TECHNICAL ANNEX

ON A
PROPOSED CREDIT

IN THE AMOUNT OF SDR 20.1 MILLION
(US$ 30.0 MILLION EQUIVALENT)

TO THE

ISLAMIC REPUBLIC OF MAURITANIA

FOR THE WEST AFRICA REGIONAL COMMUNICATIONS INFRASTRUCTURE PROGRAM - MAURITANIA PROJECT

IN SUPPORT OF THE SECOND PHASE (APL2)
OF A US$300 MILLION EQUIVALENT
WEST AFRICA REGIONAL COMMUNICATIONS INFRASTRUCTURE PROGRAM

May 02, 2013

ICT Sector Unit
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2013)

Currency Unit = SDR
SDR 0.67 = US$1
US$ 1.50 = SDR 1
MRO 270 = US$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 Africa Infrastructure Country Diagnostic
AMU Arab Maghreb Union
APAUS Agence de Promotion de l’Accès Universel aux Services
Universal Access Development Agency
APL Adaptable Program Loan
AQMI Al-Qaida au Maghreb islamique
Al Qaeda in the Islamic Maghreb
ARAP Abbreviated Resettlement Action Plan
ARE Autorité de Régulation
Regulatory Authority
ARMP Independent Procurement Regulatory Body
Autorité de Régulation des MarchésPublics
AU African Union
AXIS African Internet Exchange System
BP Bank Procedures
BPO Business Process Outsourcing
CAB Central African Backbone
CAGR Compound Annual Growth Rate
CAPEX Capital Expenditure
CAS Country Assistance Strategy
C&MA Construction & Maintenance Agreement
CEM Country Economic Memorandum
CNCMP National procurement control body
Commission Nationale de Contrôle des MarchésPublics
CPMSS Procurement Committee for Social Sectors
Commission de Passation des Marchés des Secteurs Sociaux
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>CPS</td>
<td>Country Partnership Strategy</td>
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<tr>
<td>CQS</td>
<td>Consultant’s Qualification</td>
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<tr>
<td>DA</td>
<td>Designated Account</td>
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<tr>
<td>ECOWAS</td>
<td>Economic Community Of West African States</td>
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<tr>
<td>€</td>
<td>Euro</td>
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<tr>
<td>EIB</td>
<td>European Investment Bank</td>
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<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
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<tr>
<td>ESMF</td>
<td>Environmental and Social Management Framework</td>
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<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
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<tr>
<td>FA</td>
<td>Financing Agreement</td>
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<td>FM</td>
<td>Financial Management</td>
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<td>FMS</td>
<td>Financial Management Specialist</td>
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<td>FY</td>
<td>Financial Year</td>
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<tr>
<td>Gbit/s</td>
<td>Gigabit per second</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GoM</td>
<td>Government of Mauritania</td>
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<td>GoT</td>
<td>Government of Togo</td>
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<tr>
<td>GNI</td>
<td>Gross National Income</td>
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<td>GSM</td>
<td>Global System for Mobile Communications</td>
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<td>IBRD</td>
<td>International Bank for Reconstruction and Development</td>
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<td>IC</td>
<td>Individual Consultant</td>
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<td>ICB</td>
<td>International Competitive Bidding</td>
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<td>ICT</td>
<td>Information and Communication Technology</td>
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<td>IDA</td>
<td>International Development Association</td>
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<td>IFC</td>
<td>International Finance Corporation</td>
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<td>IFR</td>
<td>Intermediate Financial reports</td>
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<td>IMT</td>
<td>International Mauritania Telecom</td>
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<tr>
<td>IP</td>
<td>Internet Protocol</td>
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<td>IPR</td>
<td>Independent Procurement Review</td>
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<td>IRR</td>
<td>Internal Rate of Return</td>
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<td>IRU</td>
<td>Indefeasible Right of Use</td>
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<td>ISA</td>
<td>International Standards on Auditing</td>
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<td>ISOC</td>
<td>Internet Society</td>
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<td>ISP</td>
<td>Internet Service Provider</td>
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<td>ISR</td>
<td>Implementation Status Report</td>
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<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
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<tr>
<td>IXP</td>
<td>Internet Exchange Point</td>
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<tr>
<td>Kbit/s</td>
<td>Kilobit per second</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>LCS</td>
<td>Least Cost Selection</td>
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<tr>
<td>MAED</td>
<td>Ministry of Economic Affairs and Development</td>
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<tr>
<td>MDEDD</td>
<td>Ministry Délégué chargé de l’Environnement et du Développement Durable</td>
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<tr>
<td>Mbit/s</td>
<td>Megabit per second</td>
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MDEFPNT  Ministère Délégué auprès du Ministre d'Etat à l'Education Nationale chargé de l'Emploi, de la Formation Professionnelle et des Technologies Nouvelles
Ministry of Employment, Professional Education and New Technologies
MDGs  Millennium Development Goals
MDN  Ministère de la Défense Nationale
Ministry of Defense
M&E  Monitoring and Evaluation
MEO  Medium Earth Orbit
MF  Ministère des Finances
Ministry of Finance
MIGA  Multilateral Investment Guarantee Agency
MIS  Management Information System
MRO  Mauritanian Ouguiya
NCB  National Competitive Bidding
NPV  Net Present Value
NRA  National Regulatory Authority
OP  Operational Manual
OPEX  Operating Expenses
ORAF  Operational Risk Assessment Framework
PAD  Project Appraisal Document
PAP  Project-Affected People
PCN  Project Concept Note
PDO  Project Development Objectives
PIM  Project Implementation Manual
PIU  Project Implementation Unit
PP  Procurement Plan
PPA  Project Preparation Advance
PPF  Project Preparation Facility
PPP  Public-Private Partnership
PPR  Post Procurement Review
PRECASp  Projet de Renforcement des Capacités du Secteur Public
Public Sector Capacity Building Project
PRSP3  Third phase of poverty reduction program
QCBS  Quality and Cost Based Selection
RAP  Resettlement Action Plan
RCIP  Regional Communications Infrastructure Program
REI  Request for Expression of Interest
RFCS  Ready For Commercial Service
RFP  Request for Proposal
RIAS  Regional Integration Assistance Strategy for Sub-Saharan Africa
RPF  Resettlement Policy Framework
RRP  Resettlement and Rehabilitation Plan
SAT-3  South Atlantic Three Cable
SBD  Standard Bidding Documents
SME  Small and Medium Enterprise
SOE  Statement of Expenditures
<table>
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<th>Description</th>
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<td>SPV</td>
<td>Special Purpose Vehicle</td>
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<td>SSS</td>
<td>Single Source Selection</td>
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<td>ToR</td>
<td>Terms of Reference</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>VoIP</td>
<td>Voice over Internet Protocol</td>
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<tr>
<td>VPN</td>
<td>Virtual Private Network</td>
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<tr>
<td>WASC</td>
<td>West African Submarine Cable</td>
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<tr>
<td>WARCIP</td>
<td>West Africa Regional Communications Infrastructure Project</td>
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<td>WATRA</td>
<td>West Africa Telecommunications Regulators Assembly</td>
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<tr>
<td>WBG</td>
<td>World Bank Group</td>
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<td>XOF</td>
<td>Franc CFA</td>
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CFA Franc
<table>
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<td>Makhtar Diop</td>
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<td>Regional Integration Director</td>
<td>Colin Bruce</td>
</tr>
<tr>
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<td>Vera Songwe</td>
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<tr>
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<td>Jose Luis Irigoyen</td>
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<td>Sector Manager</td>
<td>Randeep Sudan</td>
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<tr>
<td>Task Team Leader for WARCIP 2</td>
<td>Boutheina Guermazi</td>
</tr>
<tr>
<td>Task Team leader for WARCIP Mauritania</td>
<td>Michel Rogy</td>
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AFRICA
WARCIP Mauritania

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I. STRATEGIC CONTEXT

A. Country Context

1. Mauritania is mostly a desert country with an estimated surface area of 1,030,700 square km, a population of about 3.5 million and a GDP/capita of about US$ 1,160 (2011). Growth performance appears to be solid, although it is mostly constrained to (and driven by) capital intensive sectors and the key challenge remains to make it more inclusive. The country has a narrow production basis, with exports concentrating on a small range of commodities (fish, iron ore, gold). GDP/capita was below US$700 until 2006 when oil production started. Despite the low oil production, growth has picked-up since the return to constitutional order and resumption of donors’ support end-of-2009 particularly as a result of booming exports in the mining industry. The financial crisis of 2008/09 impacted on Mauritania (-1.2% GDP in 2009) but did not derail a macroeconomic recovery. Real GDP registered a 5.1% growth in 2010 and 3.9% in 2011; the latest available figures estimate a GDP growth at 6.2% in 2012 and a sustained average at 6.5% over the medium term (2013-2017). The 2010 Country Economic Memorandum (CEM) “The Foundations of Growth and Competitiveness in Mauritania” shows Mauritania has the potential to develop a sustainable, diversified economy outside natural resource exploitation (i.e. service industry, agriculture1 and infrastructure), but it needs to address critical constraints to growth that hampers private business development, including putting in place an adequate legal environment to boost the business climate and promote SME development and increasing the availability of skilled labor. Rising unemployment (now estimated at 35% of total labor force, and especially high among the young clusters of population) remains a daunting.

2. Mauritania does not take full advantage of its strategic geographic location, between Sub-Saharan Africa and the Maghreb. In 2000 Mauritania left the Economic Community of West African States (ECOWAS)2 in favor of membership in the Arab Maghreb Union (AMU)3 which weakened links with Sub-Saharan Africa while Mauritania’s participation in the AMU has not yet been translated into increased cooperation with regional benefits. The need for greater regional economic and infrastructure integration is obvious and such infrastructure is likely to have a significant impact on the development of trade, increased production costs and the unattractiveness of the country to foreign capital.

3. Mauritania’s human development index has moved up from 0.424 in 2007 to 0.453 in 2011 (versus an average of 0.463 for sub-Saharan Africa) with Mauritania now ranking 159 out of 187 countries, but overall the results in achieving MDGs have been mixed. MDGs regarding universal primary education and gender equality in primary education appear achievable because of the significant progress already realized in school enrollment. MDGs relating to access to water are also likely to meet. The most important deficiencies in the

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1 Agriculture will remain by and large the main employer of the country, despite representing roughly 16%-17% of GDP.
2 Benin, Burkina Faso, Cape Verde, Cote d’Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.
3 Algeria, Libya, Mauritania, Morocco, Tunisia.
progress towards achieving MDGs are related to health, environment, employment and some gender indicators. According to the latest available poverty assessment (2008 household data), poverty declined slightly from 46.7% in 2004 to 42% in 2008 - with the 2015 target of 25% remaining significantly out of reach. There are also important disparities between the urban and rural areas and between regions caused by a massive rural-urban exodus which reduced drastically the share of nomads in population and conversely increased the share of the urban population above 60 percent. Despite its small agricultural sector, food insecurity is spread all over the country, with Mauritania being very sensitive to exogenous shocks such as droughts, floods and locusts attacks.

4. **Enhancing governance is crucial to achieve the country's development objectives** and particularly ensure that wealth derived from natural resources will improve citizens’ lives, including the most vulnerable. As shown by main international indicators (Doing Business, Transparency International), Mauritania is among the countries in which governance needs to be significantly improved. Following a decade of political instability, corrective efforts have been undertaken by governments over the last years, including the current Government, to undertake serious and rigorous policies within the development agenda.

5. **Government’s attention on security matters is high.** Starting in 2006 terrorist attacks and hostage-taking by Al Qaeda in the Islamic Maghreb (AQMI) began to affect Mauritania – adding to the problems resulting from illegal immigration and drug-trafficking through the Sahara desert. Even if there has been no attack on the territory of Mauritania since 2009, the Government is increasingly worried about these security problems because Mauritania has had so far the image of a safe country for foreigners, investors and tourists. They have also increasingly focused the Government’s attention on security matters. The Government started to devote more resources to address those issues, cooperating actively with other countries of the region and the international community. The recent crisis in neighboring Mali has further compounded the security concerns.

B. **Sectoral and Institutional Context**

6. **Mauritania has shown a strong commitment to opening telecommunications to competition and the market at the local level is dynamic and competitive.**

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4 Recent data (Based on a food security survey conducted by the Food Security Commission (CSA) and the World Food Program (WFP), December 2011) show that approximately one quarter of rural households (24.6%) are food insecure, and half of these in a severe way. If compared with similar data on rural areas referring to 2010, the increase appears to be striking: food insecurity figures went up by 182%. Food insecurity in urban areas, instead, increased less but also significantly: up by 120% since December 2010. As more recent and in-depth data are expected to become available with a forthcoming household survey, the above-mentioned numbers indicate an alarming situation.

5 The capital city Nouakchott hosts approximately one-third of the total population.

6 According to the latest UNHCR estimates (Nov 2012) more than 110 thousand refugees have been officially registered in the country. This situation clearly exacerbates the existing food security issues, which had already been worsened by the recent drought in 2011.

7 Telecommunications falls under the mandate of the Ministry of Employment, Professional Education and New Technologies (MDEFPNT). The line Ministry acts as policy maker in the sector, with overall responsibility for formulating policies to develop the sector and setting up the legal and regulatory framework. There is also a
sector in Mauritania is fully liberalized and the incumbent operator Mauritel was privatized back in 2001 (with a stake taken by Maroc Telecom). As in the sub-region the fixed network shows a very low level of development (3% of penetration as of December 2012), but the cellular sector is dynamic and competitive, including 3 mobile operators: Mauritel, Mattel and Chinguitel. As of December 2012, the mobile penetration rate is 113% at the level of the bests in class in ECOWAS. Competition between the 3 operators takes place on nearly 65% of the total coverage of mobile networks: prices have gone down significantly but further decrease would be desirable given to the purchasing power of citizens (on-net calls are priced at 18.15 US$ cent/min VAT included).

7. By contrast, access to international connectivity via Senegal and the SAT-3/WASC submarine cable is at a high price and vulnerable to service interruptions, impeding a rapid development of Mauritania’s broadband internet market, and preventing the country from reaping the benefits of the ICT revolution in terms of growth, job creation and regional integration. As a consequence, the fixed and mobile broadband markets, with merely 3% penetration as of December 2012 despite all 3 operators having launched 3G services, are underdeveloped. 1 Mbit/s access via ADSL or via a 3G dongle is priced at 51 US$/month/month VAT included per month, with consumers complaining about the costs and the poor quality of service.

8. In this background, the country has developed and approved a 2012-2016 Strategy for ICT and Modernization of Public Service8, built around 6 pillars: (1) develop access for all to the information society (which includes investments in new international, regional and national fiber connectivity); (2) revise the legal and regulatory framework for ICT; (3) Improve quality and accessibility of the public service; (4) Develop e-government; (5) Develop digital economy and (6) Technical Assistance for Specific Sectors. The general objectives of this 2012-2016 Strategy are to foster human development (better access to knowledge, better implementation of e-education, better access to information), economic development (improve production and quality of life, increase business efficiency, develop Research and Development services) and higher efficiency of public service (better access and lower cost of public service, better IT systems). Building upon this strategy, a new telecommunications sector policy note has been approved by the Council of Ministers on January, 31 20139 and the MDEFPNT and the ARE expect to have the revised legal and regulatory framework for ICT (Information Society Laws and Electronic Communications Laws) also approved by End of April 2013.

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8 “Stratégie Nationale de Modernisation de l’Administration et des TICs 2012-2016”. This strategy was approved by GoM on March 22, 2012.
9 “Déclaration de politique pour le secteur des télécommunications”. This strategy was approved by GoM on January 31, 2013.
9. Investment in new submarine capacity via the ACE submarine cable\(^\text{10}\) to have direct access to international connectivity has already been made, GoM setting up a Public Private Partnership (PPP)\(^\text{11}\) called IMT with all operators to finance and operate according to open access\(^\text{12}\) principles the landing station of the ACE submarine cable; this new submarine connectivity became available in December 2012. New international connectivity via ACE will provide the potential for massively improved access to broadband communications in Mauritania, but the full benefits cannot be achieved without additional investments in regional and national fiber backbone infrastructure to connect provincial capitals and the borders with other countries from ECOWAS and from UMA. The new regulatory framework expected to be approved by the Council of Ministers by mid April 2013 is fully adapted to broadband and information society, in particular with respect to the principle of open access to international, regional and national connectivity.

10. WARCIP Mauritania Project will address the key issues of limited geographical reach of broadband networks and high costs of broadband services in the territory of Mauritania, paving the way for successful development of e-government and digital economy, through: (i) focused investments on the basis of a PPP in the roll out of crucial fiber backbone links to create a reliable regional and national backbone with a ring topology covering most of the population in Mauritania, and linking to newly available low cost international capacity via the ACE (shown in blue in the Figure below) and in the set-up of national and regional Internet Exchange Point (IXP)\(^\text{13}\) in a neutral Carrier Hotel / Datacenter building as well as (ii) technical assistance to strengthen the legal, regulatory and institutional framework to ensure open access to and interconnection between all components of the fiber backbone infrastructure and promote a pro-competitive environment to foster investments from telecoms operators and Internet service providers. Previous experience with fiber cables in East and South Africa shows that supporting the development of infrastructure whilst improving the policies and regulatory framework has a secondary impact on the market through a rapid increase in demand when price of bandwidth decrease. Access to new submarine capacity on an open access basis via ACE and to the newly rolled-out terrestrial fiber backbone is expected to directly feed into lower retail prices and higher bandwidth available in Mauritania. Significant increase in penetration shall be set in motion both for fixed (via ADSL or metropolitan fiber) and mobile (via 3G dongles or smart

\(^{10}\) The ACE submarine cable is connecting Europe with 13 countries along the West African coast (Mauritania, Senegal, Gambia, Guinea, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Benin, Nigeria, Equatorial Guinea, Gabon, São Tomé).

\(^{11}\) The concept of “Public-Private Partnership” refers to various possible types of long-term contractual relationships between the authorities and the private sector, for the design, execution, operation, maintenance and financing of equipment or infrastructure and/or the organization of services to the public. Public-Private Partnerships enable a government to leverage the management skills of private enterprises, the productivity gains and cost savings which they will achieve, the innovations which they will provide and the possibility of using private investments instead of public financing, which can then be used for other projects.

\(^{12}\) The concept of “Open Access” refers to access to terrestrial or submarine fiber optic systems by operators or service providers (holders of a telecommunications operating license or permit to engage in the provision of telecommunications infrastructure or services) on non-discriminatory and transparent terms (for pricing and non-pricing aspects) and cost-based pricing.

\(^{13}\) An Internet exchange point (IXP) is a physical infrastructure through which Internet Service Providers (ISPs) and telecommunications operators exchange Internet traffic between their networks. The primary purpose of an IXP is to allow networks to interconnect directly, via the exchange, rather than through one or more third-party networks. The advantages of the direct interconnection are numerous, but the primary reasons are cost, latency, and bandwidth.
phones) broadband. Recent research\textsuperscript{14} indicates for example that a compound annual decline of 3\% in cost of broadband access in the Africa and Middle East region could increase penetration rate by more than 4 times by 2015. Given the penetration rate of broadband services in Mauritania as of December 2011, such multiplier effect\textsuperscript{15} is likely to have a significant effect in Mauritania: monthly prices for broadband decrease, in turn improving affordability and increasing uptake of broadband services throughout the territory.

