate of Budget, Directorate of Cooperation, Directorate of Financial Control, Directorate of Public Treasury and Accounting), and go live through an official endorsement of the GoBF.

Weakness and Action Plan to reinforce the control environment

Significant Weaknesses or risks	Action	Responsible body	Completion
Risk of excessive work load to handle the new project transactions	Redeploy the accountant of one of the Bank project closing this fiscal year	PST II	3 months after effectiveness
The current external audit arrangements does not include the new project	Extend the contract of the current external auditor to include the new project	PST II	3 months after effectiveness

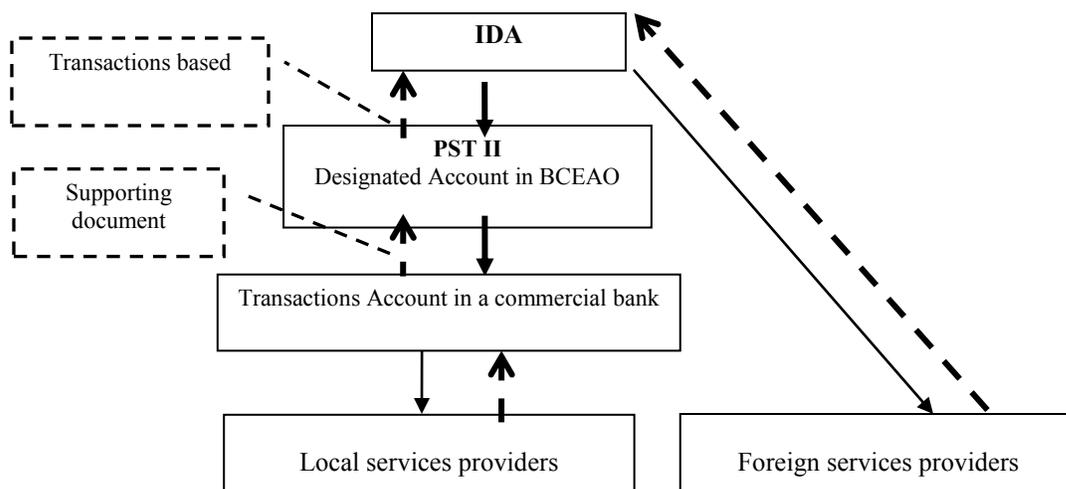
5. **Staffing and Training:** The Project FM staff will consist of PST II fiduciary staff well experienced. One accountant from the Bank-financed project which is closing this fiscal year will be redeployed to prevent delay in the processing of the transactions.

6. **Budgeting:** PST II budgeting arrangements in line with national budget arrangements are well described in their manual of procedures and adequate to run the project's activities. To prevent any delay in the budget execution, during the budget preparation process, procurement plan will be taken into account.

7. **Accounting Policies and Procedures:** Project accounting policies and procedures are documented in the PST II manual of procedures. PST II will prepare the financial statements by using a multi site version of the accounting software TOMPRO which is customized to generate IFR. As per CIFE procedures, the project's accounting transactions will be reflected into the national financial statements. This will improve reliability of the national financial statements. Upon adequate reconciliation on the project financial statements generated from CIFE and TOMPRO, a decision will be made to fully use CIFE as the project's accounting software.

8. **Internal Control:** Reliance will be placed on the existing manual of procedures and internal audit arrangements. Ex ante control and control over delivery (*contrôle du service fait*) of project's transactions will be performed by the Financial Controller as per the modalities described in the national finance management regulations. Internal audit mission will be performed by the newly recruited internal auditor jointly with the Inspectorate of Finance.

9. **Funds Flow and Disbursement Arrangements:** A Designated Account (DA) will be opened at the Central Bank in Ouagadougou and a Transactions Account in a commercial bank. Both accounts will be held in CFAF. Replenishment of the Transactions Accounts will be made on a monthly basis and based on the cash needed with supporting documents substantiating the eligibility of the expenditures. Direct payments, will be made to service providers as required.



Legend:

Transfers of funds

Flow of documents (invoices, good receipt notes, purchase order, contract)

Payment to suppliers



- **Disbursement arrangements:** The transaction – based disbursement method will be applied. The Designated Account will be used for all payments inferior to 20% of the authorized allocation and replenishment applications will be submitted as often as possible. Further deposits by the Bank into the Designated Account will be made against withdrawal applications supported by Statements of Expenditures or records evidencing eligible expenditures. The reconciliation of the Designated Account included in the withdrawal applications will include undocumented balances held in the Transactions Account. In line with CIFE arrangements, all withdrawals applications will be reviewed by the Directorate of Financial Control, and booked by Directorate of Public Accounting before submission to the Bank.
- **Disbursements by category:** The table below sets out the expenditure categories to be financed out of the Grant proceeds. This table takes into recognition the prevailing Country Financing Parameter for Burkina Faso in setting out the financing levels.

Components	Amount of the Financing Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Lease of Capacity	10,000,000	100%
(2) Goods, works, services (consultants' and non-consulting), training, workshops, Operation and Maintenance Costs, Recurrent Costs, and Operational Costs	11,240,000	100%
(3) Unallocated	760,000	100%
(4) Refund of Preparation Advance No. Q 761-BF	1,000,000	
TOTAL AMOUNT	23,000,000	

10. **Financial Reporting and Monitoring:** The existing reporting arrangements will be used. They include submission of IFR to IDA within 45 days after the end of each calendar quarterly. The existing IFR format will be adapted to the project components. At the end of each fiscal year, the project will prepare annual financial statement which will be reconciled with financial statements generated from CIFE. Upon satisfaction of the reconciliation and decentralization of CIFE at the projects level, the decision to fully rely on CIFE for the financial reporting will be made.

11. **Auditing:** The annual financial statements prepared by the project as well as internal control system applied will be subject to an annual audit using the existing audit arrangements. In addition to the audit reports, the external auditors will be expected to prepare a Management Letter giving observations, comments from the auditee, and providing recommendations for improvements in accounting records, systems, controls and compliance with financial covenants in the Financing agreement. The project through the Court of Accounts will be required to produce, no later than June 30 of the following fiscal year, audited annual financial statements. In line with the new access to information policy, project will comply with the Bank disclosure policy of audit reports (e.g. make publicly available, promptly after receipt of all final financial audit reports (including qualified audit reports) and place the information provided on the official World Bank website within one month of the report being accepted as final by the team.

Covenants:

- i. Not later than three (3) months after the Effective Date: (A) employ the existing external auditor of the PIU on the basis of terms of reference satisfactory to the Association; and (B) redeploy to the PIU one of the accountants employed by the Recipient under the Association-financed West and Central Africa Air Transport Safety and Security Project (Credit No. 4163-BUR).