11. \textbf{A regional telecommunications market is key for effective regional integration and growth.} Between 1995 and 2005, infrastructure improvements are estimated to have boosted West Africa’s growth by about one percentage point per capita per year. This positive contribution to growth was almost entirely attributed to the Information and Communication Technology (ICT) revolution while it is believed that a deficient power infrastructure held back economic growth by about 0.1 percentage point per capita per year.\textsuperscript{16} For Mauritania, the key ICT infrastructure need is to deploy a national backbone that can provide the whole population with low cost reliable connectivity, both internationally and domestically. Currently Mauritania has some fibre backbone infrastructure already built by the incumbent Mauritel or by private companies such as mining or utilities (shown in red in the Figure below) as well as under construction by Mauritel [Nouakchott – Aleg already operational; Aleg – Kiffa currently being tested; Kiffa – Aioun – Mali border under construction with expected end of works June 2013 (shown in green in the Figure below). However even by making use of this existing infrastructure, many populated areas are not covered in particular the region where the Senegal River forms the border with Senegal, where most of the agriculture is concentrated. For the regions with the highest immediate need for broadband, there are also severe reliability issues created by dependence on a single link, which can experience cable breakage for a variety of different reasons. The proposed network extensions to be financed under the proposed WARCIP Mauritania operation (shown in blue in the Figure below) will create the two core rings and the redundant connection with Mali\textsuperscript{17} (and other landlocked countries Burkina Faso and Niger) which will provide domestic backup and secure alternate international routes via Senegal to its submarine fibre hub where the SAT-3/WACS (and soon the ACE and Atlantis-2 cables) lands, and potentially to Morocco, where 8 different submarine cables land. Aside from improving reliability, this also provides competitive alternative routes to ACE, ensuring that domestic prices for international capacity are kept low. The link Aioun - Nema is needed to avoid the digital divide with the regional capital Nema, but will also contribute to improve the reliability of communications in an area where availability on accurate information could significantly improve the efficiency of herding\textsuperscript{18}. This will give Mauritania a secure and much more


\textsuperscript{15} The multiplier effect describes how an increase in some economic activity starts a chain reaction that generates more activity than the original increase.

\textsuperscript{16} Africa Infrastructure Country Diagnostic Report – ECOWAS’ Infrastructure: A Regional Perspective, April 2010

\textsuperscript{17} Exact route from Selibaby still under discussion with public and private stakeholders, with the following options being considered: 1/ Via Goureye (Mauritania) - Goureye (Senegal) to access existing fibres to both Mali and Senegal; 2/ Via Melga (Mauritania) - Gadiamou (Mali) with the need to build 50km from Kayes in Mali; 3/ Via Khabou (Mauritania) - Khabou (Mali) also with the need to build 50km from Kayes in Mali.

\textsuperscript{18} GoM is seeking financing for the link Sangrava –Tidjikja-Atar (in black in Figure above), either though donors or via the universal access fund.
affordable service, which will also see demand from across the nation's borders. If capacity is reliable and reasonably priced, Mali, Niger and Burkina Faso are all likely to purchase services on Mauritania’s national network to reach the ACE landing station. While these countries have other neighbors from which to obtain international capacity, most of them will be likely to route some of their traffic via Mauritania to maintain their restoration links in a fully redundant regional network. Low pricing for ACE capacity from Mauritania may attract even more demand as a primary route for these countries since, at least initially, the Mauritanian operators that have invested in ACE are likely to have substantial excess international capacity available. The IXP/Carrier Hotel/Datacenter building will give Mauritania a key infrastructure to install the service platforms to host e-applications and content to be developed by public and private stakeholders of the ICT sector, herewith leveraging ICT to transform service delivery across sectors.

Figure 1: Overview of key ICT infrastructure in Mauritania

Source: MDEFPNT

12. GoM has expressed interest in joining the West Africa Regional Communications Infrastructure Program (WARCIP) on October 5, 2011 and there is a strong regional rationale for a Mauritania Project under WARCIP. Although WARCIP applies to all West African countries, the Program cost was only calculated for ECOWAS members. The proposal to add Mauritania to this phase is based on the importance of Mauritania for achieving improved

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19 See Annex 6: Economic and Financial Analysis.
connectivity in the region. Mauritania is indeed a key building block of a Priority ICT regional backbone giving international connectivity to landlocked ECOWAS countries such as Mali, Burkina Faso and Niger as explained above. In addition Mauritania is a member of the West Africa Telecommunications Regulators Assembly (WATRA\textsuperscript{20}) together with the independent National Regulatory Authorities (NRAs) and departments for regulation of telecommunications services established by governments of the 15 ECOWAS member states. An operation in Mauritania will therefore be fully consistent with WARCIP’s objectives. GoM expressed interest in joining WARCIP on October 5, 2011 to finance some of the key building blocks of its a 2012-2016 Strategy for ICT and Modernization of Public Service, and restated its clear commitment to PPP and open access principles for the proposed routes to be financed under WARCIP. The WARCIP Mauritania project will in addition contribute to achieving the higher level objectives listed below.

C. Higher Level Objectives to which the Project Contributes

13. WARCIP Mauritania is fully consistent with GoM’s economic vision and the Millennium Development Goals. The third phase of Mauritania’s 2011-2015 poverty reduction program (PRSP3) is articulated around six pillars, of which Pillar I aims at Accelerating Growth and maintaining Macroeconomic Stability by developing the following growth supporting infrastructure: developing the whole transport sector, reinforcing electric power production and improving ICT access. More specifically, WARCIP Mauritania is fully consistent with GoM’s 2012-2016 Strategy for ICT and Modernization of Public Service mentioned above that will develop access for all to the information society and revise the legal and regulatory framework for ICT, paving the way for successful development of e-government and digital economy. ICT will contribute to job creation, which is of particular importance in a country like Mauritania that greatly needs to identify ways to diversify its highly concentrated economy. The project will also contribute towards realization of the Millennium Development Goals (Targets 1 and 2 by supporting economic growth, and Target 18 by making available the benefits of new technologies, especially information and communication).\textsuperscript{21}

14. WARCIP Mauritania is also fully consistent with the Africa Region Strategy “Africa’s Future and the World Bank’s Support to It” (March 2011) and the FY13-FY16 World Bank Country Partnership Strategy (CPS) FY2013-2017 currently under preparation (which is fully aligned with the AFR Strategy), the new WBG ICT strategy, as well as the Progress Report on the Regional Integration Assistance Strategy (RIAS) “Partnering for Africa’s Regional Integration” (March 2011). The AFR Strategy, and in line with it the proposed Country Partnership Strategy, rests on two pillars (I) Competitiveness and

\textsuperscript{20} WATRA was born out of the need to address present realities in the telecommunications industry in the sub-region while focusing on the need for West Africa to evolve a harmonized regulatory identity to boost investment and investors-confidence and to more effectively enhance the regulations of telecommunications services by contributing to human resource and capacity building efforts aimed at redressing the shortage of indigenous skills, competencies and capabilities in emerging information and communications technologies in the sub-region.

\textsuperscript{21} Target 1. Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day.

Target 2. Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Target 18. In cooperation with the private sector, make available the benefits of new technologies, especially information and communications technologies.
Employment and (II) Vulnerability and Resilience, and the strategic Foundation of Governance and Public Sector Capacity. ICT has been identified as a major driver for CPS pillar I and has an immense potential to provide innovative ways to enable citizen-centered governance (Foundation, CPS pillar III). The ICT strategic theme is fully reflected within the CPS under Pillar 1 – Competitiveness and Growth and, together with the West Africa Regional Fisheries project and the regional Senegal River Basin project, is an integral part of the Bank’s support to Mauritania’s regional integration agenda. WARCIP Mauritania is also fully aligned with the Connectivity pillar of the new WBG ICT strategy, which aims to scale up affordable access to broadband internet by supporting policy and institutional reforms for private investment in broadband as well as by a selective support of PPPs in frontier markets to promote affordable access for all. The RIAS update supports “completing the connection of countries to submarine cables and extending terrestrial fiber optic backbone networks into landlocked countries, on a strong PPP basis” – all key components of WARCIP Mauritania similarly to the previous phases of the WARCIP Program. As per the Bank’s Regional Strategy, the ICT component of the CPS intends to set in motion a process of transformative change by:

(a) **Leveraging partnerships.** The proposed operation builds upon the Bank’s convening power and leverages IDA resources through co-financing resources made available by the European Investment Bank (EIB). EIB financed €8 million from the US$25 Million share of Mauritania into the new ACE sub marine cable in accordance with PPP and Open Access principles. EIB is co-financing the proposed network extensions under WARCIP Mauritania (shown in blue in the Figure below) under the same principles. AfDB is funding a feasibility study for e-government applications identified in GoM’s 2012-2016 Strategy for ICT and Modernization of Public Service mentioned above (and that could be deployed nationwide using the connectivity deployed under WARCIP Mauritania) and may consider financing the roll-out of some of them later on. The African Union (AU) has awarded the Internet Society (ISOC) a contract to deliver community mobilization (best practices) and technical aspects workshops (hands-on) to support the establishment of Internet exchange points (IXPs) in thirty (30) AU Member States as part of Phase I of the African Internet Exchange System (AXIS) project, which includes Mauritania. As part of the first phase of the project, ISOC organized an AXIS Best Practices workshop in Nouakchott, Mauritania on February 18 and 19, 2013. ISOC and the AU are providing resources and preparing materials for a Technical Aspects Workshop that will seek to build capacity in terms of the technical aspects and human capacity required to establish, maintain, and sustain an IXP in Mauritania. ISOC could work with the AU and the World Bank to define further actions to follow up on the Best Practices Capacity Building and Technical Aspects Workshops (as defined under the AXIS project) in Mauritania. ISOC would implement such additional Technical Assistance as a complement to the AXIS project.

Formal request for co-financing by IDA and EIB was made by GoM in a letter dated November 12, 2012.

To mitigate the risks involved in infrastructure development and management, the 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.

Formal request to AfDB was made by GoM in a letter dated December 6, 2012.
(b) **Knowledge.** Sector dialogue was reengaged in FY11 (under TA P123095) and contributed with a Sector Note to GoM’s 2012-2016 Strategy for ICT and Modernization of Public Service. In FY13 sector dialogue is deepened (under TA P132810) to support GoM in finalizing its new Sector Policy and possibly in organizing its first international ICT event. The CPS FY2013-2017foresees further analytical work to complement lending.

(c) **Financing connectivity** under WARCIP Mauritania as envisaged in the CPS FY2013-2017, boosting regional connectivity and supporting a new wave of ICT reforms to accelerate broadband internet and reduce digital divide.

15. **Significant regional spillover benefits are expected under WARCIP Mauritania and the wider WARCIP Program.**

(a) **Improving connectivity in Mauritania accelerates the realization of an integrated regional ICT market which would stimulate economic growth and enhance trade in the region.** The AICD\(^{25}\) report highlights the importance of regional integration, in particular for smaller countries in the region which could each independently spend between 5-30% of their GDP on addressing infrastructure gaps, in contrast with 1% of regional GDP. Integrating and sharing physical infrastructure could allow countries to gain scale economies, harness regional public goods and enable deeper economic growth. A regional approach to addressing the combined effects of connectivity gaps could reduce the cost for each of the countries involved, and result in positive effects on prices and capacity, increased availability of end-to-end high-capacity bandwidth at competitive rates and hence broadband provisioning within the region. The contribution of such broadband networks to economic growth is much more pronounced than that of narrowband networks. Studies have confirmed that for every 10 percentage point increase in high-speed internet connections, there is an increase in economic growth of 1.3 percentage points.\(^{26}\) New businesses in the ICT and IT enabled services sectors are supported by improved access to high-speed internet.

(b) **Improving connectivity under WARCIP Mauritania and earlier phases of the WARCIP program will strongly benefit landlocked country Mali, Burkina Faso and Niger.** The proposed infrastructure under WARCIP Mauritania is regional/international backup: should there be a break between the Morocco border and Nouakchott (when the connection will be in place) or a break between the Mali border and Nouakchott, international traffic from Mauritania and other landlocked countries (Mali, and ultimately Burkina Faso and Niger when connected to Mali) can still flow through Mauritania and also towards the ACE landing station in Nouakchott. More generally connectivity financed under the WARCIP program ultimately contributes to a fully redundant regional network, allowing landlocked countries to access alternative and competitive routes to submarine landing stations in coastal countries.\(^{27}\) This will

\(^{25}\) AICD - ECOWAS’ Infrastructure: A Regional Perspective, July 2010
\(^{26}\) Word Bank - *Information and Communications for Development 2009: Extending Reach and Increasing Impact*.
\(^{27}\) The lack of regional/national competitive fiber infrastructure compared to the extent of supply and competition in submarine cables, is demonstrated by the fact that capacity from an African submarine landing station to Europe ($100-$300/Mbps/month) is usually cheaper than the in-country national backbone capacity ($500-
lead to lower wholesale costs for connectivity throughout the region, which will feed into lower retail prices for consumers and businesses.

(c) Implementing an up-to-date legal and regulatory framework in Mauritania enhances the harmonization of sector regulation that governs the ICT sector across the region, particularly under the umbrella of WATRA. Technical assistance under Component 2 of the project will support several key regulatory priorities of the regulatory authority as well as institutional and operational capacity building of the Line Ministry MDEFPNT in policy and regulation. This will lead to lower prices and better access to communications services, which will significantly improve foreign and local investment in the region\textsuperscript{28}, decrease the cost of doing business, increase the prospect for job creation and wealth generation and enable countries to reap the benefits of ICT as a platform to deliver services to their citizens.

(d) Building upon an existing successful PPP for international connectivity to implement a PPP for regional/national terrestrial links in Mauritania will provide incentives for other countries in the region showing reluctance to implement a PPP structure to join subsequent APLs of WARCIP. In most countries in Africa, the private sector is quite active in the sector. In order not to crowd out private investment, the WARCIP program focuses on putting in place PPP frameworks, where relevant, to leverage private sector investment and bridge the digital divide. Where private investment cannot be guaranteed upfront, the program provides guidance and resources to affect a clear exit strategy and transfer of public assets to private sector. In the case of Mauritania, interest by the private sector for a PPP is strongly motivated by the fact that the proposed routes are key for a fully redundant regional network but costlier to build (with a total CAPEX per km of US$25,048 compared to below US$20,000 per km according to latest data available) because of either a very solid soil (for Link 1) or a very floodable soil (for Link 2 and Link 3) along the path. A PPP approach enables to leverage funds from the public sector while sharing some of the risks associated with the adoption of a fast changing technology: the public sector plays the role of a catalyst to jumpstart and incentivize investment in access networks branching out of the backbone network and in application servers hosted in the IXP/Carrier hotel/Datacenter building with the expectation that the private sector will expand its role as the broadband business matures.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

16. The proposed project development objective (PDO) is to increase the geographical reach of broadband networks and to reduce the costs of communications services\textsuperscript{29} in the territory of the Islamic Republic of Mauritania.

\textsuperscript{28}Mauritania registered a real boom in foreign direct investment attraction during 2012 (more than USD 1 billion).

\textsuperscript{29}All the other countries that are covered or will be covered by WARCIP phases use the same PDO.
B. Project Beneficiaries

17. Direct beneficiaries of the project include people connected to the communications network in Mauritania (including telecommunication services and internet users, schools, hospitals, banks, corporations, government and public administrations), to be measured as the number of active fixed and mobile subscribers. Indirect beneficiaries potentially include all of the country’s population, since increased communications capabilities at affordable rates for some of the population may eventually have externalities for all in terms of an improved business environment. Because ICT are enabling tools for economic development and social change, they are a particularly valuable resource for women in developing countries who often suffer from limited availability of time, social isolation, and lack of access to knowledge and productive resources.

C. PDO Level Results Indicators

18. Achievement of the development objectives of WARCIP2 will be assessed through the key monitoring and evaluation indicators summarized in the Figure below. These indicators were retained in all APLs of regional connectivity projects such as CAB or RCIP because they enable to assess either the level of communications services within targeted countries or the competitiveness of countries with regards to cost of capacity regionally.

19. Market trends observed recently in East and Southern Africa, where new competitive submarine cables have now been in place for over a year and where data has recently been made public, confirm that these key monitoring and evaluation indicators are appropriate to capture major consequences of the combination of Component 1 - Supporting Connectivity and of Component 2 - Creating an Enabling Environment for Connectivity of WARCIP2, without large risks that exogenous factors will intervene to derail them. When investments in fiber infrastructure to access international connectivity are made in accordance with PPP and open access principles, bandwidth prices fall substantially and consumption/demand increases dramatically in the targeted country; this will adequately address the key issues of limited geographical reach of broadband networks and high costs of broadband services in the territory of Mauritania identified in the Sectoral and Institutional Context section above.

20. Intermediate Results Indicators will assist in measuring more specifically the results of Component 1 - Supporting Connectivity and of Component 2 - Creating an Enabling Environment for Connectivity (see Annex 1).

30 Internet subscribers not accounted to avoid double counting
III. PROJECT DESCRIPTION

A. Project Components

21. Similarly to APL 1-A, 1-B and 1-C, there are four guiding principles for WARCIP 2: (i) exploring PPP arrangements to avoid crowding out the private sector and minimize public investments where needed, (ii) leveraging existing infrastructure for connectivity especially for cross border connections, (iii) facilitating conducive regulatory environment to ensure open and competitive access to infrastructure and (iv) exploring a mix of Bank instruments to reach the final vision of fully integrated networks (including new connectivity components in existing projects and new operations). As outlined in the program PAD for WARCIP, all WARCIP projects are designed around three components as follows: Component 1 – “supporting connectivity”, Component 2 – “creating an enabling environment for connectivity” and Component 3 – “project implementation.”

22. WARCIP Mauritania will be executed over a five-year period with a total IDA financing of US$30.0 million and will include a set of well-defined project activities grouped under three broad components (see Annex 2 for a detailed breakdown of the proposed project components).

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31 Chosen to coincide with the Base line of the 2012-2016 Strategy for ICT and Modernization of Public Service approved by GoM on March 22, 2012
(a) **Component 1- Supporting Connectivity (US$21.5 million in IDA, and US$19.2 million in joint co-financing from EIB):** This component will include the following activities, on the basis of an open access and PPP structure to leverage private sector investment: (a) building 4 fiber optic missing links (Link 1: 531km Nouakchott-Atar-Choum; Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa; Link 3: 280km Aioun-Nema; Link 4 – 43km Selibaby towards (directly or indirectly) Mali border) to provide redundancy connectivity for cross-border links towards ECOWAS - namely towards landlocked countries Mali, Niger and Burkina Faso - and towards North Africa (via the connection with Morocco when the connection will be in place) as well as dissemination of international connectivity to most provincial capitals contributing hereby to reducing the urban/rural divide in the sub-region and a IXP / Carrier hotel / Datacenter building ; (b) establishing a national and regional Internet Exchange Point (IXP32) in this IXP / carrier hotel / datacenter building.  

(b) **Component 2 - Creating an Enabling Environment for Connectivity (US$5.3 million):** This component will include the following activities, that have been identified taking due account of the strategic projects of the 2012-2016 Strategy for ICT and Modernization of Public Service: (i) Technical Assistance (TA) to implement Open Access Regime & PPP for national backbone including transaction/legal, regulatory and economic/financial support as well as supporting the drafting of the technical tender for backbone links and for IXP/Datacenter; (ii) TA on key regulatory priorities (develop technical, financial, and operational conditions to access existing fibers; define fiber interconnection and sharing regulation tools; define Reference Offer for International Connectivity; develop cost models for interconnection (fixed and mobile) and for broadband wholesale offers including facility sharing and support in defining the relevant markets and approving the interconnection catalogue; set up an observatory of the telecoms/ICT sector)34; (iii) TA to set up an Internet Exchange Point (IXP) and to design a management policy for “.mr” domain name; (iv) TA on broadband stimulation strategies, including supporting ISPs creation, using universal access funds and costing

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32 An Internet exchange point (IXP) is a physical infrastructure through which Internet Service Providers (ISPs) and telecommunications operators exchange Internet traffic between their networks. The primary purpose of an IXP is to allow networks to interconnect directly, via the exchange, rather than through one or more third-party networks. The advantages of the direct interconnection are numerous, but the primary reasons are cost, latency, and bandwidth.

33 A carrier hotel, also called a collocation center is a secure physical site or building where data communications media converge and are interconnected. It is common for numerous telecommunications operators and service providers to share the facilities of a single carrier hotel. Co-location allows multiple customers to locate network, server, and storage gear—and connect them to a variety of telecommunications and network service providers (ensuring neutrality towards any operator or service provider) — with a minimum of cost and complexity. A carrier hotel provides collocation, offering various services to customers ranging from modest-sized racks to dedicated rooms or groups of rooms (offering herewith the appropriate environment to set up data centers). In developed countries, carrier hotel can be of sizeable magnitude (often containing more than 5000 square meters (approximately 54,000 square feet). In our case, the carrier hotel will be much smaller.

34 Following the 2012-2016 Strategy for ICT and Modernization of the Public Service, the Regulatory Authority ARE has awarded (on own funds) a major study to an internationally renowned consulting company to draft a new telecoms legal and regulatory framework (the telecoms Law dates back July 11, 1999), which is expected to be approved by the Council of Ministers by End of April 2013. WARCIP Mauritania will support MDEFPNT and ARE in the implementation of this new telecoms legal and regulatory framework for key regulatory priorities related to the development of broadband service in Mauritania.
and leveraging national postal operator Mauripost network, and associated action plan;
(v) TA on a sector fiscal study; (vi) TA to develop institutional and operational
capacities of MDEFPNT and other beneficiaries in policy and regulation, including
training and (vii) Control/evaluation of backbone and Internet Xpoint and Carrier
hotel/Datacenter building works.

(c) Component 3 – Project Implementation (US$3.2 million): This activity will (i)
finance environmental and social studies, including their implementation and/or the
monitoring of their implementation, (ii) provide support needed to strengthen the
capacity of GoM to implement WARCIP Mauritania, including setting up a Project
Implementation Unit (PIU) located within the Line Ministry (see below), covering office
equipment and some operating costs, trainings on Bank’s project cycle and procurement
and FM guidelines of Bank funded projects, and (iii) finance audits, monitoring and
evaluation (M&E) including appropriate actions to support efficient data collection, and
communication.

B. Project Financing

Lending Instrument

23. The instrument is an investment Adaptable Program Loan (APL). WARCIP
Mauritania is part of APL 2 of the regional WARCIP program. The objectives of WARCIP
Mauritania are fully in line with the objectives of the WARCIP program.

24. Activities under WARCIP Mauritania meet the regionality criteria and therefore
are eligible for regional IDA funding.

Project Cost and Financing

25. Total project financing requirements for WARCIP Mauritania are estimated at
US$51.5 million (see Figure below). The IDA US$30.0 million financing represents 58% of
total project costs, with the remaining costs financed through a combination of joint US$19.2
million co-financing by European Investment Bank (EIB) and counterpart co-financing by
GoM. The Bank and the EIB will jointly co-finance the 4 fiber optic missing links (Link 1: 531km
Nouakchott-Atar-Choum; Link 2: 723km Rosso-Boghe-Kaedi-Selibaby-Kiffa; Link 3: 280km
Aioun-Nema; Link 4: 43km Selibaby towards (directly or indirectly) Mali border) as
well as the neutral IXP/carrier hotel/datacenter building. GoM will co-finance through parallel

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35 In the future, these multi-phase operations will be presented as “Series of projects”, given changes in OP 10.0
effective April 8, 2013.
36 Following clarification by the EIB that it will lend exclusive of taxes, GoM exempts the project from import
duties as well as from the Value Added Tax and other possible taxes.
37 For joint co-financing, donors contribute towards financing the same individual contract/expenditure/invoice.
There is complete harmonization among donors with regard to procurement and attendant anti-corruption policies as
well as for safeguard policies.
38 Formal request for co-financing by IDA and EIB was made by GoM in a letter dated November 12, 2012.
financing\textsuperscript{39} (i) for US$1.00 million two activities from the 2012-2016 Strategy for ICT and Modernization of Public Service key to leverage the new connectivity (Set up a National Data Center in the building built under Component 1 and Set up an electronic certification provider to foster national data usage on the fully redundant regional network obtained through Component 1) and (ii) US$1.30 million for some of the operating costs of the PIU and of the social and environmental safeguards. In addition, GoM will provide support to the project in financing the salaries of the coordinator and the deputy coordinator and making office space available (not reflected in the table below).

26. Terms and conditions will apply as follows: 40 years with 10 year grace period and 2\% per annum for years 11-20 and 4\% per annum for years 21-40 interest rate for IDA\textsuperscript{40}; 15 years with 5 year grace period and interest rate of 0.75\% for EIB (indicative). EIB board date is indicatively set for July 2013, and availability of the funds will be harmonized to ensure effectiveness of the IDA legal documents as soon as possible while ensuring both IDA’s and the EIB’s funds are available when disbursements are expected to start under the jointly co-financed contracts.

\textsuperscript{39} For parallel co-financing, donors contribute toward the financing of separate contracts/expenditures/invoices under the same project, so that one donor is solely responsible for one such item exclusively.

\textsuperscript{40} See OP 3.10 — Annex D, dated March 2013.
Figure 3: Total Costs and Financing Sources for WARCIP Mauritania (US$ million)

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Project cost</th>
<th>IDA Financing</th>
<th>EIB Financing (joint co-financing)</th>
<th>GoM counter-part funding (parallel co-financing)</th>
<th>% Financing*41</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Supporting Connectivity</td>
<td>40.7</td>
<td>21.5</td>
<td>19.2</td>
<td>0.0**</td>
<td>100%</td>
</tr>
<tr>
<td>2. Creating an Enabling Environment for Connectivity</td>
<td>6.3</td>
<td>5.3</td>
<td>0.0</td>
<td>1.0***</td>
<td>100%</td>
</tr>
<tr>
<td>3. Project Implementation (including environmental and social safeguards)</td>
<td>4.5</td>
<td>3.2</td>
<td>0.0</td>
<td>1.3****</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total Baseline Costs</strong></td>
<td><strong>51.5</strong></td>
<td><strong>30.0</strong></td>
<td><strong>19.2</strong></td>
<td><strong>2.3</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Including Physical and Price contingencies: 1.9

**Total Project Costs**

| Interest During Implementation Front-End Fees | 51.5 | 30.0 | 19.2 | 2.3 | 100% |

**Total Financing Required**

* GoM exempts the project from import duties and from the Value Added Tax and other possible taxes.

27. **A Project Preparation Advance (PPA) of US$2.00 million was signed on February 1, 2012** to be used for studies related to setting up the Open Access Regime and Public Private Partnership for the proposed routes and to supporting regulatory priorities (develop technical, financial, and operational conditions to access existing fibers; define fiber interconnection and sharing regulation tools; define Reference Offer for International Connectivity), and for developing the Project Implementation Manual (PIM) and the Administrative and Accounting Manual of Procedures, disclosure and consultation on environmental and social safeguards documents and covering the cost of setting up the Project Implementation Unit (PIU). As of March 25, 2013, US$421,536 out of the US$2.00 million has been disbursed (22% disbursement)

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41 “% of Financing” refers to overall project cost, not eligible expenditures.

42 GoM may contribute as well through the valuation of the land adjacent to the existing ACE landing station on which the IXP/Carrier Hotel/Datacenter building will be established, should the building not be establish on the site of the ACE landing station which is owned by state-owned Mauripost.

43 During the PPA, GoM already financed via APAUS with 0.1 US$ million the feasibility study and the detailed fibre optic route survey during project preparation. ARE financed also on own funds a 0.3 US$ million assistance to draft a new telecom sector policy note and a new electronic communications law. The 1 US$ counterpart funding mentioned in the Figure is to finance key actions from the 2012-2016 Strategy for ICT and Modernization of Public Service to leverage the new connectivity: (433) Set up a National Data Center (“Mettre en place un Centre National de Données (CND”) and (435) Set up an electronic certification provider (“Mettre en place un prestataire de certification électronique”).

44 0.40 to finance safeguards implementation and 0.90 to finance PIU operating costs (total of UM 240 million over 5 years).
rate) and a direct payment request of approx. US$342,134 is being processed (38% disbursement rate).

28. **Involvement of IFC and MIGA in the operation has been considered.** Some private operators or potential ISPs in Mauritania have approached or may approach IFC and/or MIGA for financing and/or the provision of political risk insurance.

C. Program Objective and Phases

29. **The proposed operation is the second horizontal phase** of the West Africa Regional Communications Infrastructure Program (WARCIP) and deals with Mauritania and Togo. WARCIP is a World Bank Group regional instrument that seeks to contribute to increasing the geographical reach of broadband networks and reducing costs of communications services in West Africa.

30. **Mauritania fully meets the triggers to participate in the WARCIP Program.** As indicated in the WARCIP Program PAD approved by the Board in January 2011, countries join different phases of the program based on their readiness. Triggers include (i) government commitment to liberalization and open access principles, (ii) existence of 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. Mauritania fully meets the triggers to participate in the WARCIP Program. The sector is fully liberalized and highly competitive and Mauritania has already implemented a PPP/open access framework that they elaborated for the country connection to the Africa Coast to Europe (ACE) submarine cable.

D. Lessons Learned and Reflected in the Project Design

31. **Government commitment and ownership of the proposed project is important.** The team recognizes the importance of client ownership for an efficient implementation of project activities. GoM has confirmed their strong interest in participating in the WARCIP program and specifically requested support from the Bank. The proposed project design has been guided by the recently revised telecommunications sector national policies in Mauritania. The project design fully reflects the intent, interest and priorities of the various beneficiaries and

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45 The approved WARCIP Phases are as follows:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Countries</th>
<th>Approval date</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>APL 1A</td>
<td>Liberia and Sierra Leone</td>
<td>January 20, 2011</td>
<td>US$ 56 million</td>
</tr>
<tr>
<td>APL 1B</td>
<td>Guinea, The Gambia and Burkina Faso</td>
<td>June 21, 2011</td>
<td>US$ 92 million</td>
</tr>
<tr>
<td>APL 1C</td>
<td>Benin</td>
<td>June 15, 2012</td>
<td>US$ 35 million</td>
</tr>
<tr>
<td><strong>TOTAL APL 1</strong></td>
<td></td>
<td></td>
<td><strong>US$ 183 million</strong></td>
</tr>
</tbody>
</table>

46 The WARCIP2 PCN dealt with Mali, Mauritania and Togo. However, due to the political situation, the Government of Mali did not prepare a formal request and Mali had to be dropped from the APL2 and postponed to a subsequent APL.
stakeholders, in particular the different institutions in charge of defining and/or implementing sector policies and regulations (in Mauritania: MDEFPNT, ARE, APAUS).

32. **PPP arrangements avoid crowding out the private sector and open and competitive access to the infrastructure is facilitated by the proposed project.** Emerging international best practice (e.g. Kenya, Tanzania, Rwanda and Uganda) indicates the best management structures for high capacity broadband networks are under PPPs. Integrating the private sector brings access to private capital, reduced public sector operational risk, faster project deliveries, project management skills, entrepreneurship and innovation. The open access non-discriminatory treatment of all entities, fosters transparency, facilitates market entry, and promotes reasonable tariffs, maximizing the project’s developmental contribution. Lessons learned from similar operations under regional connectivity projects such as WARCIP, CAB and RCIP indicate that PPP and Open Access discussions often run into obstacles when it comes to the practical detail of how to implement PPP and Open Access principles. WARCIP Mauritania is financing extensive legal and regulatory technical assistance under the PPA for GoM to discuss and select in close interaction with the private sector the preferred between the 2 options singled out with all stakeholders during pre-appraisal missions: Option 1 consists in expanding the activities of the existing PPP IMT to the construction and/or maintenance and commercialization of backbone links and technical building\(^{47}\). Option 2 consists of selecting via an international open and transparent tender a private operator to market or develop and market the backbone links and technical building.\(^{48}\)

33. **Technical assistance is needed to support implementation of project activities.** Experience in several countries has shown that significant capacity is needed for negotiations with the private sector to establish PPP arrangements. Given the low capacity of the institutions involved in project implementation, WARCIP 2 provides financing for extensive technical assistance to allow for detailed design of the PPP agreements and other technical activities under the project, with significant involvement financed by the PPA. The technical assistance will also provide support, where needed, for the formulation of the bidding documentation and technical specifications in relevant project components. Policy and 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, Mauritania could benefit from the extensive experience of other countries in this area. The proposed project focuses on building this capacity in the Line Ministry and regulatory authority in Mauritania by using in-house training, study tours, twinning arrangements and creating opportunities for peer-to-peer learning from more advanced regulators and the sharing of experiences).

\(^{47}\) IMT is a Special Purpose Vehicle (with UM 100 million UM capital) created June 1, 2010 (for 99 years) to own and operate the submarine cable capacity and landing station. The 25 US$ million investment in ACE was split amongst shareholders as follows: 35% state owned Mauripost (carrying the Government shares), 20% Mauritel, 20% Mattel, 15% Chinguitel and 10% private investor. The president of IM is on a yearly rotating basis a representative of the shareholders. The staff of IM should be kept minimal. According to its rules of incorporation IMT responsibilities can be expanded to missing links of the national and regional backbone not build by the operators.

\(^{48}\) The tender would specify the minimum build-out of links, QOS, technical and interoperability standards, and service license terms. In addition to a technical prequalification process, the license would be awarded to the operator (or group of investors) that requires the lowest capital contribution from GoM (i.e. lowest subsidy).
34. **When available, in country expertise should be factored into project implementation arrangements.** As the project will support the Line Ministry in key priorities of the new 2012-2016 Strategy for ICT and Modernization of Public Service, the team is proposing to use an implementation arrangement already successfully applied in the transport sector, whereby the WARCIP Mauritania coordinator will be a senior government official within the Line Ministry in charge of overseeing the effective implementation of the strategy (counterpart funding). Given the limited availability of qualified staff for procurement and financial management within the Line Ministry, specialists will be hired and paid by the project as well as a technical expert to support on specific technical inputs needed by the project and M&E (including environmental and social safeguards). This staff will be trained within an existing strong PIU called PRECASP (which is also the PIU entrusted with the fiduciary activities of the PPA). A steering committee involving all stakeholders involved in policy and regulatory (MDEFPNT, ARE, APAUS) will provide overall policy and strategic direction, as well as general project oversight and overall operative guidance during implementation.

35. **The project incorporates lessons learned and builds upon experience of World Bank-financed telecommunications/ICT projects and programs.**

   (a) **The project builds on general lessons learned in the ICT sector.** Key lessons learned and applied to the project design are: (i) PDOs should be realistic, focused and achievable in the country, sector and implementing agency context; (ii) project components should support country priorities and have broad ownership among stakeholders; (iii) project design should be flexible to adapt to a rapidly changing environment; (iv) 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.

   (b) **The project builds also on specific lessons learned in preparation of phase of several telecommunications projects (WARCIP APL 1A, APL 1B and APL 1C as well as from CAB APL 2, APL 3 and APL 4 and from CARCIP).** The Bank has developed a good experience in coordinating and financing similar connectivity projects in the world in general, and Africa in particular. In the East and Southern Africa, the World Bank has approved a US$424 million Regional Communications Infrastructure Program (RCIP) covering about 25 countries. The WBG also approved a US$215 million Central Africa Backbone project which will leverage existing fiber and provide improved connectivity to the region. The Caribbean Infrastructure Program (CARCIP) is a US$98 million program approved by the Board in May 2012. These experiences are being leveraged in the preparation of WARCIP APL2. Specific lessons include safeguard issues related to broadband networks, formulation of tailored PPP arrangements and open access principles to support the expansion of broadband networks and collaboration with Development Partners. Additional lessons related to implementation difficulties and limited capacity on FM, procurement and M&E functions witnessed in previous WARCIP phases have been taken into account in the design of WARCIP APL2.

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49 See GALLEGOS, D., Partnerships for Broadband: Innovative public private partnerships will support the expansion of broadband networks, ICT Policy Notes, June 2012.
Finally, to ensure smooth processing, the WARCIP Mauritania project incorporates general good practice and lessons learned from managing multi donor operations in the Africa Region as well as specific lessons from recent Bank’s projects co-financed with EIB, such as the Lom Pangar Hydropower Project (P114077) in Cameroon or the Zambia Kafue Town - Muzuma - Victoria Falls Regional Transmission Line Reinforcement Project (P124351). The Bank and the EIB are discussing a Memorandum of Understanding (“MoU”) to cooperate and coordinate their respective arrangements in relation to procurement of goods and works and on safeguard matters under the jointly co-financed Project. A draft MoU has been finalized and is going through final reviews by the legal teams of the respective institutions.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

37. The Line Ministry MDEFPNT will lead the implementation of WARCIP Mauritania. To ensure coordination with all beneficiaries of the project (MDEFPNT, ARE and APAUS) and involvement of other governmental stakeholders, a National Connectivity Steering Commission (“comité de pilotage du projet de connectivité nationale”) was established by Ministerial Decision n°679/MDEFPN from March 21, 2012, in charge of providing overall policy and strategic direction, as well as general project oversight and overall operative guidance during project implementation.