12. **Implementation Support Plan:** FM implementation support mission will be consistent with a risk-based approach, and will involve a collaborative approach with the entire Task Team. For the sake of efficiency the FM implementation support will be performed once for all projects managed by PST II by using the AFTFM risk based approach model. It will include the following activities: (i) monitoring of the financial management arrangements during the supervision process at intervals determined by the risk rating assigned to the overall FM Assessment at entry and subsequently during Implementation (ISR); (ii) review of the IFRs; (iii) review of the audit reports and management letters from the external auditors and follow-up on material accountability issues by engaging with the task team leader, Client, and/or Auditors. The quality of the audit (internal and external) also is to be monitored closely to ensure that it covers all relevant aspects and provides enough confidence on the appropriate use of funds by recipients; and, (iv) physical supervision on the ground; and (v) assistance to build or maintain appropriate financial management capacity. The supervision will be designed in a way to identify and address bottlenecks that could occur with CIFE implementation.

PROCUREMENT

13. Procurement for the proposed Project would 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, and in accordance with any additional provisions stipulated in the Financing Agreement. For each contract to be financed by the Grant, the procurement plan will define the appropriate procurement method or consultant selection method, the need for pre-qualification, estimated costs, the prior review requirements, and the time frame. The procurement plan was agreed upon during negotiations, and an initial procurement plan is presented below as has been agreed during appraisal. The procurement plan will be updated at least annually, or as required, to reflect the actual Project implementation needs and improvements in institutional capacity.

14. **Procurement of Works and Goods:** All the methods as indicated in the Guidelines will be appropriately indicated for each procurement activity in the Procurement Plan. The method entitled “National Competitive Bidding (NCB)” will be subject to the additional provision that the Recipient shall use Standard Bidding Documents acceptable to the World Bank Procurement of Goods, Works and Non Consulting (January, 2011) Services.

15. **Procurement of Consultants' Services:** All the methods as indicated in the Guidelines, Selection and Employment of Consultants (January 2011) will be appropriately indicated for each procurement activity in the Procurement Plan.

16. **Workshops, Seminars and Conferences.** Training activities will comprise workshops and training in the region and abroad, based on individual needs as well as group requirements, on-the-job training, and hiring consultants for developing training materials and conducting training. All training and workshop activities will be carried out on the basis of approved annual programs to be cleared by the task team leader that will identify the general framework of training activities for the year, including: (i) the type of training or workshop; (ii) the personnel to be trained; (iii) the selection methods of institutions or individuals conducting such training; (iv) the institutions which will conduct the training; (v) the justification for the training, how it will lead to effective performance and implementation of the project and or sector; and (vi) the duration of the proposed training; (vii) the cost estimate of the training. Report by the trainee upon completion of training would be mandatory. Generally, attending training activities are not part of the procurement plan, and are not subject to procurement clearances. Certain very large workshops and training events organized by Recipient where a firm is hired to package together training services, catering, rental of accommodations, rental of conference facilities, etc, could be procured through a competitive process, and would be part of the procurement plan.

17. **Operating Costs.** The operating costs shall mean the incremental expenses incurred on account of Project implementation, consisting of reasonable expenditures for office supplies, vehicle operation and maintenance, communication and insurance costs, banking charges, rental expenses, office and office equipment maintenance, utilities, document duplication/printing, consumables, travel and meal costs for Project staff for travel linked to the implementation of the Project, and salaries of contractual staff for the Project (but excluding salaries of officials of the Recipient's civil service). Operating costs financed by the project will be procured using the implementing agency's administrative procedures described in the Project Implementation Manual (PIM) reviewed and found acceptable to IDA, and generally not part of the procurement plan.

Assessment of the Agency's Capacity to Implement Procurement

18. Because of the merger of the Ministry of Post and ICT with the Ministry of Transport to form the "Ministère des Transports, des Postes et de l'Économie Numérique" in April 2011, it was proposed that the PIU of the Transport Sector Project (PST2/UCP) support the Directorate of Telecommunication for the implementation of this project. The PST2 is an existing PIU which is implementing three projects financed by IDA in the Transport Sector. The PST2 will have the overall responsibility of procurement activities. The Procurement capacity assessment conducted by the Bank Procurement Specialist found that the PST2 has the adequate arrangements to properly carry out procurement. The Procurement Specialist in the PST2 has a masters degree in law and is working in the PIU for more than seven years. He has a confirmed experience in Bank procurement procedures and attended the main procurement trainings. To strengthen the PIU capacity and reduce the workload, the PIU will recruit an additional procurement specialist. However, it is important to notice that the Procurement Specialist has no significant experience in Procurement of Information Systems.

Risk Assessment and Mitigations Measures

20. **Procurement Risk at Country Level:** The public procurement system in Burkina Faso is currently under reform. The 2005 Country Procurement Assessment Report (CPAR) was carried out in order to: (i) measure progress made in the past five years, (ii) analyze the current procurement environment, (iii) assess the 2003 national procurement law in view of: (a) transparency, efficiency and competition principles required for International Standards, and (b) the harmonization process (among sub-regions countries) initiated by the West African Economic and Monetary Union (WAEMU).

21. The 2005 CPAR Action Plan was adopted by the Council of Ministers in March 2006. The 2003 National Procurement Act, evaluated in light of the OECD Benchmark Indicators system, has been found unsatisfactory – indicating a strong need to improve the institutional framework - even if major progress had been achieved to date. Based on the progress made from 2000-2005 (from 31 % to 55 % of requirements for international procurement benchmarks were met), the system was at that time found acceptable for National Competitive Bidding processes. It was agreed that the implementation of the action plan included in CPAR 2005 would help to achieve 76 % of the requirements by 2010. One of the major actions currently under implementation is the updating of a 2003 version of National Procurement Act in light of a WAEMU Regional Guidelines, an action that is also endorsed by the World Bank and included in the CPAR recommendations.

22. The Procurement System has been strengthened again in 2008 by (i) the adoption of new procurement procedures, (ii) the creation of *Autorité de Régulation des Marchés Publics* (Regulatory Authority for Public Procurement) including *the Commission de Règlement des Litiges à l'Amiable (CRAL) transformed in 2010 to CDR (Commission de Règlement des Différends)* who is in charge of procurement policy and complaints, and (iii) the deployment of procurement specialists away from a centralized approach to key ministries.

23. The national standard bidding documents were finalized and published in July 2009. The Bank is working with the government to identify the inconsistencies with the Bank's standard bid documents in order to recommend some exceptions to the NCB method, to facilitate Bank investment operations. Until the NCB documents are finalized and acceptable to the Bank, the Bank ICB documents should be adapted for all NCBs, and the adapted version should be cleared by the Bank

24. **Procurement risk at the Project level and Mitigation Measures:** The PST2 and the Procurement Specialist have a strong experience in the Bank procedures; however, it is important to note that there is no technical experience in IT, and the Procurement Specialist has no significant experience in Procurement of Information System. It was recommended: (i) the nomination of focal point to take care of technical aspect and the preparation of TORs and technical specifications, (ii) an additional training of the Procurement Specialist and the Focal point on Procurement of Information System.

25. Overall Procurement Risk Assessment:

Low	
Moderate	X
Substantial	
High	

26. **Procurement plan:** The Recipient has developed a draft procurement plan for the first 18 months of the project implementation on the basis for the procurement methods for each component. The procurement plan was reviewed and agreed between the recipient and the Bank during negotiations. Immediately upon approval of the Grant, with the Recipient's agreement, the plan will be published on the Bank's public website and the Recipient's intranet website. Once approved, the procurement plan shall be updated in agreement with the Project Team on an annual basis or as required, to reflect the actual project implementation needs and improvements in institutional capacity.

27. **Fraud, Coercion, and Corruption:** All procuring entities, as well as bidders, suppliers, and contractors shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraphs 1.15 & 1.16 of the Procurement Guidelines and paragraphs 1.25 & 1.26 of the Consultants Guidelines as well as Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and revised in January 2011.

28. **Frequency of Procurement Implementation Support :** In addition to the prior review supervision as indicated in the procurement plan, the preliminary capacity assessment of the implementing agency, MTPEN, recommended supervision missions to visit the field twice a year and to carry out post review of procurement actions once annually.

1. Table 1: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contract Subject to Prior Review
	US\$		US\$
1. Works	≥ 3,000,000	ICB	All
	< 3,000,000	NCB	The first contact
	< 50,000	Shopping	
	No threshold	Direct contracting	All
2. Goods	≥ 500,000	ICB	All
	< 500,000	NCB	The first contract
	< 50,000	Shopping	
	No threshold	Direct contracting	All
3. Consultants <i>Firms</i>	No threshold	QCBS; LCS; FBS	All contracts of US\$200,000 and more
	< 100,000	CQ	
Individuals	No threshold	IC (at least 3 CVs)	All contract of US\$50,000 and more
	No threshold	Single Source (Selection Firms & Individuals)	All
All TORs regardless of the value of the contract are subject to prior review			

Details of the Procurement Arrangements Involving International Competition -Procurement plan for the 18th first months.

1. Goods and Telecom Services²¹

List of contract Packages for Goods and non-consulting services

1	2	3	4	5	6	7	8	9
Ref. No	Contract (Description)	Estimated Cost US\$	Procurement Method	Prequalification (yes/no)	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Call for Bids	Expected Bid opening Date
1	Provision of International Capacity	10,000,000	ICB-S&IIS ²²	YES	NO	PRIOR		October 2012
2	Tender for VLP/IXP ²³	700,000	ICB	NO	NO	PRIOR		April 2012
3	Tender for fiber link (Ouaga-Paga)	5,000,000	ICB	NO	NO	PRIOR		July 2012
4	Local Area Networks for Government Connectivity (Telecommunication Equipment and accessories)	1,000,000	ICB	NO	NO	PRIOR		July 2012
5	Initial Operating Cost for PPP Operator	500,000	ICB	No	No	PRIOR		April 2012
6	Office Furniture	30,000	Shopping	NO	NO	POST		January 2012
7	Office Equipment (Laptops, copier, scanner, projector)	40,000	Shopping	NO	NO	POST		January 2012
8	Communication and Promotional Materials	25,000	Shopping	NO	NO	Post		January 2012
10	Vehicles	48,000	NCB	NO	NO	POST		January 2012

²¹ Telecom Services in this context are defined as purchase of telecommunications capacity

²² International competition bidding methodology using the Standard Bidding Document for the Supply and Installation of Information Systems

²³ Includes maintenance of VLP/IXP equipment and training (US\$100,000)

1. CONSULTANTS

1	2	3	4	5	6	7	8	9	10	11
Ref. No	Contract (Description)	Estimated Cost US\$	Procurement Method	Prequalification (yes/no)	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Call for Bids	Expected Bid opening Date	Contract Award	Comments
2	Legal and Transaction Support for VLP and Bandwidth	500,000	QCBS	N/A	N/A	PRIOR		September 2011		PPA
3	Framework for Open Access VLP and Infrastructure Sharing for Fiber Connection	250,000	QCBS	No	No	PRIOR		September 2011		
4	Broadband and Universal Access Strategy,, Action Plan and Implementation Arrangements	300,000	CQBS	N/A	N/A	PRIOR		Sept 2011		PPA
5	Due Diligence of legal and Regulatory Environment	100,000	IC	No	No	PRIOR		July 2011		PPA
6	Strategy and Action Plan for Digital Economy	200,000	CQ	N/A	N/A	PRIOR		January 2012		
7	Assessment of Gov. Connectivity Needs	100,000	CQ	N/A	N/A	PRIOR		January 2012		
9	Study on Policy/Regulatory Considerations of Digital Broadcasting Migration	200,000	QCBS	N/A	N/A	PRIOR		April 2012		
10	Review of Taxation Policies and implications on Access	100,000	CQ	N/A	N/A	PRIOR		January 2012		
11	Technical Adviser for Ministry	100,000	IC	N/A	N/A	PRIOR		March 2012		
12	Consultant to provide advisory service, tender design and supervision of fiber cable btn Ouaga and Paga	180,000	CQ	N/A	N/A	PRIOR		Nov 2011		
13	Framework for Top-	150,000	QCBS	N/A	N/A	PRIOR		April 2012		

1	2	3	4	5	6	7	8	9	10	11
Ref. No	Contract (Description)	Estimated Cost US\$	Procurement Method	Prequalification (yes/no)	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Call for Bids	Expected Bid opening Date	Contract Award	Comments
	level domain name Registration									
14	Regulations to support the electronic transactions bill	250,000	QCBS	N/A	N/A	Prior		April 2012		
14	Study on Number Portability	200,000	QCBS	N/A	N/A	PRIOR		April 2012		
	Audit	20,000	LCS	N/A	N/A	PRIOR		October 2012		
	Project Operational Manual	30,000	IC	N/A	N/A	PRIOR		July 2011		
	M & E	50,000	IC		N/A	PRIOR		March 2012		
	Communications	75,000	IC					July 2012		

III. Environmental and Social safeguards

Overland Connection to fiber cable system is not expected to have a large environmental and social impact. The terrestrial connectivity is expected to follow the major routes already in place between Ouagadougou and neighboring countries. The impact of laying the additional fiber along these routes will be fairly minimal and temporary. The following issues were identified in the ESMF and RPF which were disclosed in May 2011.

Environmental and social issues in the project intervention areas

The environmental and social issues for the project implementation focus on the potential of connectivity infrastructure to cross some cities, rivers, farmlands and marshy lands. In urban areas, the major issue could be the reduced right of way occupied by stores, shops, kiosks, garages; rainwater gutters, etc. In rural areas, issues could include crossing the many streams and ponds (including at Kaboré Tambi National Park), farmlands (fields and plantations of millet, sorghum, corn, etc.).