38. Because WARCIP Mauritania will support key strategic goals of the 2012-2016 Strategy for ICT and Modernization of Public Service, a small WARCIP Mauritania PIU will be set up in the Line Ministry with overall responsibility for smooth project implementation and coordination with the Bank and EIB. The small PIU is comprising of a technical expert (also in charge of M&E, including environmental and social safeguards), a procurement specialist, a financial and administration specialist, an accountant and an assistant financed by the project. The coordinator and the deputy coordinator of WARCIP were chosen so as to coincide with senior governmental positions directly entrusted with implementing the 2012-2016 Strategy and financed by GoM counterpart funding: as per Ministerial Instruction n°109/012/MDEFPN from March 26, 2012, the coordinator is the Advisor for New Technologies of the line Minister and the deputy coordinator is the Director General in charge of ICT in the Line Ministry. The WARCIP Mauritania PIU was incubated during the PPA in the PIU of an existing Bank project (PRECASP), with PRECASP being responsible for compliance with Bank’s procurement, financial management and M&E (including safeguards) policies. It is expected that following successful evaluation by the Bank’s procurement and financial management specialists, responsibilities will be handed over from PRECASP to WARCIP Mauritania after negotiations but before Board. The WARCIP PIU is physically located within an existing building of the Line Ministry, in immediate vicinity of the teams in charge of implementing the 2012-2016 Strategy for ICT and Modernization of Public Service.

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50 See Learning Guide for Task teams, Draft #20, August 2011.
51 A similar arrangement has been successfully implemented in Mauritania in the transport sector.
52 At Mid Term Review, readiness to have the PIU more aligned with country system will be assessed, which should help with the sustainability of the work supported by WARCIP Mauritania.
39. To ensure smooth implementation of the project on a day to day basis, a technical team was set up to assist the National Connectivity Steering Commission, comprising of representatives of the beneficiary institutions as well as the coordinator and the deputy coordinator of the WARCIP PIU. While all procurement, financial management, M&E (including safeguards) activities will be centralized and carried out by the WARCIP Mauritania PIU, the beneficiary institutions MDEFPNT, ARE and APAUS will participate actively by contributing their expertise and knowledge in preparing TORs, evaluations, participation in selection committees, etc.

B. Results Monitoring and Evaluation

40. The PIU will monitor and evaluate the project. The PIU will bear the primary responsibility for project 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. ARE will be responsible for collecting the relevant PDO Level Results Indicators and Intermediate Results Indicators (see Annex 1), because these are usually collected by the regulatory authority in the context of its market oversight duties. The PIU will submit to the National Connectivity Steering Commission the M&E biannual reports that will include the updated Results Framework and the Action Table as well as the environmental and social safeguards indicators, listing the corrective actions to be implemented with deadlines and persons responsible clearly identified. The report will be sent to the Bank and the EIB for information (see Annex 3 for detailed information).

41. 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, ISPs 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.

42. Implementation support missions will be conducted at least twice a year. GoM, through the PIU, may perform evaluations jointly with the World Bank and the EIB team and conduct supervision or implementation support missions at least twice a year. Missions will be based on the latest biannual implementation and financial monitoring reports prepared and submitted by the PIU.

C. Sustainability

43. Sustainability of the proposed project is determined by GoM’s commitment and private sector participation. GoM is highly committed to the project, as it is fully aligned with

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53 ARE will get its information directly from the operators and ISPs and will conduct surveys as appropriate; in order to ensure a smooth and regular collection of information, ARE must identify within each source of data a focal point that will serve as ARE’s counterpart for M&E so that the person can anticipate data collection and the necessary resources and provide data to ARE. Indicators will be collected yearly as a minimum but ARE will endeavor to collect them every 6 months.
its 2012-2016 Strategy for ICT and Modernization of Public Service, this strategy being itself aligned with the broader Mauritania’s 2011-2015 poverty reduction program (PRSP3), increasing the sustainability of the project outcome. GoM is also committed to expand implementation of PPP and Open Access principles already successful with international connectivity to the backbone links to be financed under WARCIP Mauritania, ensuring an effective operation and maintenance of the infrastructure. In Africa, private companies have demonstrated, almost without exceptions, that they are more capable of operating telecommunications networks and delivering services than public-owned entities.

44. **Improved access and lower prices will be sustained.** Improved service coverage and quality at more competitive prices for international, regional and national connectivity and for data services will be sustained as it will create opportunities for advanced applications via the ICP/carrier hotel/datacenter, using more bandwidth and creating more traffic.

45. **Local capacity will be strengthened through training and technical assistance.** The project will make significant investments in capacity-building efforts through training and technical assistance to build technical expertise, social capital and knowledge. The WARCIP PIU will also be physically located within an existing building of the Line Ministry, in immediate vicinity of the teams in charge of implementing the 2012-2016 Strategy for ICT and Modernization of Public Service. With the focus on building sustainable capacity in key institutions such as the line ministry and the regulatory authority, the benefits of the project are expected to last far beyond program completion. As such, capacity will support the creation of ICT policy and regulatory know-how to guide sector growth and transformational applications in the future.

V. **KEY RISKS AND MITIGATION MEASURES**

A. **Risk Ratings Summary Table**

<table>
<thead>
<tr>
<th>Risk</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Stakeholder Risk</td>
<td>S</td>
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<td>Implementing Agency Risk</td>
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<td>- Capacity</td>
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<td>- Governance</td>
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<td>Project Risk</td>
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<tr>
<td>- Design</td>
<td>S</td>
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<tr>
<td>- Social and Environmental</td>
<td>S</td>
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<tr>
<td>- Program and Donor</td>
<td>M</td>
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<tr>
<td>- Delivery Monitoring and Sustainability</td>
<td>S</td>
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<tr>
<td>- Other ( Delays in passing the communications law)</td>
<td>M</td>
</tr>
<tr>
<td>- Other ( Possible resistance from Mauritel)</td>
<td>M</td>
</tr>
</tbody>
</table>

L – Low;  M – Moderate;  S – Substantial;  H - High
B. Overall Risk Rating Explanation

46. The overall risk for preparation is rated S (substantial) based on country risks and the necessary commitments at the national level to establish the PPP in a highly competitive environment with a dominant incumbent operator: while there are a number of risks involved, the PPA will allow for these risks to be contained and appropriate mitigation measures to be put in place given high commitment GoM and already from private sector stakeholders. The project will not be constructed on, or pass by, any dispute territories (see annex 3).

47. The overall risk for implementation is rated S (substantial) as well due to the country risks, to the risks linked to the timely implementation of infrastructure and to the risks linked to weak implementation capacity in terms of Financial Management, Disbursements and Procurement.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

48. Construction of missing links to Mauritania's regional and national fibre optic backbone is the most cost-effective long-term solution for improved access to broadband and other communications services in the territory of Mauritania as well as for providing important alternative routes to international connectivity in the region. Financial analysis was performed for the proposed missing links in Mauritania. Without a reliable and affordable broadband network in place, the benefits of Mauritania's recent investment in the ACE submarine cable and landing station according to PPP and Open Access principles will not be fully realized: (i) areas of the country will not have access to the low cost international connectivity now available at Nouakchott and the areas already covered by fiber will be vulnerable to high costs and service interruptions due to the lack of alternative routes and of a redundant ring structure to the network; and (ii) important alternative routes to international connectivity will not be provided for landlocked country Mali and potential upstream traffic via Mali from Niger and Burkina Faso, as well as a potential restoration route for Senegal. ACE international connectivity being Ready For Service since December 2012, the capacity in use is expected to increase dramatically due to the lower prices expected. This will create substantial additional pressure to ensure reliability of service, and new demand from the population in areas that expect to benefit similarly from the developments, but do not yet have access to low cost national fiber infrastructure. The analysis considered a variety of technical options and

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54 Based on the report and financial model developed by Sofrecom on behalf of APAUS (see: Etude de faisabilité technico-économique d’un réseau national de fibres optiques en Mauritanie, 2011), complemented by the business model developed by the Consultant CADMOS/JIDCOM/PROGRESSUS/BIRD&BIRD advising GoM on the PPP (see: Présentation de différentes options envisageables de « PPP (Partenariat Public Privé) / Accès Ouvert au Réseau » pour la construction et l’exploitation des tronçons du backbone national financés dans le cadre du projet WARCIP Mauritanie, 2013) as well as economic and financial analysis conducted jointly with EIB.

55 The Government of Mauritania has set up a Public Private Partnership (PPP) with the 3 mobile operators (incumbent Mauritel having been privatized some years ago) to finance and operate according to open access principles the landing station of the ACE submarine cable. It is the first time ever that Mauritania will have direct access to international fiber optic connectivity.
concluded that terrestrial fiber cable has an advantage over satellite and radio wave alternatives in terms of price and quality of service to disseminate international connectivity throughout the country and to its borders.

49. **The WARCIP Mauritania project will result in a suitable economic return for Mauritania over a 20 years period.** All scenario as well as sensitivity analysis on the CAPEX show positive IRR after 20 years. Base case and optimistic case have a positive NPV indicating an IRR after 20 years equal or greater than 10%, and the conservative case with 9.7% is very close to 10% IRR. The project would be cash flow positive between 2032 and 2034 depending on the scenario. In case of higher CAPEX all scenario show IRR between 8 and 9%, whilst in case of lower CAPEX all scenario show IRR between 12% and 15%. However, as the missing links will be procured according to ICB, it is expected that the CAPEX are unlikely to exceed $39.5 million. In the base case scenario, assuming a discount rate of 10%, the project is estimated to have a NPV of $US2 million over 20 years and an IRR of 11%, breakeven payback occurring in 2032. In the optimistic case scenario, assuming a discount rate of 10%, the project is estimated to have a NPV of $US6 million over 20 years and an IRR of 11%, breakeven payback occurring in 2032. The financial analysis confirms GoM and private sector preliminary view that the proposed routes are appropriate candidates for a PPP.

50. **The project will increase access to internet, create jobs, improve education opportunities and public administration and increase government revenues.** The project will bring significant benefits to Mauritania in a number of ways including (i) increased public access to Internet services (ii) a broad range of social benefits through increased labor productivity, employment creation, learning opportunities for youth, participation by women in the labor market, and improved public administration (iii) greater fiscal returns due to new sources of revenue for the GoM. Because ICT are enabling tools for economic development and social change, they are also particularly valuable resource for women in developing countries who often suffer from limited availability of time, social isolation, and lack of access to knowledge and productive resources. It must be noted, however, that the economic and financial benefits of a technical assistance component is generally difficult to quantify because of the inadequacy of data available at the outset.

**B. Technical**

51. **Due diligence has been made on the investments associated with the proposed routes under WARCIP Mauritania, confirming a total Capital Expenditure (CAPEX) of US$ 39.5 million**\(^5\) (including contingencies of 7%). The estimated average total CAPEX per km for the project is US$25,048 to be compared with an Average Cost per Km to Deploy Fiber Optic Networks (Excluding Highest and Lowest) in Africa of US$27,846 (according to a sample historical data available to the Bank’s ICT unit). More recent data indicate that this Average Cost is currently below US$20,000 per km in standard soil conditions. Detailed soil analysis currently undertaken by APAUS along the roads that will be followed by the fiber optic cables confirmed

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5\(^{5}\) The Component 1- Supporting Connectivity foresees a total of US$40.20 million, of which (i) US$39.50 millions for building 4 fiber optic missing links (Link 1: 531km Nouakchott-Atar-Choum ; Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa ; Link 3: 280km Aioun-Nema ; Link 4 – 43km Selibaby-Mali border) and (ii) US$0.70 million for establishing national and regional Internet Exchange Point (IXP) in a neutral carrier hotel / datacenter building
that Link 1 is more costly because of high proportion of very solid soil along the path and Links 2 and 4 because of high proportion of floodable soil along the path. Link 3 by contrast is closer of a standard type of soil along the path.\textsuperscript{57}

52. The concept of “Public-Private Partnership” refers to the arrangements (covers contracts, agreements, licenses, etc.) between one or more public sector entities and one or more private sector entities concerning the financing, ownership, governance and/or operation of the infrastructure. Public-Private Partnerships enables a government to leverage the management skills of private enterprises, the productivity gains and achievable cost savings, provided innovations and the possibility of using private investments instead of public financing, which can then be used for other projects.

\textbf{Figure 4: Overview of Public Private Partnerships}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4.png}
\caption{Overview of Public Private Partnerships}
\end{figure}

\textbf{NB} Although the key features of each category are summarized, there is overlap between the categories and the name given to a particular agreement may not reflect this classic categorization. Care should also be taken to identify whether a specific classification is enshrined in the laws of the host country, as in the case of many civil law jurisdictions where there are strict definitions of “concessions” and “affermages”.

\textit{Source: http://ppp.worldbank.org/public-private-partnership/}

53. GoM consulted with the private sector on 2 main options for the Public Private Partnership for WARCIP Mauritania identified during project preparation:

\begin{itemize}
\item[(a)] \textbf{Option 1 can be characterized as a “Shared Infrastructure/Consortium Model”}\textsuperscript{58}. Under this approach, private operators form or consortium to build and operate backbone networks in underserved areas. By providing public resources to the consortium, the government can ensure that the network meets public policy objectives such as focusing investment on areas not served by private operators, ensuring cost-oriented wholesale prices, and ensuring nondiscrimination between purchasers of service. An example of this option in terrestrial fiber networks has been used in Burundi with the national
\end{itemize}

\textsuperscript{57} See: Preliminary Survey report from Quantum Services for APAUS (Rapport de survey Mai 2012, Projet Réseau National Fibre Optique Mauritanie).

backbone project. Option 1 in the case of Mauritania would consist of expanding the activities of the existing PPP IMT to either build and operate or solely to operate the backbone links and IXP/carrier hotel/datacenter building.\(^{59}\)

(b) **Option 2 can be characterized as a “Competitive Subsidy Model”.**\(^{60}\) Under this approach, a license to either build and operate or solely to operate a backbone network is awarded by the government to a private sector entity. The licensee would also be awarded a contract to build out a network defined by the government and that meets the government’s policy objectives. The government would provide some resources, in the form of cash payments, to this licensee. The contract design would include the terms on which backbone network services are provided. One key aspect of these terms would be the price of service, since this determines the impact on downstream users of the network. Quality of service and the type of services provided would be other important aspects of contract design. An example of this option in terrestrial fiber networks has been used in France with the DORSAL Project in France\(^{61}\) to support infrastructure development by targeting economic bottlenecks while also maintaining the conditions for competition. Option 2 in Mauritania would consist in selecting via an international open and transparent tender a private operator (or several private operators) to either build and operate or solely to operate of the backbone links and IXP/carrier hotel/datacenter building \(^{62}\).

54. The formal consultation process, with the assistance of a consultant financed under the PPA, was kicked off with all stakeholders in Nouakchott on February 4, 2013 and consensus was achieved during a public workshop on March 11, 2013 on a variant of Option 1 for the missing links, with the same to also apply to the IXP / Carrier Hotel / Datacenter building. GoM confirmed its endorsement for the implementation of this PPP option, which is described in more detail below (see Figure). This PPP option bears resemblance

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\(^{59}\) IMT is a SPV (with 100 million UM stock) created June 1, 2010 (for 99 years) to own and operate the submarine cable capacity and landing station, and possibly terrestrial fibers not build by the operators. The 25 US$ million investment in ACE was split amongst shareholders as follows: 35% Mauripost (carrying the Government shares), 20% Mauritel, 20% Mattel, 15% Chinguitel, 10% private investor. The president of IMT is on a yearly rotating basis a representative of the shareholders and the staff of IMT should be kept minimal. According to its rules of incorporation IMT responsibilities can be expanded to missing links of the national and regional backbone and to new/external operators.

\(^{60}\) See WILLIAMS, Mark D. J., Broadband for Africa: Developing Backbone Communications Networks, The World Bank, Infodev, 2010, p. 49. GALLEGOS, D., Partnerships for Broadband: Innovative public private partnerships will support the expansion of broadband networks, ICT Policy Notes, June 2012

\(^{61}\) Limousin is a rural region in the center of France that suffers from a major rural-urban differential in the availability of broadband services. To address this difference, the government launched the DORSAL project to develop a backbone network capable of delivering high-speed Internet access to all residents. The project is structured as a PPP with a 20-year concession to build and operate a backbone network and to construct a WiMAX access network capable of supporting high-speed value-added services. The cost of the project, €85 million, was shared between the public (45 percent) and private (55 percent) sectors. The construction of the fiber-optic backbone network was successfully implemented in mid-2007; subsequently, downstream competition has developed. Customers in the DORSAL area now have access to third-party service providers offering a wide range of broadband services such as Internet protocol television (IPTV), voice-over-Internet protocol, and high-speed data services in competition with France Telecom.

\(^{62}\) The tender would specify the minimum build-out of links, QOS, technical and interoperability standards, and service license terms. In addition to a technical prequalification process, the license would be awarded to the operator (or group of investors) that requires the lowest capital contribution from GoM (i.e. lowest subsidy).
with the one envisaged for CAB4 in Gabon (financed by the Bank with IBRD funds) for international submarine and regional/national terrestrial fiber optic links where the Gabonese Government seeks to have the benefits of the connectivity investments immediately and fully transferred to the sector and ultimately to the Gabonese residential and business customers as well as the bigger market potential for broadband in Gabon taking into account Bank’s requirements for open access to boost sector development and for strong private sector involvement to ensure effective operation and maintenance of the assets.

(a) As the private sector is not capable to finance, according to its existing share of the recent investment in ACE (all three operators financed 55% of the US$ 25 million investment in ACE), the US$ 40.5 million WARCIP investment needed to provide Mauritania with a national backbone that can provide the whole population with low cost reliable connectivity, GoM will set up a state-owned and controlled company holding (HoldCo) for Digital Assets that will own the links and the IXP/CARRIER Hotel/Datacenter building built under WARCIP and will make them available according to open access principles. This HoldCo shall be as lean as possible.

(b) As per Section 4 of the Guidelines for the Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011), the jointly co-financed 4 fiber optic missing links as well as the IXP/CARRIER Hotel/Datacenter building shall be procured by the WARCIP PIU in accordance with ICB.

(c) IMT will be the PPP operating the assets (OpCo) and providing the services. These services are (i) connectivity offered via a Reference Offer to Operators and ISPs according to open access principles and (ii) square meters in the IXP/CARRIER Hotel/Datacenter building to all clients also according to open access principles.

(d) A Delegation contract (Lease/Affermage) will be established between the HoldCo and the OpCo. The contract will be awarded for an initial duration of up to 15 years and will contain detailed provisions on (i) the reference offer (scope of services, level of quality of services, collocation…) and on (ii) the obligation to report publicly against a set of Key Performance Indicators (KPI) chosen to reflect in particular price levels, quality of service and profitability. A Business case for the missing link has been prepared by the consultants in the PPA to assist GoM and private sector in setting up the appropriate level of remuneration for IMT. GoM has indicated during that the proceeds of the universal access fund (which is disbursing in towards the telecom sector since 2012 under the recent universal access decree) will be considered to address any operating financing needs of IMT in the initial years of the delegation contract.

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63 In the case of Gabon, the OpCo is not an existing PPP formed by the Gabonese operators. The HoldCo will award through an international open and transparent tender an Operating, Maintenance and Commercialization contract to an experienced independent private wholesale operator.