National Environmental and Social Policy and Legislation

The policy and legal context of the social and environmental sector, and of the project intervention areas (agriculture, livestock and fisheries) is marked by the existence of strategic planning documents and relevant texts at the legislative and regulatory level in Burkina Faso. Institutionally, the capabilities for environmental and social management exist but are relatively limited, especially in the field of environmental and social assessment. Therefore, the environmental and social management will need to be strengthened. National legislation has arrangements for Environmental Impact Assessment (EIA) and the implementing regulations set the contents, methodology and procedure for impact assessments, and the conditions under which these studies are made public. The National Legislation on the Environment and OP 4.01 converge, mainly on the classification of projects by category (A, B and C). However, the procedure for this categorization has not been established. Therefore, the ESMF proposes a screening process for the WARCIP project activities. The project has been categorized by the Bank as B because adverse environmental and social impacts are expected to be minimal.

World Bank Safeguard Policies

Because of environmental and social impacts that may result from the implementation of its activities, the WARCIP Project has triggered four of the World Bank safeguard policies, more precisely, OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitats), OP 4.11 (Physical Cultural Heritage), and OP 4.12 (Involuntary Resettlement). The other operational policies of the World Bank are not applicable to this project. An ESMF has been prepared, which takes account of potential impacts on critical natural habitats and physical cultural resources. As the WARCIP activities could lead to the displacement of populations or loss of activity, WARCIP has prepared a Resettlement Policy Framework in a separate document.

Potential Negative environmental and social impacts

Some marginally negative impacts could result from the activities of Component 1 (Connectivity). This component aims to provide broadband connectivity to people and ensure regional interconnectivity with neighboring countries and submarine cables with optical fiber. However, the planned activities under the Government Connectivity sub-component (mainly radio links, software, etc.) will not adversely affect the environment.

Environmental and social impacts of the project will come mainly from the laying of the fiber (excavation and crossing of human settlements, farms, the Kabore Tambi National Park, rivers, etc.) that may lead to: soil

erosion; the pollution of soil and water; loss of vegetation; the disruption of living environment and socio-economic activities and livelihoods located on the right-of-way (workshops, garages, shops, etc.); the disruption of traffic; noise, dust, and/or risk of accidents; the generation of solid and liquid wastes; the acquisition of all or part of some private lands; potential destruction of crops and/or woodlands; and, also the risks of vandalism and the frustration when the local workforce is not employed.

It should be noted that the project connection at the border with Ghana will not lead to social conflicts because the borders between the two countries have been clearly delineated and materialized. Moreover, the virtual landing point (VLP) will be located in a vacant land belonging to the Government that should be secured and not currently occupied, and which will be made available to the project. From this point there should be no risks for social impacts. The land may be developed later by private telecom operators.

The environmental and social screening process of projects

The different stages of environmental and social screening are determined in the following paragraphs. The extent of environmental and social measures required for the activities of WARCIP depend on the outcome of the screening process. This screening process aims to: (i) determine which actions of the project are likely to have negative impacts at the environmental and social level; (ii) determine the appropriate mitigation measures for activities with adverse impacts; (iii) identify activities requiring an ESIA/ESMP and/or RAP; (iv) describe the institutional responsibilities for reviewing and approving the results of the screening, the implementation of proposed mitigation measures, and the preparation of ESIA/ESMP and/or RAP; (v) monitor environmental parameters during construction and during operation, and; (vi) identify the WARCIP activities that may involve land acquisition.

Measures to strengthen the Environmental and Social Management of the WARCIP Project

The environmental and social management of the WARCIP project activities also requires measures for institutional and technical capacity strengthening, but also training, information and awareness, and monitoring and evaluation. The costs of environmental and social measures: The ESMP will be included in the WARCIP Project Operations Manual. The estimated cost of resettlement of US\$50,000 is included in the project costs.

Institutional arrangements for implementation and monitoring:

The Environmental and Social Management and Monitoring of the project will be ensured by the PIU which currently has an Environmental Specialist, in consultation with the Directorate of Environmental Assessments and of Pollution and Nuisance Control. Resources have been included in the Project to support this work. The project is rated as a Category B project

IV. Monitoring & Evaluation

The PIU will monitor and evaluate the project. They 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 will organize training sessions for project stakeholders in their use.

An M&E system will be set up within the PIU to keep track of and evaluate implementation progress of the proposed IDA project within the broader context of the institutional framework for the telecommunications sector. Although increased geographical reach and reduction of costs at the country level remains the hallmark of success of an enabling environment, the project's M&E system will seek first to measure results that are closely associated with project activities including the quality, quantity and cost. Ultimately, improvement of laws and decrees by the project activities (component 2) will have positive ripple effects on the whole sector and on service delivery.

The PIU will designate a person responsible for M&E. The person responsible for M&E will liaise with all the project's stakeholders (through designated focal points) to gather relevant information and data regularly.

The views of direct beneficiaries will be brought into the monitoring and evaluation process. Comprehensive M&E reporting will be needed to monitor the results and performance of the project. It will involve mainly the direct beneficiaries of project activities, but will be extended to other beneficiaries such as telecommunications operators and private ICT firms, which ultimately are the main beneficiaries of the project's outcomes. The PIU will review and validate the reports on performance indicators and recommend corrective action if necessary.

V. Role of Partners

A number of Development Financial Institutions (DFIs), including the World Bank, United States Trade and Development Agency (USTDA), the International Finance Corporation (IFC), the Islamic Development Bank (IsDB) and the European Commission have indicated their willingness to support improved infrastructure in the region. The World Bank has already committed to help Burkina Faso achieve its international and national connectivity needs through the WARCIP program. The IsDB is currently supporting the ECOWAN program, (which aims to link all ECOWAS national focal points and ensure that missing cross-border infrastructure is in place), and is considering support for Burkina Faso's national backbone project. The USTDA has already provided support for the development of a detailed feasibility study for a national backbone, while the International Telecommunication Union (ITU) is supporting policy and regulatory capacity building activities. The WARCIP program will coordinate with all partners in the areas of infrastructure and capacity building for regional regulatory authorities and seamless development of Burkina Faso's connectivity infrastructure.