64 This HoldCo will be established for the purposes of owning the digital infrastructure: (i) to be built and developed under Part 1 (a) of the Project; (ii) to be built under any other project financed by the GoM and the property of which the GoM wishes to transfer to the HoldCo; and/or (iii) that the HoldCo shall construct by itself.
(e) **Regulatory due diligence has concluded that the required revision of the license of IMT and that “open access” (fair and transparent pricing and access) to the bandwidth capacity provided under WARCIP can be most effectively implemented under the new regulatory framework for electronic communications to be approved in Council in Ministers by Mid April 2013. All the PPP documents, including the statutes and bylaws for the HoldCo (and the amendments for the OpCo as deem appropriate), the revised license terms and conditions for the OpCo, as well as the two contracts (between GoM and the HoldCo and between the HoldCo and the OpCo) are currently under preparation and will be required as a disbursement condition.**

(f) **GoM identified possible locations for the IXP/Carrier Hotel/Datacenter building, including (but limited to) directly on the site of the ACE landing station which is owned by state-owned MauriPost or on a piece of land adjacent to the existing ACE landing station.** Should the chosen location not be on the site of the ACE landing station, GoM will make as an inkind contribution free of charge to the HoldCo the piece of land necessary for the construction of IXP/Carrier Hotel/Datacenter building.
55. Regulatory due diligence has concluded that the electronic communications law to be approved in Council in Ministers by Mid April 2013 will significantly improve open access to and seamless interconnection between all terrestrial fibers in Mauritania (be they set up by a telecoms operator such as incumbent Mauritel, private companies such as mining or utilities or by a PPP under the WARCIP Mauritania project). Assurance to this effect will be reflected as a legal covenant in the Financing Agreement. In addition, technical assistance funded under the PPA will assist the Regulatory Authority in the effective implementation of the new electronic communications law.

C. Financial Management

56. The WARCIP Mauritania project will be managed by a PIU established within the Ministry of Employment, Professional Education and New Technologies (MDEFPNT). A financial management assessment of the WARCIP PIU, which is the main implementing agency for the project for the MDEFPNT, was conducted. The conclusion of the assessment is that the
financial management arrangements are being set up and will meet the Bank’s minimum requirements under OP/BP10.02 once the mitigation measures are implemented. The overall risk for the project is rated Moderate.

57. **The fiduciary capacity of the MDEFPNT to implement Bank-financed projects is weak.** The FM system has the following capacity constraints: (i) lack of adequate FM staff, and (ii) weak internal control environment that need to be strengthened.

58. **A number of mitigation measures have been identified.** The Administrative and Accounting Manual of Procedures has been finalized before negotiations and was deemed acceptable by the Bank. In addition, four months after effectiveness, the PIU will finalize the recruitment of the accountant and finalize the accounting software installation. Details on the Financial Management arrangements for this project are included under Annex 3.

59. **Following clarification by the EIB that it will lend exclusive of taxes, the GoM confirmed that it will exempt the project from import duties and the Value Added Tax (and other possible taxes).** A covenant was introduced in the FA for this effect.

**D. Procurement**

60. **The procurement environment in Mauritania has recently improved** (i) with a Public Procurement Code adopted in July 2010, and made effective in February 2012 and (ii) with the establishment of a three level organization comprising of (1) an independent procurement regulatory body (“Autorité de Régulation des Marchés Publics - ARMP”) responsible for procurement policy and handling complaints from bidders, (2) a national procurement control body (“Commission Nationale de Contrôle des Marchés Publics - CNCMP”) responsible for the control of procurement transactions, and (3) seven Procurement Committees in charge of specific sectors, the one in charge of WARCIP being the Procurement Committee for Social Sectors (“Commission de Passation des Marchés des Secteurs Sociaux - CPMSS”). All three bodies are operational and in addition, the control Body has been decentralized at regional level inside the country. The project will benefit from the existence of these three bodies which are expected to improve the procurement function in the country. Mauritania’s procurement laws and regulations do not conflict with IDA guidelines. With the exception of National Competitive Bidding procedures, no special exceptions, permits, or licenses need to be specified in the Credit related documents since IDA procedures take precedence other those laws and regulations.


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65 The procurement process for these activities is already launched
62. **An assessment of the capacity of the PIU and the CPMSS in terms of procurement for the project was carried out in December 2012**, during the supervision mission of the PPA, by IDA’s procurement specialist, based in Nouakchott. The assessment has put an emphasis on the project’s forecast organization, the interaction of Commission’s staff involved in procurement, and the structures benefitting from support and in charge of technical implementation of activities within the project. The WARCIP PIU has satisfactorily carried out operations realized under Project Preparation Facility (PPF), in interaction with the Line Ministry’s services involved in these activities and the PIU of the PRECASP Project. The procurement of PPF should be transferred to the PIU of WARCIP project, which no longer needs coaching from the PIU of the PRECASP Project. The procurement for WARCIP Mauritania will be handled by the procurement specialist in the WARCIP PIU, whose recruitment and training into Bank’s procurement guidelines will be done, if need be, based on his previous skills and whenever it proves to be necessary during project implementation. Risk mitigation measures have been discussed with the WARCIP PIU and agreed. The overall project risk for procurement under this project is High; it may be Substantial once the mitigation measures are in place.

63. **The procurement plan has been agreed upon during negotiations** and will be available at the respective offices of the PIU, the ARMP and the CNCMP. It will also be available in the project’s database and in the Bank’s external website. The Procurement Plan will be updated in agreement with the Project Team at least annually or as required, to reflect the actual project implementation needs and improvements in institutional capacity. All subsequent updates will be disclosed in the same way as mentioned above, once they are approved by the Bank.

**E. Social and Environment (including Safeguards)**

64. **The terrestrial fiber optic links are expected to follow roads already in place and the IXP/Carrier Hotel/Datacenter building to be built on an existing technical site or on the adjacent piece of land owned by GoM.** From an environmental and social safeguard standpoint, the WARCIP Mauritania project is rated as a Category B. That is, the environmental and social impacts of the project, for the most part, are expected to be minimal, site-specific and manageable to an acceptable level.

65. **Triggered safeguard policies.** Because of the environmental and social impacts that may result from the works related to the terrestrial fiber optic links and the IXP/Carrier Hotel/Datacenter building, the Bank Safeguard policy on Environmental Assessment (OP/BP 4.01) is triggered. Natural Habitats (OP/BP 4.04) is triggered as well because of some humid areas and fragile ecosystems (in particular for the Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa and the Link 4 – 43km Selibaby towards (directly or indirectly) Mali border) that may be negatively impacted. Physical Cultural Resources (OP/BP 4.11) is triggered to contemplate the event archeological sites are discovered during the carrying out of works. Finally, Involuntary Resettlement (OP/BP 4.12) is triggered because WARCIP Mauritania may result in displacement or loss of activities. In line with the triggering of these four safeguard policies and because of the lack of site-specific information about the environmental and social characteristics of future investments, GoM has prepared and consulted upon 2 safeguards instruments, namely an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF).
66. The project is expected, thanks to lower prices and better access to communications services, to have several positive social benefits including decreasing the cost of doing business, reducing the urban / rural divide, improving the security situation, increasing the prospect for job creation and wealth generation, and enabling Mauritania to reap the benefits of ICT as a platform to deliver services to their citizens and to SMEs.

67. Despite these expected positive social benefits, negative environmental and social impacts of the project will come mainly from the laying of the fiber (and excavation through human settlements, fields, forests, etc.) that could lead to: soil erosion (in dune areas); soil and water pollution; loss of vegetation (tree felling); the disruption of life (waste from work), of socio-economic activities and livelihoods located on the way (workshops, garages, shops, etc.); disturbance of traffic; noise; dust; risk of accident and the generation of waste; occupation of private land; possible destruction of crops (in the areas of Rosso, Boghé, Kaédi, Selibabi, Kiffa and Nema), but also the risk of vandalism and social frustration when local workforce is not used. The accurate estimate of the number of people who will be affected is not feasible at this stage of the study. However, a rough estimate of 400 could be made according to the planned route. Land requirements are estimated at 20 ha. By contrast, negative impacts for the IXP/Carrier Hotel/Datacenter should be limited to risks of accidents during the works.

68. The ESMF outlines: (i) mitigation of impacts of the fiber laying and building the carrier hotel including environmental guidelines for contractors and guidelines applicable to health, safety and environment; (ii) measures in case of archaeological discovery; (iii) institutional strengthening measures (strengthening environmental expertise of the WARCIP PIU); (iv) strengthening technical measures (provision for the implementation of environmental impact assessments; monitoring and evaluation of WARCIP); (v) informing stakeholders involved in the implementation of the project and public awareness; (vi) a program of surveillance and monitoring; (vii) institutional responsibilities for environmental monitoring; (viii) the institutional arrangements for implementing the ESMF; (ix) the recommendations for implementation; (x) the timing for the implementation of measures and the costs of environmental and social measures.

69. The need for involuntary resettlement resulting from land acquisition in specific project per areas will only be known during project implementation when site-specific plans are available. The RPF includes guidance for preparing socio-economic surveys, a census of people and assets, and appropriate eligibility and entitlement frameworks. Therefore, specific activities will be screened for application of the resettlement policy and any activities involving involuntary resettlement or land acquisition will only be approved (and disbursed against) after preparation of a Resettlement Action Plan (RAP) acceptable to the Bank. The RPF has included procedures for identifying eligible project-affected individuals, calculating and delivering compensation, and determining mechanisms for land dispute grievance redress as well as mechanisms for adequately monitoring and evaluating the level of compliance.

70. The ESMF has been disclosed publicly. It was submitted in draft form to the World Bank and to the EIB on January 10, 2013. Consolidated comments have been provided by the two Bank’s environmental and social safeguards teams on January 22, 2013 and on February 19,
2013. The RPF was submitted in draft form to the World Bank and to the EIB on January 25, 2013. Consolidated comments have been provided by the two Bank’s environmental and social safeguards teams on February 19 and on February 28, 2013. Draft versions were discussed in a public workshop organized by the WARCIP PIU with all stakeholders on March 3, 2013. Following clearance by the World Bank, both documents have been disclosed publicly in the country and as well as in the Bank Infoshop on March 8, 2013. Relevant provisions of the safeguards documents (ESMF, RPF) are included in the Project Implementation Manual.

71. **Once the final paths and sites are chosen and the specific civil works identified, an Environmental and Social Assessment/ESMP, and a RAP will be prepared by GoM as part of project implementation but before the terrestrial fiber optic links are laid and the IXP/Carrier Hotel/Datacenter is built.** Key stakeholders for consultation will include current inhabitants (where applicable), the line Ministry in charge of Environment and Sustainable Development (MDEDD), businesses and civil society.

72. **The funding requirement for the environmental and social safeguards is estimated in total at US$1,190,000.** Bank will finance US$800,000 and GoM US$390,000. The Bank funds will not finance land acquisition or resettlement costs.

73. **A representative of the Ministry in charge of Environment and Sustainable Development (MDEDD) has been appointed to the National Connectivity Steering Commission with letter dated March 17, 2013.**
F. Effectiveness conditions and Covenants

74. **Effectiveness conditions**: standard one related to the execution of the Financing Agreement and the provision of a legal opinion to attest to the validity and binding force of the Financing Agreement.

75. **Disbursement conditions**

No withdrawal shall be made under Category (1) (a) (works and goods under component 1 (a) of the Project), until and unless:

a) The Recipient (i) shall have adopted the ESIA, ESMP and RAP, as the case may be, and the same documents have been consulted upon and disclosed as approved by the Association; and (ii) shall have verified, through its own staff, outside experts, or existing environmental/social institutions, that the activities under Part 1 (a) 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 social review procedures and comply with the environmental and social review procedures set forth in the ESIA, ESMP and RAP, as the case may be, and the Project Implementation Manual;

b) (A) The Holding Company for Digital Assets has been duly created, registered and made operational in the territory of the Recipient, including through the appointment of its manager and 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 Holding Company for Digital Assets 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;

c) (A) The legal framework of the IMT, including its legal status, mandate, objective, powers and/or operations, as the case may be, has been modified as required, and the IMT is operational, for the purposes of carrying out Part 1 (a) of the Project on behalf of the Holding Company for Digital Assets in accordance with the provisions of the Delegated Contractual Agreement; (B) the IMT has obtained all necessary authorizations, permits and/or licenses as required for the purpose and pursuant to the applicable legal and regulatory framework; and (C) there shall be furnished to the Association an opinion satisfactory to the Association of counsel acceptable to the Association showing that the IMT has been duly modified and made operational in the territory of the Recipient for the
purposes of carrying out Part 1 (a) of the Project and is legally authorized to operate and provide services on Part 1 (a) of the Project in accordance with the laws of the Recipient;

d) (A) the Main Contractual Agreement, in form and substance satisfactory to the Association, has been entered into between the Recipient and the Holding Company for Digital Assets; and (B) there shall be furnished to the Association an opinion satisfactory to the Association of counsel acceptable to the Association showing that the Main Contractual Agreement has been duly authorized or ratified on behalf of the Recipient and the Holding Company for Digital Assets, and executed and delivered on its behalf, and is legally binding upon the Recipient and the Holding Company for Digital Assets in accordance with its terms; and

e) (A) the Delegation Contractual Agreement, in form and substance satisfactory to the Association, has been entered between the Holding Company for Digital Assets and the IMT; and (B) there shall be furnished to the Association an opinion satisfactory to the Association of counsel acceptable to the Association showing that the Delegation Contractual Agreement has been duly authorized or ratified on behalf of the Holding Company for Digital Assets and of the IMT, and executed and delivered on their behalf, and is legally binding upon the Recipient and the IMT in accordance with its terms.

76. **Legal covenants**

(a) The Co-financing Deadline for the effectiveness of the EIB Co-financing Agreement is December 31, 2014.

(b) The Recipient, through its MDEFPNT, shall ensure the overall responsibility for smooth Project implementation, coordination with the Association and the Co-financier, and supervision of the Project is carried out by the Project Implementation Unit with due diligence and efficiency. To this end, the Recipient shall maintain the Project Implementation Unit throughout Project implementation under terms of reference satisfactory to the Association and with staff and resources adequate to enable it to carry out its responsibilities under the Project. The PIU shall be headed by a Project coordinator, assisted by a deputy coordinator, whom shall both: (i) report directly to the minister in charge of new technologies; (ii) be directly responsible for the implementation of the 2012-2016 Strategy for ICT and Modernization of Public Service; and (iii) carry out their responsibilities under terms of reference satisfactory to the Association.

(c) To ensure the success of the Project, the Recipient shall: provide to the PIU, throughout Project implementation: (i) adequate office space out of charge in the vicinity of the office where the PIU coordinator carries out his/her daily work responsibilities at the MDEFPNT; and (ii) the resources necessary to enable the PIU to carry out its responsibilities under the Project by means of punctual deposits, in a
manner satisfactory to the Association and into an account acceptable to the Association: (A) not later than June 30, 2013, an amount of not less than MRO 12,000,000; (B) not later than September 30, 2013, an amount of not less than MRO 36,000,000; and (C) not later than, respectively, each of May 31, 2014, May 31, 2015, May 31, 2016 and May 31, 2017, an amount of not less than MRO 48,000,000.

(d) To ensure effective coordination among all Project beneficiaries, in particular among the MDEFPNT, ARE and APAUS, and the timely involvement of other governmental stakeholders in Project implementation and oversight, the Recipient shall maintain throughout Project implementation the National Connectivity Steering Commission under terms of reference satisfactory to the Association and vested with the responsibility of providing overall policy and strategic direction as well as general Project oversight and overall operative guidance. The National Connectivity Steering Commission shall be comprised at all times of representatives of the MDEFPNT, ARE and APAUS as well as the PIU coordinator. The National Connectivity Steering Commission shall meet at least once every semester.

(e) To facilitate the carrying out of Part 1 (a) of the Project, the Recipient shall have in place a suitable contractual framework to ensure the Financing is used for the intended purposes. To that end, the Recipient shall conclude a contractual agreement (“Main Contractual Agreement”) with the Holding Company for Digital Assets whereby the Recipient shall, among others, transfer to the Holding Company for Digital Assets: (A) on a non-reimbursable basis, the proceeds of the Financing allocated from time to time to Category (1) (a) to finance the building of the backbone links and the Internet Exchange Point/Carrier Hotel/Datacenter technical building under Part 1 (a) of the Project to be implemented by the PIU; and (B) the ownership of the backbone links and the Internet Exchange Point/Carrier Hotel/Datacenter technical building to be built under Part 1 (a) of the Project.

(f) In order to ensure the backbone links and the Internet Exchange Point/Carrier Hotel/Datacenter technical building to be built under Part 1 (a) of the Project are operated with due diligence and efficiency and are managed in a manner suitable to ensure services are delivered according to Open Access principles and in a manner satisfactory to the Association, the Recipient shall cause the Holding Company for Digital Assets to enter into a delegated contractual agreement (“Delegated Contractual Agreement”) with the IMT whereby the Holding Company for Digital Assets shall assign to the IMT full responsibility for the management and operation of the backbone links and the Internet Exchange Point/Carrier Hotel/Datacenter technical building to be built under Part 1 (a) of the Project.

(g) The Recipient shall take on its behalf, and ensure the Holding Company for Digital Assets take on its behalf, all action necessary:

(i) to comply with the ESMF and to carry out the ESIA and/or the ESMP, as the case may be, with due diligence and efficiency; (ii) to ensure that the relevant mitigation and monitoring provisions of the ESIA and/or the ESMP, as the case may be, are appropriately included in the
works, goods and services contracts to be concluded under Part 1 (a) of the Project and that they are implemented in the carrying out of said Part 1(a); and (iii) to maintain the Recipient and the Association suitably informed of the progress in the implementation of the ESIA and/or the ESMP, as the case may be, through the information to be prepared and furnished to the Recipient in the Project Reports; and

(ii) to comply with the RPF and to carry out the RAP with due diligence and efficiency and at all times provide the funds necessary therefor; (ii) to adequately monitor and evaluate the carrying out of the activities provided in the RAP in the carrying out of Part 1 (a) of the Project; and (iii) to maintain the Recipient and the Association suitably informed of the progress in the implementation of the RAP through the information to be prepared and furnished to the Recipient in the Project Reports.

(h) For the purposes of the Training to be provided under the Project, the Recipient shall:

a) furnish to the Association for its approval, not later than January 31 of each year, a training program including an explanation of how such training is consistent and conducive to the objectives of the Project and whether it offers the best price/quality ratio, as well as the schedule for its implementation;

b) select the trainees in accordance with a transparent process and criteria satisfactory to the Association; and

c) furnish to the Association a report of such scope and detail as the Association shall reasonably request, on the results of each training and the benefits to be derived therefrom.

(i) With a view to leverage the new connectivity to be developed under the Project, the Recipient shall take all action required on its behalf to make available to the PIU, not later than January 1, 2014, an amount equivalent to at least one million dollars ($1,000,000) to support the implementation with due diligence and in a timely fashion of activities No. 433 (Mettre en place un Centre National de Données) and No. 435 (Mettre en place un prestataire de certification électronique) of the 2012-2016 Strategy for ICT and Modernization of Public Service.

(j) The Recipient shall ensure that draft new legislation, satisfactory to the Association, aimed to revise the Recipient’s existing ICT legal and regulatory framework is approved by the Recipient’s Council of Minister not later than September 30, 2013.