Annex 4: Operational Risk Assessment Framework (ORAF)

BURKINA FASO
WARCIP 1B

Project Development Objective(s)

To increase the geographical reach of broadband networks and reduce costs of communications services in the Burkina Faso

PDO Level Results Indicators:	Volume of international traffic (Kbit/s per person)
	Access to telephone services (%)
	Access to internet services (%)
	Average monthly price of wholesale international E1 capacity link from capital city to Europe
	Number of direct project beneficiaries, of which female

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures
Stakeholder	MI	<p>Inadequate interest from private sector to finance PPP for VLP and terrestrial connectivity</p> <p>Potential “veto” by existing private licensees and government operators over different aspects of the program. Delays in agreement to PPP Model or models to manage all aspects of the International Connectivity</p>	<p>Resources to make PPP structures and enabling environment attractive for private investment. Private sector already signaled significant interest under transparent conditions.</p> <p>Detailed due diligence through Transaction Advisory Services will identify incentives to encourage participation.</p> <p>Transparent competitive bidding will reassure private sector. Pre-qualification procedure will ensure bidder capability in meeting tender conditions. Transaction Advisory Team consisting of legal and financial advisers will be in place to support development of business model and rules of engagement.</p>
Implementing Agency Risks (including FM & PR Risks)	MI	Novelty of proposed VLP arrangements and envisaged technical complexity coupled with new institutional arrangements (Ministerial) may initially slow down project.	Extensive preparation work and due diligence carried out by the Task Team and client will facilitate implementation. Additionally, the new Ministry of Transport which has merged with the ICT Ministry brings a very experienced Project Implementation Unit which is implementing several World Bank financed Projects and which is being leveraged for the WARCIP Project.
Design	MI	<p>This Program phase (APL1B) involves three countries with very different challenges. Some implementation delays/issues in one country could affect the overall execution of the entire Program.</p> <p>For Burkina, there is potential monopoly risk for VLP and Transmission. In theory, the market could be open to other broadband players but in reality, it could be challenging to effectively manage operator behavior.</p>	<p>Program structured so that if the Financing Agreement for one country or its disbursements falter, this would only reduce the scope but not affect the overall implementation of self-standing Burkina Faso activities.</p> <p>The VLP is designed to be carrier neutral and operated in an open and inclusive manner with transparent pricing to ensure international bandwidth capacity at low prices. Transaction Advisers will delineate rules of engagement to ensure competitive access.</p>
Social & Environmental	ML	Possible negative environmental and social impacts for VLP and terrestrial connectivity.	<p>MTPEN’s capacity for safeguards through the PIU is adequate. The PIU has a dedicated environment specialist who will support the project implementation.</p> <p>An Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) for the regional connectivity component have been prepared and disclosed prior to Project appraisal. Once the final sites are chosen and the specific civil works identified, an Environmental and Social Assessment including an ESMP, and a RAP as appropriate will be prepared. Finally, as a PPP, relevant technical clauses will be prepared and included in the biddings/tender documents for the Private Entity as needed, to ensure the execution of agreed environmental and social safeguards and implementation of the recommendations.</p>

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures
Program & Donor		NA	NA
Delivery Quality	ML	Key data collections and sharing, particularly from operators, may be difficult as the market is highly competitive and operators may be unwilling to provide accurate information.	Training and TA will be made available for monitoring and evaluation. The system will be designed with incentives to advance; not hamper operators' competitiveness. An experienced M & E specialist exists in the PIU. Project will provide additional resources for data collection.

Project Team	Risk Rating: Preparation	Risk Rating: Implementation	Comments
Overall Risk	MI	MI	The implementation is rated MI. While timely infrastructure implementation is a high risk, the risk is more than offset by the imperative regional commitments to the international connectivity and the experienced Project Implementation Unit.

Annex 5: Implementation Support Plan

BURKINA FASO WARCIP 1B

- 1. The World Bank has been collaborating with partners to ensure better broadband access since 2007.** Following the Connect Africa Summit (Kigali, 2007), the World Bank has been collaborating with other Development Partners (African Union Commission, African Development Bank, International Telecommunications Union and African Telecommunications Union) on key strategies and funding to ensure Broadband access in Africa. These commitments were recently re-affirmed during the African Union Heads of States Summit (Addis Ababa, 2009) where the World Bank and other Development Partners committed to accelerate with established goals to ensure Africa participates effectively in the digital world.
- 2. The World Bank has engaged with Development Partners to agree to promote open and competitive access.** To mitigate the risks involved in infrastructure development and management, the World Bank has engaged with Development Partners to foster Open and Competitive Access to communications Infrastructure, actively engaging private sector through PPPs, and strengthening policy and regulatory frameworks / institutional capacity to facilitate enabling environment. The Bank has also had extensive engagement with client countries and regional institutions and worked with them to develop detailed feasibility studies to support proposed infrastructure investment decisions.
- 3. Policy, regulatory, environmental and social safeguards are being put in place prior to full implementation of APL 1.** Project Preparation Advances granted to WARCIP APL1 countries are expected to ensure that the policy, regulatory, environmental and social safeguards, as well as requisite capacity are in place before Board. The PPAs are also expected to ensure that the countries have the requisite Transaction, Legal and Regulatory experts to ensure open access, effective structuring of PPPs to own and manage communications infrastructure. Additional resources have been provided to support countries to undertake environmental assessments and to put in place mitigation measures. These activities are in various stages of implementation and expected to be completed before project effectiveness.
- 4. The team has conducted preliminary assessments of the institutions expected to execute the project.** The strategic partnerships and collaboration, combined with active client engagement and upfront preparatory work, are expected to facilitate achievement of the PDO. Furthermore the team has conducted preliminary assessments of the institutions expected to execute the Program to ensure that they meet the minimum requirements of the World Bank's fiduciary obligations.
- 5. FM and Procurement Assessments show that Burkina Faso, with the merger of the Ministries of Transport and ICT currently has strong implementation arrangements.** Preliminary assessments of both the FM and Procurement Capacity suggest that the existing PIU which is already implementing several Transport projects financed by the World Bank and European Union has significant expertise to manage the WARCIP Burkina component. The project will provide additional support for operational and other expenses as required.

What would be the main focus in terms of support to implementation

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Strengthening of PIU Transaction/Legal/Open Access Advisory Work Audit of legal and Regulatory Framework	Procurement, FM, Program Coordinators Experienced Transaction and Legal Teams Legal Expert	US\$100,000	
12-48 months	Selection of Operator for PPP Tendering of bulk Capacity Purchase Construction of Fiberlink	Procurement, FM, Program Coordinators Experienced Transaction and Legal Teams Legal/Technical Experts	US\$100,000	
Other	Strengthening of regulatory and policy capacity	Regulatory and ICT specialists	US\$100,000	

Implementation Support Plan

6. The Bank team members will be based either in Washington DC and/or in the Africa region, and will be available to provide timely, efficient and effective implementation support to the client. Formal supervision and field visits will be carried out semi-annually initially, with possibility for annual visits in later years of the project. Detailed inputs from the Bank team are outlined below:

- Technical inputs. Technical telecommunications and regulatory related inputs are required to review bid documents to ensure fair competition through proper technical specifications and fair assessment of the technical aspects of bids. ICT Policy Specialists and regulatory specialists will provide technical support and conduct supervision visits whenever needed.
- Fiduciary requirements and inputs. Training will be provided by the Bank’s financial management specialist and procurement specialist before the commencement of project implementation as needed. The team will also help PIU to identify capacity building needs to strengthen its financial management capacity and to improve procurement management efficiency. Both the financial management and the procurement specialist will be based in the region 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 an environment specialist and a social specialist may be required, though the project's social and environmental impacts are limited and client capacity is generally adequate. No field visits are likely to be required, but this will be confirmed - the social and environmental specialists will be available on a need basis.
- Operation. The TTLs will also provide day to day supervision of all operational aspects, as well as coordination with the client and among Bank team members. If needed, a consultant may be used to support this role.