(k) The Recipient shall exempt the contractors, suppliers and/or consultants (or the Recipient shall pay on behalf of the contractors, suppliers and/or consultants) from
any taxes, duties, fees, levies and other impositions imposed on the contractors, suppliers and/or consultants under the laws and regulations in effect in the territory of the Recipient in respect of any payments whatsoever made to the contractors, suppliers, and/or consultants in connection with the Project, any equipment, materials and supplies brought into the Recipient’s territory by the contractors, suppliers, and/or consultants for the purpose of carrying out the Project and which, after having been brought into such territory, will be subsequently withdrawn, any equipment, material and supplies brought into the Recipient’s territory by the contractors, suppliers and/or consultants for the purpose of carrying out the Project and which will be consumed therein or will become the property of the Recipient, and any property brought into the Recipient’s territory by the contractors, suppliers and/or consultants (other than nationals of the Recipient or permanent residents of the Recipient’s territory) for their personal use and which will be consumed therein or subsequently withdrawn therefrom by them upon their departure.

(l) In the event the site chosen for the building, under Part 1 (a) of the Project, of the Internet Exchange Point/Carrier Hotel/Datacenter technical building is not within the premises of the landing station of the Africa Coast to Europe Submarine Cable, the Recipient shall make available to the Holding Company for Digital Assets, in the form of in-kind contribution and free of charge, the piece of land suitable and necessary for the building of the said Internet Exchange Point/Carrier Hotel/Datacenter technical building, both in size and legal and physical condition acceptable to the Association.

(m) The Recipient shall, not later than four (4) months after the Effective Date: (i) employ an accountant and an external auditor for the PIU under terms of reference satisfactory and with qualifications and experience satisfactory to the Association; and (ii) finalize the installation of accounting software for the Project satisfactory to the Association.
Annex 1: Results Framework and Monitoring
AFRICA: WARCIP Mauritania

Results Framework

Project Development Objectives

PDO Statement

The program development objective for WARCIP Mauritania is to increase the geographical reach of broadband networks and to reduce the costs of communications services in the territory of the Islamic Republic of Mauritania.

Project Development Objective Indicators

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<tbody>
<tr>
<td>(***) Volume of international traffic: International Communications (Internet, Telecoms, and Data) bandwidth per person</td>
<td></td>
<td>Kbits per second per person</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>yearly</td>
<td>ARE from Operators</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(***) Access to Internet Services (number of subscribers per 100 people)</td>
<td></td>
<td>Ratio</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>yearly</td>
<td>ARE from Operators</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(***) Access to Telephone Services (fixed mainlines plus cellular phones per 100 people)</td>
<td></td>
<td>Ratio</td>
<td>100</td>
<td>111</td>
<td>116</td>
<td>120</td>
<td>122</td>
<td>124</td>
<td>yearly</td>
<td>ARE from Operators</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(***) Average monthly price of wholesale international E1 capacity link from capital city to Europe</td>
<td></td>
<td>Amount (USD) per month 2 Mbps</td>
<td>7,000</td>
<td>1,200</td>
<td>750</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>yearly</td>
<td>ARE from Operators</td>
<td>PIU from ARE</td>
</tr>
</tbody>
</table>

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66 Results platform, Core sector indicators and definitions, Information, Communications and Technology (ICT), CT: Telecommunications, February 2012.
67 This indicator measures the volume of international traffic generated by people who pay for access to Internet.
68 This indicator is a proxy for the volume of national traffic. It measures the number of people who pay for access to Internet per 100 people.
69 This indicator is a proxy for the volume of national traffic. It measures the total number of fixed telephone lines and mobile cellular subscriptions per 100 people.
70 This indicator is a proxy for the average price of international communications. It measures the wholesale price of an E1 or 2 Mbit/s capacity acquired by operators and ISPs to carry traffic from/to Europe.
### Intermediate Results Indicators

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<tr>
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</thead>
<tbody>
<tr>
<td>(* ) Length of fiber optic network built(^{75})</td>
<td>✓</td>
<td>km</td>
<td>0</td>
<td>0</td>
<td>1,297</td>
<td>1,577</td>
<td>1,577</td>
<td>1,577</td>
<td>yearly</td>
<td>PPP</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(* ) Cross-border interconnections built(^{76})</td>
<td></td>
<td>Number</td>
<td>0</td>
<td>0</td>
<td>1(^{77})</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>yearly</td>
<td>PPP</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(* ) Number of operators and ISPs buying capacity from the infrastructure deployed(^{78})</td>
<td></td>
<td>Number</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>yearly</td>
<td>ARE from PPP</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(**)(^{79}) Number of localities with broadband Internet access (256 Kbps)(^{80})</td>
<td></td>
<td>Number</td>
<td>144</td>
<td>144</td>
<td>149</td>
<td>160</td>
<td>175</td>
<td>200</td>
<td>Mid term review and project completion</td>
<td>ARE from Survey</td>
<td>PIU from ARE</td>
</tr>
</tbody>
</table>

\(^{71}\) Lowest range of satellite connectivity from Nouakchott to Europe.

\(^{72}\) Direct beneficiaries of the project include people who are connected to the communications network or the Islamic Republic of Mauritania (including telecommunications services and Internet users, schools, hospitals, banks, corporations, government and public administrations), to be measured as the number of active fixed and mobile subscribers (Internet subscribers not accounted to avoid double counting).

\(^{73}\) Assuming Female percentage on a pro-rata basis using the current figure for total population: 51%.

\(^{74}\) As WARCIP projects do not fund the roll out of e-gov applications, the team did not propose an indicator for e-gov. However the projects in Mauritania through the datacenter sites will have a leveraging effect on e-gov, which will be further reinforced in case of funding by AfdB. The team will explore at Mid Term Review the merits of adding an intermediate indicator to track the leveraging effect such as the e-government index of the UN Public Administration Programme.

\(^{75}\) This indicator measures the cumulative number of kilometers of fiber optic backbone built under the project. This indicator measures the progress towards a fully redundant regional network.

\(^{76}\) This indicator measures the number of cross-border interconnections built under the project. This indicator measures the progress towards a fully redundant regional network.

\(^{77}\) Selibaby towards (directly or indirectly) Mali border

\(^{78}\) This indicator is a proxy for open access. It measures the progress of unfettered and non-discriminatory access at reasonable price for all operators to the fiber optic backbone.

\(^{79}\) Under Capacity Building activities for ARE under Component 2, assistance in improving the Market Observatory will address this issue of lacking data on geographical basis. A specific indicator to capture number of localities served by the fiber optic built under the intervention is expected to be introduced after mid-term review.

\(^{80}\) This indicator is a proxy for increased geographical reach and usage of broadband network services.
Intermediate Result (Component 2) - Creating an Enabling Environment for Connectivity: Sound environment conducive to investment and competition

<table>
<thead>
<tr>
<th>(*) Impact on telecom sector of World Bank Technical Assistance**1</th>
<th>(composite score: 1-low impact to 5 – high impact)</th>
<th>0</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>Mid term review and project completion</th>
<th>ARE from Survey</th>
<th>PIU from ARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(***) Retail Price of Internet Services (per Mbit/s per Month, in US$)**2</td>
<td>USD per Mbit/s per Month, in US$</td>
<td>51</td>
<td>41</td>
<td>37</td>
<td>33</td>
<td>30</td>
<td>27</td>
<td>yearly</td>
<td>ARE from Operators</td>
<td>PIU from ARE</td>
</tr>
<tr>
<td>(***) Average cost of mobile call (three minutes, local, peak)**3</td>
<td>USD/3 min</td>
<td>0.52</td>
<td>0.47</td>
<td>0.43</td>
<td>0.38</td>
<td>0.35</td>
<td>0.31</td>
<td>yearly</td>
<td>ARE from Operators</td>
<td>PIU from ARE</td>
</tr>
</tbody>
</table>

NB: (*) results directly attributable to the intervention; (**) results resulting from the leveraging effect of the intervention.

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**1** This indicator is a proxy for the enhancement of the harmonization of sector regulation that governs the ICT sector in the region. It is a qualitative composite indicator. It rates (a) making the regulatory framework more effective at delivering sector performance, (b) improving the capacity of the regulatory institution to deliver on its mandate, (c) increasing the level of competition in the ICT, (d) improving the ICT policy environment in the country and (e) reforming state-owned assets in the ICT sector as a result of the project technical assistance.

**2** This indicator measures the price for access to the Internet at the equivalent rate of 1 Mbit/s per month paid by end users in the country.

**3** This indicator measures the cost of a three minute peak time local call in the same mobile network.
Annex 2: Detailed Project Description

AFRICA: WARCIP Mauritania

1. The development objectives of the proposed WARCIP Mauritania project are consistent with the PDO for the WARCIP Program: to contribute to increasing the geographical reach of broadband networks and reducing costs of communications services in the territory of Mauritania.

2. Similarly to APL 1-A, 1-B and 1-C, there are four guiding principles for WARCIP 2: (i) exploring PPP arrangements to avoid crowding out the private sector and minimize public investments where needed, (ii) leveraging existing infrastructure for connectivity especially for cross border connections, (iii) facilitating conducive regulatory environment to ensure open and competitive access to infrastructure and (iv) exploring a mix of Bank instruments to reach the final vision of fully integrated networks (including new connectivity components in existing projects and new operations). As outlined in the program PAD for WARCIP, all WARCIP projects are designed around three components as follows: Component 1 – “Supporting connectivity”, Component 2 – “Creating an enabling environment for connectivity” and Component 3 – “Project implementation”.

3. The project activities will contribute to the PDO of the proposed project by addressing the key issues of limited geographical reach of broadband networks and high costs of broadband services in the territory of Mauritania, paving the way for successful development of e-government and digital economy, though: (i) focused investments on the basis of a PPP in the roll out of crucial but costly fiber backbone links to create a reliable regional and national backbone with a ring topology covering most of the population in Mauritania, and linking to newly available low cost international capacity via the ACE (shown in blue in the Figure below) and in the set-up of a national and regional Internet Exchange Point (IXP) in a neutral carrier hotel / datacenter building as well as (ii) technical assistance to strengthen the legal, regulatory and institutional framework to ensure open access to and interconnection between all components of the fiber backbone infrastructure and promote a pro-competitive environment to foster investments from telecoms operators and Internet service providers.
Figure 6: Overview of key ICT infrastructure in Mauritania

4. Component 1- Supporting Connectivity (Bank finances US$21.5 million out of Estimated cost 40.7 million exclusive of taxes). This component will improve regional connectivity and will include the following activities, on the basis of an open access and PPP structure so as to leverage private sector investment:

(a) Co-financed with the EIB:

(1) building 4 fiber optic missing links (Bank finance US$20.74 million out of Estimated cost 39.50 million exclusive of taxes) to provide redundancy connectivity for cross-border links towards ECOWAS - namely towards landlocked countries Mali, Niger and Burkina Faso - and towards North Africa (via the connection with Morocco when the connection will be in place) as well as dissemination of international connectivity to most provincial capitals contributing hereby to reducing the urban/rural divide in the sub-region;

(i) Investment in new submarine capacity via the ACE submarine cable\(^{84}\) to have direct access to international connectivity has already been

\(^{84}\) The ACE submarine cable is connecting Europe with 13 countries along the West African coast (Mauritania, Senegal, Gambia, Guinea, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Benin, Nigeria, Equatorial Guinea, Gabon, São Tomé).
made, GoM setting up a PPP\textsuperscript{85} (named IMT) with the 3 mobile operators to finance and operate according to open access\textsuperscript{86} principles the landing station of the ACE submarine cable; this new submarine connectivity became available in December 2012. New international connectivity via ACE will provide the potential for massively improved access to broadband communications in Mauritania, but the full benefits cannot be achieved without additional investments in regional and national fiber backbone infrastructure to connect provincial capitals and the borders with other countries from ECOWAS and from UMA.

(ii) There is a need to augment the existing fiber infrastructure comprising of the dorsal single track Morocco Border-Nouadhibou-Nouakchott-Aleg-Kiffa-Aiou-Mali Border link built and operated by incumbent Mauritel\textsuperscript{87} as well as the other fibers in the North and in the South built by non-telecom firms (Nouakchott-Rosso-Senegal Border by Manantali Energy Project; Nouadhibou-Choum-Zoueratt by Mining company SNIM) to create a reliable regional and national backbone with a ring topology covering most of the population in Mauritania, and linking to newly available low cost international capacity via the ACE.

(iii) Link 1: 531km Nouakchott-Atar-Choum; Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa; Link 3: 280km Aioun-Nema; Link 4 – 43km Selibaby (directly or indirectly to) Mali border would achieve this objective of a fully redundant regional network but are costlier to build (with a total CAPEX per km of US$25,048 compared to below US$20,000 per km according to latest data available on standard soil conditions) because of either a very solid soil (for Link 1) or a very floodable soil (for Link 2 and Link 3). Hence the interest by the private sector for a PPP for this links.

(2) building an IXP / Carrier hotel / Datacenter technical building (Bank finances US$0.5 million out of Estimated cost US$1 million exclusive of taxes). This technical building is a secure physical site or building where data communications media converge and are

\textsuperscript{85}The concept of “Public-Private Partnership” refers to various possible types of long-term contractual relationships between the authorities and the private sector, for the design, execution, operation, maintenance and financing of equipment or infrastructure and/or the organization of services to the public. Public-Private Partnerships enable a government to leverage the management skills of private enterprises, the productivity gains and cost savings which they will achieve, the innovations which they will provide and the possibility of using private investments instead of public financing, which can then be used for other projects.

\textsuperscript{86}The concept of “Open Access” refers to access to terrestrial or submarine fiber optic systems by operators or service providers (holders of a telecommunications operating license or permit to engage in the provision of telecommunications infrastructure or services) on non-discriminatory and transparent terms (for pricing and non-pricing aspects) and cost-based pricing.

\textsuperscript{87}This dorsal single track link was built by Maroc Telecom primarily to connect with its subsidiaries in the sub-region (Mauritel in Mauritania, Malitel in Mali and Onatel in Burkina Faso).
interconnected. It is common for numerous telecommunications operators and service providers to share the facilities of a single carrier hotel. Co-location allows multiple customers to locate network, server, and storage gear — and connect them to a variety of telecommunications and network service providers (ensuring neutrality towards any operator or service provider) — with a minimum of cost and complexity. A carrier hotel provides collocation, offering various services to customers ranging from modest-sized racks to dedicated rooms or groups of rooms offering herewith the appropriate environment to set up data centers. In developed countries, carrier hotel can be of sizeable magnitude (often containing more than 5000 square meters (approximately 54,000 square feet). In our case, the carrier hotel will be much smaller.

(b) Financed solely by the WB: equipment required to establish (inside the technical building described above) a national and regional Internet Exchange Point (IXP) (Estimated cost US$0.2 million exclusive of taxes). An Internet exchange point (IXP) is a physical infrastructure through which Internet Service Providers (ISPs) and telecommunications operators exchange Internet traffic between their networks. The primary purpose of an IXP is to allow networks to interconnect directly, via the exchange, rather than through one or more third-party networks. The advantages of the direct interconnection are numerous, but the primary reasons are cost, latency, and bandwidth.

5. Component 2 - Creating an Enabling Environment for Connectivity (Estimated cost: US$5.3 million exclusive of taxes). This component will include the following activities, that have been identified taking due account of the strategic projects of the 2012-2016 Strategy for ICT and Modernization of Public Service: (i) Technical Assistance (TA) to implement Open Access Regime & PPP for national backbone including transaction/legal, regulatory and economic/financial support as well as supporting the drafting of the technical tender for backbone links and for IXP/Datacenter; (ii) TA on key regulatory priorities (develop technical, financial, and operational conditions to access existing fibers; define fiber interconnection and sharing regulation tools; define Reference Offer for International Connectivity; develop cost models for interconnection (fixed and mobile) and for broadband wholesale offers including facility sharing and support in defining the relevant markets and approving the interconnection catalogue; set up an observatory of the telecoms/ICT sector); (iii) TA to set up an Internet Exchange Point (IXP) and to design a management policy for “.mr” domain name; (iv) TA on broadband stimulation strategies, including supporting ISPs creation, using universal access funds and leveraging national postal operator Mauripost network, and associated action plan; (v) TA on a sector fiscal study; (vi) TA to develop institutional and operational capacities of MDEFPNT and other beneficiaries in policy and regulation, including training; and (vii) Control / evaluation of backbone and Internet Xpoint and Carrier hotel/Datacenter works.

88 Following the 2012-2016 Strategy for ICT and Modernization of the Public Service, the Regulatory Authority ARE has awarded (on own funds) a major study to an internationally renowned consulting company to draft a new telecoms legal and regulatory framework (the telecoms Law dates back July 11, 1999). In accordance with ARE, WARCIP Mauritania will support the implementation of this new telecoms legal and regulatory framework for key regulatory priorities related to the development of broadband service in Mauritania.
6. **Component 3: Project Implementation (Estimated cost: US$3.2 million exclusive of taxes).** This activity will (i) finance environmental and social studies, including their implementation and/or the monitoring of their implementation, (ii) provide support needed to strengthen the capacity of GoM to implement WARCIP Mauritania, including setting up a Project Implementation Unit (PIU) located within the Line Ministry (see Annex 3), covering office equipment and some operating costs, trainings on Bank’s project cycle and procurement and FM guidelines of Bank funded projects, and (iii) finance audits, monitoring and evaluation (M&E) including appropriate actions to support efficient data collection, and communication.
Annex 3: Implementation Arrangements

AFRICA: WARCIP Mauritania

Project Institutional and Implementation Arrangements

Project administration mechanisms

1. The line ministry MDEFPNT is leading the implementation of WARCIP Mauritania. To ensure coordination with all beneficiaries of the project (MDEFPNT, ARE and APAUS) and involvement of other governmental stakeholders, the MDEFPNT has established a National Connectivity Steering Commission (“comité de pilotage du projet de connectivité nationale”) by Ministerial Decision n°679/MDEFPN from March 21, 2012. The National Connectivity Steering Commission is in charge of providing overall policy and strategic direction, as well as general project oversight and overall operative guidance during project implementation. A representative of the Ministry in charge of Environment and Sustainable Development (MDEDD) has been appointed to the National Connectivity Steering Commission with letter dated March 17, 2013.

2. GoM ensures that it will maintain throughout project implementation the National Connectivity Steering Commission under terms and conditions satisfactory to the Bank vested with responsibility for providing overall technical and operative guidance, direction and coordination (including compliance of safeguard activities to national and Bank policies) as well as fiduciary and governance oversight during project implementation.

3. Because WARCIP Mauritania will support key strategic goals of the 2012-2016 Strategy for ICT and Modernization of Public Service, a small WARCIP Mauritania PIU has been set up in the line ministry with overall responsibility for smooth project implementation and coordination with the World Bank and the EIB.

(a) The small PIU is comprising of a technical expert (also in charge of M&E, including environmental and social safeguards), a procurement specialist, a financial and administration specialist (or financial officer), an accountant and an assistant financed by the project.