The main focus of implementation support is summarized below.

Time	Focus	Resource Estimate	Partner Role
Project duration	Team leadership, technical and procurement review of the bidding documents and Institutional arrangement and project supervision coordination	ICT Policy Specialist SWs 8	
	Procurement training	Procurement specialist(s) SWs 2	
	FM training and supervision	FM specialist SWs 2	
	Environmental and Social Issues	Social specialist SWs 0.5 Environmental specialist(s) SWs 0.5	

Note: SW – Staff-Week

Staff skill mix required is summarized below.

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leaders	8 SWs annually	Fields trips as required.	DC or Country office based
Procurement	2 SWs annually	Fields trips as required.	Country office based
Social specialist	0.5 SWs annually	Fields trips as required.	Country office based
Environment specialist	0.5 SWs annually	Fields trips as required.	Country office based
Financial management specialist	2 SWs annually	Fields trips as required.	Country office based
Legal support	1 SW	Fields trips as required	DC based

Annex 6: Team Composition

BURKINA FASO WARCIP 1B

Name	Title	Unit
Mavis Ampah	Sr. ICT Policy Specialist	ICT Sector Unit
Boutheina Guermazi	Sr. Regulatory Specialist	ICT Sector Unit
Doyle Gallegos	Lead ICT Policy Specialist	ICT Sector Unit
Laurent Besancon	Regional Coordinator/Sr. Regulator Specialist	ICT Sector Unit
Michel Rogy	ICT Adviser	ICT Sector Unit
Marc Lixi	Sr. Operations Officer	ICT Sector Unit
Sarah Brierley	STC	ICT Sector Unit
Duncan Wambogo Omole	Information Analyst	ICT Sector Unit
Michele Ralisoa Noro	Sr. Program Assistant	ICT Sector Unit
Deo Ndikumana	Sr. Operations Officer (AFCRI)	AFCRI
David Satola	Sr. Counsel (LEGPS)	LEGPS
Yves Prevost	Lead Environmental Specialist	MIGEP
Abdoul-Wahab Seyni	Sr. Social Development Specialist	AFTCS
Wolfgang Chadab	Sr. Finance Officer	CTRFC
Mamata Tiendrebeogo	Procurement Specialist	AFTPC
Ousmane Kolie	Financial Management Specialist	AFTFM
Tassere Pitroipa	Information Analyst	AFRIT
Claudia Pardiñas Ocaña	Sr. Counsel	LEGAF
Alexandra Sperling	Paralegal	LEGAF
Djeneba Bambara Sere	Program Assistant	AFMBF

Annex 7: Economic and Financial Analysis

BURKINA FASO

WARCIP 1B

- 1. For Burkina Faso an overland route to a new or existing fiber-cable system is found to be the most long-term cost effective option.** Analysis conducted indicates that cross-border fiber optic connections would be the most viable strategy to meet Burkina Faso's international bandwidth requirements. The cost of capacity on new submarine cables linking to Europe (e.g. MainOne), is between US\$280 and US\$800/Mbit/s/month, and averages \$500/Mbit/s/month. The cost advantages are significant when compared to existing capacity costs, which are about \$4500/Mbit/s/month. Aside from low bandwidth costs, the high quality of fiber bandwidth provided is also a factor which has to be taken into account in comparing options.
- 2. Additional fiber connections will help to create a competitive market for international bandwidth and reduce in prices.** The state-backed operator, Onatel, has built a national fiber backbone of 1,100-km connecting to the neighbouring countries of Côte d'Ivoire, Mali and Togo. Onatel is using all of these cross border links to access about 800Mbit/s of international capacity in total, mainly through the Togo link, which in turn provides access to Benin's backbone and SAT-3 landing station. Additional fiber connections will help to create a competitive market for international bandwidth and lead to reduction in prices. The high charges levied by Onatel, combined with reliability problems, indicates that use of its infrastructure is unlikely to be the most desirable option for improving international connectivity.
- 3. The range of fiber optic routes from Burkina Faso to the nearest submarine landing stations was examined and it was found that connections via Cote d'Ivoire, Ghana, Benin, Nigeria and Togo all offer potential to immediately lower the current cost of capacity in the country.** However, Accra provides the shortest distance to Ouagadougou, and has the highest level of competition between submarine cables (SAT-3, Glo-1 and MainOne, and WACS). As a result it is likely to be one of the strongest contenders for provision of a low cost link for Burkina Faso, in terms of long-term cost effectiveness and bandwidth availability.
- 4. Benefits of fiber-optic cable investments.** International capacity to London at the Burkina Faso border could be obtained for less than US\$250/Mbit/s/month today. Bringing that capacity to Ouagadougou is feasible for a cost of US\$10-50/Mbit/s/month, depending on the exit border, route and capacity purchased. With the 800Mbit/s of international capacity being purchased at present, this represents an annual saving of over US\$40 million, when compared to current costs of about US\$4500/Mbit/s/month (US\$2.88m vs US\$43.2m) at the retail level.
- 5. Fiber cable systems that serve the West Africa region use well-proven technologies and involve no appreciable technology risk.** The latest cable to arrive, ACE cable, has a design that is both “state of the art”, uses well-established procedures, and involves no significant technology risk. The choice of SDH electronics is conservative and has reasonable efficiencies carrying Internet Protocol (IP) traffic. Similarly, Glo-1, Main-One and SAT-3 cables are also relatively young cables. For Burkina Faso, the emerging options are very promising - Main One has a broadband capacity of 1,920 gigabits per second to West Africa. SAT-3 has been operating since 2001 and currently has a capacity of 120 Gbit/s, and plans are in place to nearly triple SAT-3's capacity to 340 Gbit/s soon. Glo-1 has a minimum

capacity of 640 Gbit/s. ACE and WACS will add another 10 000 gigabits per second in capacity.