(b) The coordinator and the deputy coordinator of the WARCIP PIU are chosen so as to coincide with senior governmental positions directly entrusted with implementing the 2012-2016 ICT Strategy and financed by GoM counterpart funding: as per Ministerial Instruction no109/012/MDEFPN from March 26, 2012, the coordinator is the Advisor for New Technologies of the line Minister and the deputy coordinator is the Director General in charge of ICT in the line ministry. GoM ensures that it will maintain throughout project implementation a coordinator and a deputy coordinator under terms and conditions satisfactory to the Bank.

(c) A similar arrangement has been successfully implemented in Mauritania in the transport sector.
(d) At Mid Term Review, readiness to have the PIU more aligned with country system will be assessed, which should help with the sustainability of the work supported by WARCIP Mauritania.

4. The PIU will serve as the Credit administrator of the project and will handle all administrative matters in accordance with the Project Implementation Manual (PIM) developed under the PPA. It will also ensure financial management and handle project disbursements as well as the preparation and submission of replenishment requests to IDA according to the Financial and Administrative Procedures Manual (PAM) developed under the PPA. The PIU will also be responsible for (i) tracking progress in all project components, both in terms of financial performance and meeting implementation targets and monitor the performance of all contractors under the project; (ii) preparing annual work programs and budgets and, if necessary, reviewing in consultation with IDA the allocation of resources across the various components of the project as lessons emerge as to patterns of demand and development impact and (iii) interacting with the World Bank and the EIB for obtaining the requisite no objections.

5. GoM ensures throughout project implementation that it will provide the office space for the WARCIP PIU in the vicinity of either the coordinator or the deputy coordinator of the WARCIP PIU and that it will contribute to the PIU operating costs. In order to mitigate risks of untimely availability of counterpart funding, the Line Ministry in charge of Finance (MF) will channel the subventions to the WARCIP PIU according to the following schedule. With letter dated February 12, 2013, GoM confirmed availability on the project account of MRO 30 million

<table>
<thead>
<tr>
<th>No later than</th>
<th>No later than</th>
<th>No later than</th>
<th>No later than</th>
<th>No later than</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2013</td>
<td>September 2013</td>
<td>May 2014</td>
<td>May 2015</td>
<td>May 2016</td>
<td></td>
</tr>
<tr>
<td>MRO million</td>
<td>MRO million</td>
<td>MRO million</td>
<td>MRO million</td>
<td>MRO million</td>
<td>MRO 240 million</td>
</tr>
<tr>
<td>12</td>
<td>36</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
</tr>
</tbody>
</table>

6. To ensure smooth implementation of the project on a day to day basis, a technical team was set up to assist the National Connectivity Steering Commission, comprising of representatives of the beneficiary institutions as well as the coordinator and the deputy coordinator of the WARCIP PIU. While all procurement, financial management, M&E (including safeguards) activities will be centralized and carried out by the WARCIP Mauritania PIU, the beneficiary institutions MDEFPNT, ARE and APAUS will participate actively by
contributing their expertise and knowledge in preparing TORs, evaluations, participation in selection committees, etc.

*Measures to address capacity constraints*

7. The WARCIP Mauritania PIU was incubated during the PPA in the PIU of an existing Bank project (PRECASP), with PRECASP being responsible for compliance with Bank’s procurement, financial management and M&E (including safeguards) policies. It is expected that following successful evaluation by the Bank’s procurement and financial management specialists, responsibilities will be handed over from PRECASP to WARCIP Mauritania after negotiations but before Board. The Bank will in addition fund targeted TA and capacity building activities as part of the operation throughout project preparation and implementation. The strategy for implementation support (see Annex 5) has also been developed to provide mitigation measures to capacity risk.
Financial Management, Disbursements and Procurement

Financial Management and Disbursements

The following are the financial management and disbursements arrangements for the project:

Budgeting arrangements

8. The PIU will prepare annual budgets based on agreed annual work programs and annual procurement plans. The budget will be adopted by the National Connectivity Steering Commission before the beginning of the year and its execution will be monitored on a quarterly basis. The budgeting process and monitoring will be clearly defined in the Administrative and
Accounting Manual of Procedures. Annual draft budgets will be submitted to the Bank’s non-objection before adoption and implementation.

**Accounting arrangements**

9. **The current accounting standards in use in Mauritania for on-going Bank-financed projects will be applicable.** A computerized and integrated financial management system is being installed in the PIU and applications should be set up to generate useful information. An Administrative and Accounting Procedures Manual will be elaborated to serve as a basis to draft the fiduciary procedures relevant to the project. The financial officer is already recruited and an accountant is being recruited.

**Internal Control and Internal Auditing arrangements**

10. **The Administrative and Accounting Procedures Manual provides a clear description of the approval and authorization processes in respect of the rule of segregation of duties.** The Bank will pay attention to the adequacy of internal control during its supervision missions.

**Flow of funds and disbursement arrangements**

11. **Disbursement arrangements.** The proceeds of the Credit would be disbursed in accordance with the traditional disbursement procedures of the Bank and will be used to finance project activities through the disbursement procedures currently used: i.e. Direct Payment, Advances, Reimbursement and Special Commitment. Replenishment and Reimbursement Withdrawal Applications will be accompanied by Statement of Expenditures (SOEs) in accordance with the procedures described in the Disbursement Letter and the Bank's "Disbursement Guidelines". Interim Unaudited Financial Reports and Annual Financial Statements will be used as a financial reporting mechanism and not for disbursement purposes. The minimum application size for direct payment and reimbursement will be the equivalent of 20% of the Advance ceiling amount. The Bank will honor eligible expenditures completed, services rendered and delivered by the Project closing date. A four months' grace period will be granted to allow for the payment of any eligible expenditure incurred before the Credit Closing Date.

12. **Disbursement methods.** The transaction-based disbursement method will be used (i.e. replenishment, direct payment, reimbursement, and special commitments). All replenishments or reimbursement applications will be fully documented except for contracts under the prior review threshold to be determined during the procurement assessment. Documentation will be retained at the PIU for review by Bank staffs and external auditors. The Disbursement Letter, discussed and agreed upon during negotiations, elaborates on provisions of the Financing Agreement, will provide details of the disbursement methods, required documentation, DA ceiling and minimum application size. Disbursements for Works and Goods related to the construction of the fiber optic cable under Part 1 (a) of the Project will be made in installments linked to milestones reached at key stages of the development of the network. Payments will be made on the basis of customized Statement of Expenditures certified upon verification of an Independent Engineer as to the achievement of the milestones (e.g. constructed network segment) during the construction phase of the network. The remaining project components can be done using any of the four disbursement methods (Advance, Reimbursement, Direct Payment and Special Commitment).
For the rest of Categories, necessary supporting documents will be sent to the Bank in connection with contract that are above the prior review threshold, except for expenditures under Contracts with an estimated value of: (a) US$ 200,000 or less for works; (b) US$ 200,000 for goods; (c) US$ 100,000 or less for Consulting Firms; (d) US$ 50,000 or less for Individual Consultants, operating costs and training, which will be claimed on the basis of SOEs. The documentation supporting expenditures will be retained at Project Implementation Unit and will be readily accessible for review by the external auditors and periods Bank supervision missions.

13. **Disbursement categories.** The table below sets out the expenditure categories to be financed out of the Credit proceeds.

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount of the Credit Allocated (expressed in USD)</th>
<th>Percentage of Expenditures to be Financed (exclusive of taxes*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Works and Goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Under Part 1 (a) of the Project</td>
<td>21,262,500</td>
<td>52.5%</td>
</tr>
<tr>
<td>(b) Under Part 1 (b) of the Project</td>
<td>200,000</td>
<td>100%</td>
</tr>
<tr>
<td>(c) Under Parts 2 and 3 of the Project</td>
<td>100,000</td>
<td>100%</td>
</tr>
<tr>
<td>(2) Non-consulting services, Consultants’ services, Operational Costs and Training under Parts 2 and 3 of the Project</td>
<td>6,437,500</td>
<td>100%</td>
</tr>
<tr>
<td>(3) Refund of the Preparation Advance No. Q804</td>
<td>2,000,000</td>
<td>Amount payable pursuant to Section 2.07 (a) of the General Conditions</td>
</tr>
<tr>
<td>TOTAL AMOUNT</td>
<td>30,000,000</td>
<td></td>
</tr>
</tbody>
</table>

* GoM exempts the project from import duties and from the Value Added Tax and other possible taxes).

14. **Banking arrangements.** A separate Designated Account (DA) for the project will be opened in the Central Bank and a Project Account (PA) will be opened in a commercial Bank in Nouakchott on terms and conditions acceptable to the Bank. The DA will be used for all eligible payments financed by the Credit as indicated in the specific terms and conditions of the Financing Agreement and the Disbursement Letter. The PIU will submit initially a withdrawal application to the Bank based on 4 months forecast expenditures expected to be made through the DA. The Bank will process the withdrawal application and deposit funds into the Designated Account. The DA and the PA will be used to pay for most eligible expenditures except for those exceeding 20% of the DA ceiling. Such payments should be made through the direct payment method or a special commitment letter issued by the Bank. The DA should be replenished on a monthly basis.

15. **Counterpart funding.** The Mauritanian Government will provide parallel financing for the purpose of the project development objective. A counterpart account will be opened in order to receive the counterpart funding. These contributions are also under the scope of auditors reviews.
16. **Refinancing date of the PPA.** The refinancing date of the PPA is June 28, 2013. An extension to match the effectiveness deadline of the Financing Agreement (board approval scheduled May 30, 2013) has been requested by the government. The same Designated Account opened for the Project Preparation Advance (PPA) may continue to be used for the follow-on Credit. Any amount outstanding in the Designated Account at the time the PPA is refinanced is treated as a partial Advance of the amount agreed under the follow-on Credit.

**Financial reporting arrangements**

17. **The PIU will prepare quarterly un-audited Interim Financial Report (IFRs) for the project in form and content satisfactory to the Bank,** which will be submitted to the Bank within 45 days after the end of the quarter to which they relate. The PIU will prepare and agree with the Bank on the format of the IFRs during negotiations. The PIU will also prepare Project’ Financial Statements (PFS) in compliance with International Accounting Standards (IAS) and World Bank requirements. The Financial Statements will be composed of:
   a) A balance sheet;
   b) A statement of Sources and Uses of Funds;
   c) A statement of Commitments;
   d) The Accounting Policies adopted with appropriate notes and disclosures;
   e) A Management Assertion that Program funds have been expended for the intended purposes as specified in the relevant credit agreement

**Auditing arrangements**

18. **The Financial Agreement will require the submission of Audited Financial Statements by the PIU to IDA within six months after the end of each fiscal year end.** The audit report should reflect all the activities of the project. An external auditor with qualification and experience satisfactory to the World Bank will be appointed to conduct an annual audit of the PFS. Appropriate terms of reference (ToR) - shared with the EIB - for the external auditor will be provided to the project team. A single opinion on the Audited PFS in compliance with International Standards on Auditing (ISA) will be required. The external auditors will prepare a Management Letter giving observations and comments, providing recommendations for improvements in accounting records, systems, controls and compliance with financial covenants in the Financing Agreement.

<table>
<thead>
<tr>
<th>Audit Report</th>
<th>Entity</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual audited financial statements and Management Letter (including reconciliation of the Designated Accounts with appropriate notes and disclosures)</td>
<td>PIU</td>
<td>June 30 N+1</td>
</tr>
</tbody>
</table>
Action plan

19. The following actions, agreed with the PIU, need to be taken in order to enhance the financial management arrangements for the WARCIP Mauritania project.

<table>
<thead>
<tr>
<th>Nº</th>
<th>Action</th>
<th>Due Date</th>
<th>Responsible Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prepare and agree with the Bank on the format of the IFRs</td>
<td>By Negotiations - done</td>
<td>PIU</td>
</tr>
<tr>
<td>2.</td>
<td>Finalize the Administrative and Accounting Manual of Procedures</td>
<td>By Negotiations – done</td>
<td>PIU</td>
</tr>
<tr>
<td>3.</td>
<td>Finalize the Recruitment the accountant</td>
<td>Four months after effectiveness</td>
<td>PIU</td>
</tr>
<tr>
<td>4.</td>
<td>Finalize the installation of the Accounting Information System in the PIU</td>
<td>Four months after effectiveness</td>
<td>PIU</td>
</tr>
<tr>
<td>5.</td>
<td>Selection of Recruit an external auditor</td>
<td>Four months after effectiveness</td>
<td>PIU</td>
</tr>
</tbody>
</table>

Financial covenants

20. The Recipient shall establish and maintain a financial management system including records, accounts and preparation of related financial statements in accordance with accounting standards acceptable to the Bank. The Financial Statements will be audited in accordance with international auditing standards. The Audited Financial Statements for each period shall be furnished to the Association not later than six (6) months after the end of the project fiscal year. The Recipient shall prepare and furnish to the Association not later than 45 days after the end of each calendar quarter, interim un-audited financial reports for the Project, in form and substance satisfactory to the Association. The Recipient will be compliant with all the rules and procedures required for withdrawals from the Designated Accounts of the project.
Procurement

General

21. Procurement for the proposed project would be carried out in accordance with the World Bank’s "Guidelines: Procurement of Goods, Works and Non-consulting Services Under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011, and the provisions stipulated in the Financing Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Credit, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Recipient and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The Bank shall arrange after loan negotiations the publication on the Bank’s external website of the agreed initial procurement plan and all subsequent updates once it has provided a no objection.

22. National procurement system and ongoing reforms. The procurement environment in Mauritania has been recently improved (i) with a Public Procurement Code adopted in July 2010, and made effective in February 2012 and (ii) with the establishment of a three level organization comprising of (1) an independent procurement regulatory body ("Autorité de Régulation des
Marchés Publics - ARMP”) responsible for procurement policy and handling complaints from bidders, (2) a national procurement control body (“Commission Nationale de Contrôle des Marchés Publics - CNCMP”) responsible for the control of procurement transactions, and (3) seven Procurement Committees in charge of specific sectors, the one in charge of WARCIP being the Procurement Committee for Social Sectors (“Commission de Passation des Marchés des Secteurs Sociaux - CPMSS”). All three bodies are operational and in addition, the control Body has been decentralized at regional level inside the country. The project will benefit from the existence of these three bodies which are expected to improve the procurement function in the country. Mauritania’s procurement laws and regulations do not conflict with IDA guidelines. Except for National Competitive Bidding procedures, no special exceptions, permits, or licenses need to be specified in the Credit related documents since IDA procedures take precedence over those laws and regulations.

(a) For the purpose of a possible use of the Procurement Code for National Competitive Bidding (NCB) method, the team has identified that the method described as "Appel d’Offres" (i.e. Competitive Bidding) in reference to the provision 27 of the procurement Code, can be considered for NCB subject to the conditions described in the paragraph below.

(b) In order for the Competitive Bidding procedure to become acceptable to the Bank for its use for NCB, the following special requirements will be taken into account: (1) the procedures will require that for small contracts, a competitive method be used (e.g. shopping/price comparison); (2) eligible firms, including foreign firms, will not be excluded from the competition in any case; (3) no preference margin will be granted to domestic bidders; (4) four weeks will be provided for preparation and submission of bids, after the issuance of the Invitation for Bids or the availability of the bidding documents, whichever is later; (5) the evaluation and award process of alternative bids will be revised to be concordant with the Bank’s procurement Guidelines; (6) if the bid which results in the lowest Evaluated Bid Price is seriously unbalanced or front loaded in the opinion of the Employer, the evaluation process should be concordant as spelled out in the relevant Standard Bidding Documents published by the Bank; (7) for all procurement of goods and works, the Bank’s Standard Bidding Documents (SBD) or National SBD if acceptable to the Bank, will be used and modified in order to meet the exceptions authorized under NCB.

(c) Procurement will be carried using the Bank’s Standard Bidding Documents (SBD) for all ICB and National SBD for any NCB contracts deemed satisfactory to the Bank. Contracts estimated at less than US$10,000,000 for works and contracts for goods available locally, or non-consulting services with a cost estimate less than US$1,000,000, may be awarded through NCB procedures.

(d) Contracts for small works if any, small goods such as office supplies, minor equipment and furniture available locally, or non-consulting services, with a cost estimate equal or bellow US$100,000, may be procured under the shopping procedure in accordance with the provisions 3.5 of the Guidelines, and in accordance with the
Memorandum “Guidance on Shopping” issued by the Bank, date June 9, 2000
provided this memorandum is not contradictory with the Procurement Guidelines.

23. **Procurement of Works.** The procurement of works will be done using the Bank’s standard bidding documents (SBD) for all international competitive bidding (ICB) and national SBD for any NCB contracts agreed with or satisfactory to the Bank. Contracts estimated to cost less than US$10,000,000 equivalent for works available locally would be procured under national competitive bidding (NCB) procedures. Small contracts for works available locally and for which the cost estimate is equal or less than US$100,000, may be awarded through shopping procedures as described in the paragraph 3.5 of the procurement Guidelines, based on requests for quotations obtained from several qualified suppliers.

24. **Procurement of Goods.** The procurement of goods will be done using the Bank’s standard bidding documents (SBD) for all international competitive bidding (ICB) and national SBD for any NCB contracts agreed with or satisfactory to the Bank. Contracts estimated to cost less than US$1,000,000 equivalent for goods available locally would be procured under national competitive bidding (NCB) procedures. Small contracts for articles and office supplies as well as small equipment and furniture available locally and for which the cost estimate is equal or less than US$50,000, may be awarded through shopping procedures as described in the paragraph 3.5 of the procurement Guidelines, based on requests for quotations obtained from several qualified suppliers.

25. **Procurement of non-consulting services.** The procurement of non-consulting services will be done using the Bank’s standard bidding documents (SBD) for all international competitive bidding (ICB) and national SBD for any NCB contracts agreed with or satisfactory to the Bank. Contracts estimated to cost less than US$1,000,000 equivalent for non-consulting services available locally would be procured under national competitive bidding (NCB) procedures. Small contracts for which the cost estimate is equal or less than US$50,000, may be awarded through shopping procedures as described in the paragraph 3.5 of the procurement Guidelines, based on requests for quotations obtained from several qualified suppliers.

26. **Selection of Consultants:** Consultants will be selected using the Quality and Cost-Based Selection (QCBS) method in most cases. In special cases specified in the Procurement Plan (PP) the following methods will be used: (1) Quality-Based Selection; (2) Selection under a Fixed Budget (FBS); (3) Least Cost Selection (LCS); (4) Selection Based on the Consultants’ Qualifications (CQS); (5) Single Source Selection (SSS) and (6) Individual Consultants (IC) Selection (either through competitive selection or single source). For competitive selection methods, the selection will be done (i) through requests for expression of interest (REIs) except for the selection of individual consultants for which REIs are not mandatory, and (ii) using the Bank’s Standard Request for Proposals where required. Short lists of consultants for Engineering Designs & Contract Supervisions with the estimated cost less than $300,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. And for All other Consultancy Assignments with the estimated cost less than $100,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.
27. Operating costs. Operating costs financed by the project are incremental recurrent expenditures including office equipment and supplies, office rental, communications, vehicle-maintenance costs, fuel and spare parts, and travel expenses and per-diems, all needed for the supervision of the project. They will be procured according to shopping procedures, grouping together when possible and using shopping for repetitive goods and services. These procedures will have to be detailed in the Project Implementation Manual.