- 6. Fiber cable has an advantage over satellite in terms of price and quality of service.** Use of satellite bandwidth to meet international connectivity needs was eliminated as too costly and suffering from lower quality than fiber. The latency factor introduced in satellite links can be a problem with some communication services, especially high data rate interactive multimedia applications. The almost 1-second delays introduced by satellite connectivity significantly reduces performance of international services and limits the types of services that can be provided, such as the use of secure Virtual Private Networks (VPNs) which time out when performance is degraded by satellite links. While it is possible to circumvent these problems to some extent through use of sophisticated traffic shaping devices at each end of the link, this creates additional capital and human resource costs for the user. And the perceived disadvantages of satellite can limit foreign investment in the sector, especially among high bandwidth consuming interactive services such as BPO call centres and VPN networks where companies are reticent to establish these on the end of a satellite link because of the latency issue.
- 7. ‘Medium earth orbit’ (MEO) satellites (MEO) and terrestrial microwave options relatively more costly compared to fiber option.** There have been suggestions that a new type of satellite service based on 'medium earth orbit' satellites (MEOs), which provides lower levels of latency due to their greater proximity to earth, could meet needs for improved international connectivity. However, the only proposed service of this type, called O3B, has yet to launch any satellites and is still relatively costly when compared to the fiber options, so it was also eliminated from further consideration as a national solution, although in some remote areas it may have value for providing connectivity where there is no fiber. In the same vein, improved terrestrial microwave links could be considered another alternative, however as with satellite solutions, these links do not scale economically to the levels of bandwidth that are expected to be required at an international level. This is evidenced by the efforts of the International mobile operators, such as Airtel and Moov, to replace their existing international microwave links with fiber.

Table 1: Advantages and Disadvantages of submarine fiber cable compared to Satellite

	Increased satellite capacity	Fiber optic Submarine Cable Systems
Advantages	Lower CAPEX and O&M; Bandwidth purchases grow in concert with demand growth;	Future proof in terms of capacity available and superior quality through higher performance (lower latency);
Disadvantages	Less risk of service being discontinued for long periods Far higher cost for bandwidth; High latency can limit the bandwidth quality and applications that can be used.	Much lower cost for bandwidth. Fixed cost for capacity investment means prices go down as usage picks up. Higher CAPEX required (effectively a 'pre-purchase of bandwidth, most of which will be for future use); More expensive O&M; Slower repair times means need for backup via alternative cross-border fiber route or satellite in case of cable damage (if only one cable)
Socio/ Economic/ User Impact	Number of Internet users and extent of usage is constrained by high bandwidth prices and slower performance. Reduced potential for development of local ICT industry and fewer BPO opportunities. More limited potential value/use by government due to reduced Internet penetration in the population generally.	Number of Internet users and extent of usage grows rapidly, less constrained by high bandwidth prices and slower performance. Increased potential for development of local ICT industry and more BPO opportunities. More extensive use by government as Internet penetration reaches majority of people. improved educational opportunities through increase in access to information and education resources; Development of a regional sense of community through greater equality of Information sharing across geographical regions and across groups in society Economic benefits from the enhanced opportunities for new and small enterprises that may have previously been excluded from technologies by high costs; and macro-economic benefits of the potential expansion of technology-reliant industries, such as information technology services and software development businesses.

8. Assumptions of financial analysis. Financial comparisons of satellite versus fiber options were made using the following assumptions:

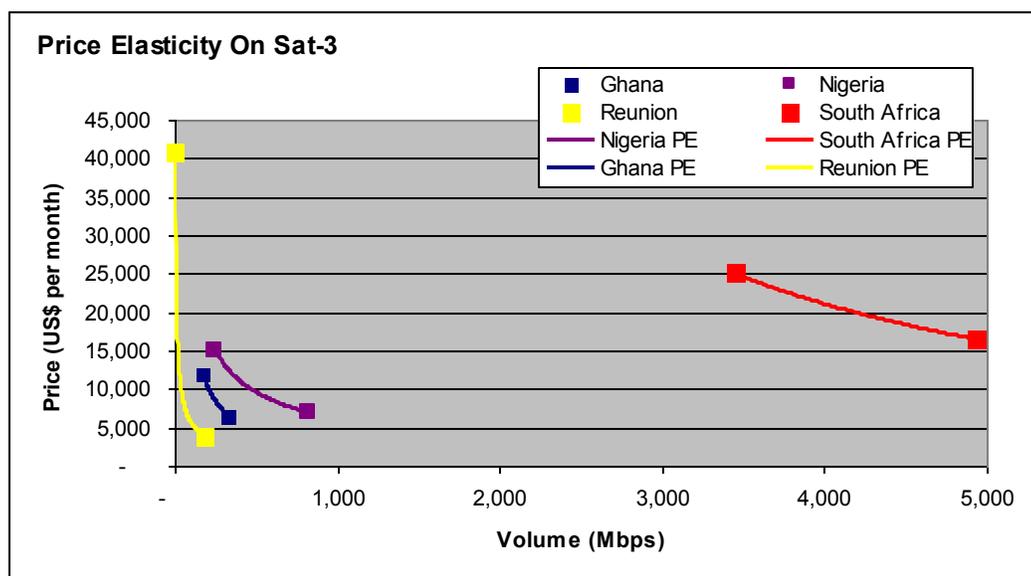
- A 15% discount rate
- A 60% annual increase in international bandwidth required until 2017 and then a 50% increase until 2022
- Contracting takes place in 2011, but facilities not operational until beginning of 2012
- Cost of international capacity purchases (Burkina-Faso-Europe) are recovered directly from the customers.

With enhanced connections to West Africa's fiber-cable systems, Burkina Faso will see investment breakeven between 2016 and 2018, after which substantial revenues would be made if wholesale pricing levels are maintained. Overland fiber connection for Burkina Faso will see the country breakeven between 2016 and 2018, with an NPV for the first 10 years (to 2022) of US\$8.38million. The IRR is 28% assuming an average bandwidth sale price of US\$100/Mbit/s/month, and an IRR of 41% assuming a US\$20/ Mbit/s/month for capacity on the link to the Burkina border. For Burkina Faso final breakeven year will depend on actual capacity uptake and the wholesale price of bandwidth. However, by 2020 at the latest, the project would be cash-flow positive and substantial revenues would be made if these wholesale pricing levels are maintained.

Table 3: Bandwidth Demand Forecast for Burkina Faso						
Estimate Basis	International Bandwidth (Mbit/s)	Estimated number of Subscribers	Penetration (%population)	Population	International Kbps/ Subscriber	Bps/ total population
Current Status in Burkina Faso (2010)	800	28,741	0.18	15,730,977	28	51
Senegal comparison (2009)	3,500	54,200	0.40	13,700,000	65	255
2021 Forecasts:						
Existing Onatel Infrastructure	14 560	73,584	0.3	22,009,036	11	36
Virtual Landing Point/IXP	101,922	515,085	2.3	22,009,036	198	4,631
Bandwidth Requirement Estimates Based on:						
Low Broadband Definition (256Kbps), Low Penetration Scenario (10%)	18,030	2,200,904	10.00	22,009,036	205	819
Low Broadband Definition (256Kbps), Low-Medium Penetration Scenario (20%)	31,552	4,401,807	20.00	6,647,190	179	4747
Medium Broadband Definition (1Mbit/s), Low Penetration Scenario (10%)	70,429	2,200,904	10.00	6,647,190	800	10595
Medium Broadband Definition (1Mbit/s), Low-Medium Penetration Scenario (20%)	123,251	4,401,807	20.00	22,009,036	700	5600
Optimal Broadband Definition (20Mbit/s) Low Penetration Scenario (10%)	1,408,578	2,200,904	10.00	22,009,036	16000	64000
Medium Broadband Definition (1Mbit/s), Medium Penetration Scenario (40%)	176,072	8,803,614	40.00	22,009,036	500	8000
Optimal Broadband Definition (20Mbit/s) Medium Penetration Scenario (40%)	3,521,446	8,803,614	40.00	22,009,036	10000	160000

9. **Previous experience with fiber cables shows a rapid increase in demand when price of bandwidth decreases.** As indicated above, lowering the cost of access has a strong impact on the amount of bandwidth sold. This can be modeled using a price elasticity curve. The SAT-3 example (SAT-3 is between Portugal and South Africa), for which the most data is available, shows a clear relationship between volume and tariffs. The chart below compares the price of access on SAT-3 (per E1 half-circuit to Sessimbra, Portugal) against the volume of international bandwidth sold. This shows the effect that price decreases between 2004 and 2006 have had on the volume of bandwidth sold in each of four countries where comparable data was available. The increase in international bandwidth demand increases because broadband services first become more viable for operators to deploy, and secondly because as retail prices decrease the service become increasingly affordable and penetration increases. Réunion is included here as a particularly clear case which shows that when price was US\$20,466 per Mb the volume was just 4 Mbit/s, but when it decreased to US\$1,967 volume increased to 180 Mbit/s. If the price were to drop further to US\$500 per Mb, it is projected that the volume would increase to 1.656 Gbit/s. If the price were to decrease to US\$250 per Mbit/s per month, the volume is projected to grow to 5.02 Gbit/s, which translates to a 50% price reduction resulting in a 300% increase in bandwidth demand. This increase comes about because of the multiplier effects: monthly prices for broadband decrease, in turn improving affordability and increasing uptake of services.

Figure 7.1: Bandwidth Price Elasticity



10. **The predicted bandwidth demand Burkina Faso with a virtual landing point connection to fiber is 3,500 Mbit/s compared to 800 Mbit/s if bandwidth is connected through Onatel’s existing fiber links to Togo.** Extrapolating current usage and growth in users could provide an indication of future bandwidth demand, however due to the current high cost of service (relative to income levels) and the relatively slow speeds available, this would tend to substantially underestimate pent-up demand when bandwidth availability improves and costs decrease. Given the trends worldwide in broadband adoption levels, and especially encouraged by the explosion of mobile broadband²⁴ (3G), the estimates used appear relatively conservative, especially toward the end of the analysis period (2021), by which date it is expected that almost every mobile phone user would have access to broadband on their handset²⁵. However, this is dependent on the introduction of high-bit-rate mobile services into the market, and

²⁴3G data service uptake from the consumer has been massive and unprecedented in other developing countries such as Kenya

²⁵ Brand new 3G capable smartphones are already being sold in Kenya for less than \$100, and prices are expected to come down much further over the next 10 years.

unless increased competition is introduced into the sector, the operators may not be encouraged to introduce these types of new services in the near future. Extrapolating current usage and growth in users could provide an indication of future bandwidth demand, however due to the current high cost of service (relative to income levels) and the relatively slow speeds available, this would tend to substantially underestimate pent-up demand when bandwidth availability improves and costs decrease. Globally, the last 10 years has seen massive increases in end-user bandwidth demand resulting from the popularity of social networks, image and video sites such as FaceBook and YouTube. Fortunately these bandwidth demands have kept pace with technology developments which are now seeing domestic broadband services delivering 100Mbit/s and even 1Gbit/s in some advanced countries. Given the trends worldwide in broadband adoption levels, especially encouraged by the explosion of mobile broadband²⁶ (3G/4G/LTE), the estimates used in this analysis appear relatively conservative, especially toward the end of the forecast period, when it is expected that almost every mobile phone user would have access to broadband on their handset²⁷. This also follows current trends which show that 2010 traffic in Africa and the Middle-East grew by 45%, this includes many countries which already have fiber access, so the growth rates for those which will have access to fiber for the first time are expected to be much higher.

- 11. Bandwidth requirement per user has the potential to advance rapidly with further social and economic development, especially with the development of tourism and Business Process Outsourcing (BPO) sector.** There are also some special sources of additional demand which could also significantly increase international transmission requirement: Tourism and development of BPO sector. Although tourism is currently only a small part of the economy in Burkina, tourism in West Africa could increase significantly in future. Tourism creates demand for international telecommunication services through demand of administrative and marketing service as well as demand for internet access, international calls and money transactions. BPO and Internet call centre service companies can generate significantly more Internet traffic if bandwidth prices can be reduced and fiber connections made available. Sourcing channels for television rebroadcasting is currently carried out by satellite but could be substituted by fiber if bandwidth prices are sufficiently competitive.
- 12. Fast internet has been shown to boost the productivity of firms as well as generate employment opportunities.** New growth theory suggests that long-run economic growth emanates from spillover arising from innovation and investment in new technologies. Fast internet access can be considered one important new technology, and broadband is increasingly recognized to promote productivity and boost aggregate economic growth (OECD, 2003). Analytical studies have shown that firms using standard broadband (defined as connection speeds above 256 Kbit/s (OECD, 2002)) were on average 10 % more productive than firms using dial-up internet access. Faster internet speeds are also causally related to increased employment opportunities with analysis showing that for every one percentage point increase in broadband penetration within a region, employment increases by 0.2-0.3 % per year for the private, non-farm economy (Crandall et al, 2007). Indeed, studies show a clear positive relationship between employment and broadband penetration in the manufacturing and service industries, with business growth shown to be particularly significant for larger businesses and for IT intensive sector (Lehr et al, 2006). The results of these studies support the hypothesis that broadband penetration enhances economic activity. Increased broadband speeds and less expensive data access have the potential to promote economic activities in West Africa, supporting the growth and productivity of businesses and gradual transfer of employment from agricultural to service industries and expansion of the region's nascent ICT and BPO sector.



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BURKINA FASO

- PROVINCE CAPITALS
- ✳ NATIONAL CAPITAL
- RIVERS
- MAIN ROADS
- RAILROADS
- PROVINCE BOUNDARIES
- INTERNATIONAL BOUNDARIES