28. Advertisement: The Borrower will prepare and submit to the Bank a General Procurement Notice (GPN). The Borrower will publish this in UNDB online and in local newspapers of wide national circulation. The Bank will arrange for its publication in *UN Development Business online (UNDB online)* and on the Bank’s external website. Specific Procurement Notices for contracts for goods and for works to be procured under International Competitive Bidding (ICB) and Requests for Expressions of Interest for contracts for consulting services costing the equivalent of US$300,000 and above will be published in UNDB and in the national press with wide circulation, in addition to other media with wide circulation. All other specific procurement notices and other requests for expressions of interest shall be published at least in the national press with wide circulation.

Assessment of the agency’s capacity to implement procurement

29. All procurement activities will be carried out by the Project Implementation Unit (PIU), and through the Procurement Committee for Social Sectors (CPMSS), for all contracts above 10 million MRO (equivalent to US$33,000).

30. Assessment of the capacity of the PIU. An assessment of the capacity of the PIU and the CPMSS in terms of procurement for the project was carried out in December 2012, during the supervision mission of the PPA, by IDA’s procurement specialist, based in Nouakchott. The assessment has put an emphasis on the project’s forecast organization, the interaction of Commission’s staff involved in procurement, and the structures benefitting from support and in charge of technical implementation of activities within the project.

31. Project implementation unit staff includes a coordinator, a financial officer, and a procurement specialist. The coordination unit has satisfactorily carried out operations realized under Project Preparation Facility (PPF), in interaction with the Line Ministry’s services involved in these activities and the PIU of the PRECASP Project. The procurement of PPF should be transferred to the PIU of the WARCIP project, which no longer needs coaching from the PIU of the PRECASP Project. The procurement for WARCIP Mauritania will be handled by the procurement specialist in the WARCIP PIU, whose recruitment and training into Bank’s procurement guidelines will be done, if need be, based on his previous skills and whenever it proves to be necessary during project implementation.

32. Although no specific case of lack of compliance with procurement rules has been noticed during the preparation of the project, the quality of procurement by the staff in charge of implementation is considered weak, and overall institutional, political, and

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89 In order to comply with its own procurement policies, EIB will undertake to publish on behalf of Mauritania any required procurement notices for the jointly co-financed contracts in the Official Journal of the European Union.
organizational risks are high. Consequently, capacity building will be considered as part of the project, with a strong emphasis on the training of the project team and of the CPMSS members, in: (i) designing procurement plans; (ii) preparing requests for proposals; (iii) establishing shortlists for services providers; (iv) publishing bidding documents, openings of proposals, and evaluation reports; (v) awarding and signing contracts; and (vi) implementing contracts and handling complaints.

33. Mitigation measures, detailed in Table below, have been agreed with the PIU during pre-appraisal to deal with noticed weaknesses. They consist in: (i) the training of staff involved in procurement to reinforce procurement capacity in the PIU, the CPMSS, the beneficiaries; (ii) the recruitment of short-term consultants, if need be, for specific technical activities and capacity reinforcement; (iii) the set-up of a system for the planning and management of contracts, benefiting the PIU, in coordination with the CPMSS and the CNCMP and ARMP; and (iv) the strengthening of the filing system for procurement documents.

<table>
<thead>
<tr>
<th>Weakness</th>
<th>Recommendation</th>
<th>Activity</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>No manual of procedures</td>
<td>Develop and adopt a manual of procedures deemed satisfactory to the Bank. This could be a section in the Project Implementation Manual.</td>
<td>Produce the procurement procedures in the PIM. Approve the manual. Train staff in using the manual</td>
<td>PIU</td>
<td>Done by negotiations</td>
</tr>
<tr>
<td>Weakness in the procurement document classification system</td>
<td>Improve the procurement document classification system at project and CPMSS levels</td>
<td>Appoint a person in charge of filing Appoint a local for filing and provide necessary equipment and filing cabinets</td>
<td>PIU</td>
<td>First three months of project execution at most</td>
</tr>
<tr>
<td>Weaknesses in the CPMSS members’ knowledge in terms of the Bank procurement procedures</td>
<td>Training of CPMSS members.</td>
<td>Training of CPMSS members.</td>
<td>PIU/CPMSS</td>
<td>First three months of project execution at most</td>
</tr>
</tbody>
</table>
34. The overall project risk for procurement under this project is High; it may be Substantial once the mitigation measures are in place.

**Procurement Plan**

35. A procurement plan was approved by the Bank. It will be available at the respective offices of the PIU, the ARMP and the CNCMP. It will also be available in the project’s database and in the Bank’s external website. The Procurement Plan will be updated in agreement with the Project Team at least annually or as required, to reflect the actual project implementation needs and improvements in institutional capacity. All subsequent updates will be disclosed in the same way as mentioned above, once they are approved by the Bank.

### Thresholds for Procurement Methods and Prior Review

<table>
<thead>
<tr>
<th>Expenditure Category</th>
<th>Contract Value (Threshold) Amounts in US$</th>
<th>Procurement Method</th>
<th>Contract Subject to Prior Review US$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Works</strong></td>
<td>≥ 10,000,000</td>
<td>ICB</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>&lt; 10,000,000</td>
<td>NCB</td>
<td>On a case by case basis</td>
</tr>
<tr>
<td></td>
<td>&lt; 100,000</td>
<td>Shopping/price Comparison</td>
<td>On a case by case basis</td>
</tr>
<tr>
<td></td>
<td>No threshold</td>
<td>Direct contracting</td>
<td>All</td>
</tr>
<tr>
<td><strong>2. Goods and non-consulting services</strong></td>
<td>≥ 1,000,000</td>
<td>ICB</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>&lt; 1,000,000</td>
<td>NCB</td>
<td>On a case by case basis</td>
</tr>
<tr>
<td></td>
<td>&lt; 50,000</td>
<td>Shopping</td>
<td>On a case by case basis</td>
</tr>
<tr>
<td></td>
<td>No threshold</td>
<td>Single Source Selection</td>
<td>All</td>
</tr>
<tr>
<td><strong>3. Consulting services</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3.1 Firms</strong></td>
<td>No threshold</td>
<td>QCBS; QBS; LCS; FBS;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 100,000</td>
<td>CQS</td>
<td>All short-lists under CQ</td>
</tr>
<tr>
<td><strong>3.2 Individuals</strong></td>
<td>No threshold</td>
<td>Selection of Individual Consultants (Comparison of at least 3 CVs)</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>No threshold</td>
<td>Single Source Selection (Firms &amp; Individuals)</td>
<td></td>
</tr>
</tbody>
</table>

All ToRs regardless of the value of the contract and the selection method, are subject to prior review.
## Simplified Procurement Plan

### 1. Works

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description of assignment</th>
<th>Estimated cost (US$)</th>
<th>Selection method</th>
<th>Pre qualification (yes/no)</th>
<th>Domestic preference (yes/no)</th>
<th>Review by the Bank (prior/post)</th>
<th>Expected Bid Opening Date</th>
<th>Expected Contract Signature Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fiber optic links (Link 1: 531km Nouakchott-Atar-Choum; Link 2: 723km Rosso-Boghe-Kaedi-Selibaby-Kiffa; Link 3: 280km Aioun-Nema; Link 4 – 43km Selibaby-towards Mali border)</td>
<td>39,500,000</td>
<td>ICB</td>
<td>Yes</td>
<td>No</td>
<td>prior</td>
<td>1st quarter 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IXP / Datacenter building</td>
<td>1,000,000</td>
<td>ICB</td>
<td>Yes</td>
<td>No</td>
<td>prior</td>
<td>2nd quarter 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>40,500,000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2. Goods and non-consulting services

<table>
<thead>
<tr>
<th></th>
<th>Description of assignment</th>
<th>Estimated cost (US$)</th>
<th>Selection method</th>
<th>Pre qualification (yes/no)</th>
<th>Domestic preference (yes/no)</th>
<th>Review by the Bank (prior/post)</th>
<th>Expected Bid Opening Date</th>
<th>Expected Contract Signature Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FMS software</td>
<td>30,000</td>
<td>Shopping</td>
<td>No</td>
<td>No</td>
<td>post</td>
<td>2nd quarter 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IT, telecoms, and office equipment</td>
<td>30,000</td>
<td>Shopping</td>
<td>No</td>
<td>No</td>
<td>post</td>
<td>1st quarter 2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Internet Xpoint equipment and equipment to design management policy for “.mr” domain name</td>
<td>200,000</td>
<td>NCB</td>
<td>No</td>
<td>No</td>
<td>post</td>
<td>1st quarter 2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>260,000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3. Consulting services

<table>
<thead>
<tr>
<th></th>
<th>Description of assignment</th>
<th>Estimated cost (US$)</th>
<th>Selection method</th>
<th>Review by the Bank (prior/post)</th>
<th>Expected Bid Opening Date</th>
<th>Expected Contract Signature Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Assistance to MEFPNT, ARE and APAUS to implement Open Access Regime &amp; PPP for national backbone including transaction/legal, regulatory and economic/financial support</td>
<td>250,000</td>
<td>QCBS</td>
<td>Prior</td>
<td>3rd quarter 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Development for ARE of cost models for interconnection (fixed and mobile) and for broadband wholesale offers including facility sharing and support in defining the relevant markets and approving the interconnection catalogue (3 years)</td>
<td>700,000</td>
<td>QCBS</td>
<td>prior</td>
<td>2nd quarter 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Study for MEFPNT APAUS and ARE on broadband stimulation strategies, including supporting ISPs creation, using universal access funds and costing and leveraging Mauripost network, and associated action plan</td>
<td>550,000</td>
<td>QCBS</td>
<td>Prior</td>
<td>1st quarter 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Technical assistance to MEFPNT to design management policy for “.mr” domain name</td>
<td>150,000</td>
<td>QCBS</td>
<td>Prior</td>
<td>2nd quarter 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sector fiscal study for MEFPNT and ARE</td>
<td>250,000</td>
<td>QCBS</td>
<td>Prior</td>
<td>4th quarter 2013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Training, workshops, seminars and conference

36. The expenditure of these activities will be carried out on the basis of approved annual programs.

Environmental and Social

37. The terrestrial fiber optic links are expected to follow roads already in place and the IXP/Carrier Hotel/Datacenter building to be built on an existing technical site or on the adjacent piece of land owned by GoM. From an environmental and social safeguard standpoint, the WARCIP Mauritania project is rated as a Category B. That is, the environmental and social impacts of the project, for the most part, are expected to be minimal, site-specific and manageable to an acceptable level.

38. Triggered safeguard policies. Because of the environmental and social impacts that may result from the works related to the terrestrial fiber optic links and the IXP/Carrier Hotel/Datacenter building, the Bank Safeguard policy Environmental Assessment (OP/BP 4.01) is triggered. Natural Habitats (OP/BP 4.04) is triggered as well because of some humid areas and fragile ecosystems (in particular for the Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa and the Link 4 – 43km Selibaby (directly or indirectly) towards Mali border) that may be negatively impacted. Physical Cultural Resources (OP/BP 4.11) is triggered should archeological sites be discovered during works. Finally, Involuntary Resettlement (OP/BP 4.12) is triggered because WARCIP Mauritania may result in displacement or loss of activities. In line with the triggering
of these four safeguard policies⁹⁰ and because of the lack of site-specific information about the environmental and social characteristics of future investments, GoM has prepared and consulted upon 2 safeguards instruments, namely an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (ESMF).

39. The project is expected, thanks to lower prices and better access to communications services, to have several positive social benefits including decreasing the cost of doing business, reducing the urban / rural divide, improving the security situation, increasing the prospect for job creation and wealth generation, and enabling Mauritania to reap the benefits of ICT as a platform to deliver services to their citizens and to SMEs.

40. Despite these expected positive social benefits, negative environmental and social impacts of the project will come mainly from the laying of the fiber (and excavation through human settlements, fields, forests, etc.) that could lead to: soil erosion (in dune areas); soil and water pollution; loss of vegetation (tree felling); the disruption of life (waste from work), of socio-economic activities and livelihoods located on the way (workshops, garages, shops, etc.); disturbance of traffic; noise; dust; risk of accident and the generation of waste; occupation of private land; possible destruction of crops (in the areas of Rosso, Boghé, Kaédi, Selibabi, Kiffa and Nema), but also the risk of vandalism and social frustration when local workforce is not used. By contrast, negative impacts for the IXP/Carrier Hotel/Datacenter should be limited to risks of accidents during the works.

41. The ESMF outlines: (i) mitigation of impacts of the fiber laying, including environmental guidelines for contractors and guidelines applicable to health, safety and environment; (ii) measures in case of archaeological discovery; (iii) institutional strengthening measures (strengthening environmental expertise of the WARCIP PIU); (iv) strengthening technical measures (provision for the implementation of environmental impact assessments ; monitoring and evaluation of WARCIP); (v) informing stakeholders involved in the implementation of the project and public awareness; (vi) a program of surveillance and monitoring; (vii) institutional responsibilities for environmental monitoring; (viii) the institutional arrangements for implementing the ESMF; (ix) the recommendations for implementation; (x) the timing for the implementation of measures and the Costs of environmental and social measures. The total cost of activities is estimated at US$700,000.

42. The proposed operation, mainly the terrestrial fiber optic links which follow roads already in place and the IXP/Carrier Hotel/Datacenter to be built on an existing technical site, is not expected to pose risks of damaging existing community cultural property. Nevertheless, proposed activities will be screened for their potential impacts on cultural property and chance find procedures will be applied and appropriate mitigation measures for both the identification and protection of cultural property. These measures will be included in standard bidding documents as part of the social and environmental clauses for consideration by the construction companies. While not damaging cultural property, activities preparation may later identify and include assistance for preservation of historical or archeological sites. If these opportunities

⁹⁰ The ESMF confirms that there is no territorial dispute affecting the project area for the purposes of OP/BP 6.60.
occur, cultural property management plans would be prepared for those activities. The ESMF has provided the systematic steps to be followed once these properties are discovered during project implementation.

43. The proposed activities under this operation should not cross natural parks or reserves. However, the project will make special arrangements to avoid sensitive sites (wetlands and critical natural habitats). If the works will result any pressures on natural ecosystems, fauna and flora, the ESMF has recommended step to be followed during ESIA preparation in addition to avoid these sites with the project design (for example, following existing roads as much as possible).

44. The RPF estimates that the implementation of the WARCIP Mauritania project is likely to cause the following potential impacts: (i) impact on land: permanent acquisition of the land required for the facilities; (ii) impact on buildings and other structures: loss of habitat or buildings, reduction of farmland following the realization of basic socio-economic infrastructure; (iii) impact on livelihoods and incomes: damage to persons, including loss of land, of shelters and stores or other communal properties. However if the project only follows the existing road network, it is unlikely that it would require more than the temporary displacement of socio-economic activities and livelihoods located on the right-stations and roads, or demolition and replacement of infrastructure edge invading the hold road routes in areas that are potentially targeted. The accurate estimate of the number of people who will be affected is not feasible at this stage of the study. However, a rough estimate of 400 could be made according to the planned route. Land requirements are estimated at 20 ha. All in all, the overall cost of resettlement can be estimated at US$ 450,000, based on estimates of affected populations and areas required for the implementation of the Project.

45. The ESMF has been disclosed publicly. The ESMF was submitted in draft form to the World Bank and to the EIB on January 10, 2013. Consolidated comments have been provided by the two Bank’s environmental and social safeguards teams on January 22, 2013 and on February 19, 2013. The RPF was submitted in draft form to the World Bank and to the EIB on January 25, 2013. Consolidated comments have been provided by the two Bank’s environmental and social safeguards teams on February 19 and on February 28, 2013. Draft versions were discussed in a public workshop organized by the WARCIP PIU with all stakeholders on March 3, 2013. Following clearance by the World Bank, both documents have been disclosed publicly in the country and as well as in the Bank Infoshop on March 12, 2013?. Relevant provisions of the safeguards documents (ESMF, RPF) are included in the Project Implementation Manual.

46. Once the final paths and sites are chosen and the specific civil works identified, an Environmental and Social Assessment including an ESMP and a RAP will be prepared by GoM as part of project implementation but before the terrestrial fiber optic links are laid and the IXP/Carrier Hotel/Datacenter is built. Key stakeholders for consultation will include current inhabitants (where applicable), the line Ministry in charge of Environment and Sustainable Development (MDEDD), businesses and civil society.
Arrangements for environmental and social safeguards supervision

47. The National Connectivity Steering Commission, in which the Line Ministry in charge of Environment and Sustainable Development is being represented, will bear overall responsibilities for compliance of safeguard activities to national and Bank policies. The supervision of safeguards implementation for WARCIP Mauritania will be done as part of the overall project implementation by the WARCIP PIU (on behalf of the National Connectivity Commission) in conjunction with the Line Ministry in charge of Environment and Sustainable Development.

48. The technical expert within the WARCIP PIU will serve as an Environment and Social Safeguards Focal Point (Point Focal Environnement et Social (PFES)) that will be in charge of coordinating the implementation, the monitoring (control and audit) of social and environmental aspects and be an interface between the project, local authorities and other stakeholders. He will be assisted by two external environmental and social experts:
   - During project preparation: The Firm (Bureau d’études (EES/BE)) selected to provide Technical Assistance to support tender design and evaluation of the terrestrial fiber optic links and the IXP/Carrier Hotel/Datacenter will have amongst its key experts an environmental and social expert.
   - During project implementation: The Firm (Bureau de Contrôle (EES/BC)) selected to provide Project Management during the construction of the terrestrial fiber optic links and the IXP/Carrier Hotel/Datacenter will have amongst its key experts an environmental and social expert.

49. Successful implementation of project safeguard requirements and performance measurement requires regular monitoring and evaluation of activities to comply with national and Bank safeguard policies. This will also help ensure that implementation of project safeguard measures are systematically carried out throughout the life of the project. To do so, a list of verifiable indicators is defined in the ESMF that will be measured as part of the project global monitoring plan. The Environmental and Social Safeguards Focal Point within the WARCIP PIU will bear the primary responsibility for collecting data supported by the external environmental and social experts mentioned above and by the Line Ministry in charge of Environment and Sustainable Development.

50. To ensure successful implementation of the project safeguard measures, capacity of the WARCIP PIU as well as of the Line Ministry MDEFPNT, the APAUS and of the Line Ministry in charge of Environment and Sustainable Development will be strengthened throughout the project. To ensure effective Bank supervision, the WARCIP PIU will prepare and update reports on the implementation of the safeguards instruments prepared under WARCIP Mauritania before Bank supervision missions (see Annex 5). World Bank supervision teams will include the environmental and social specialists.
Financing of environmental and social safeguards

51. The funding requirement for the environmental and social safeguards is estimated in total at US$1,190,000. Bank will finance US$800,000 and GoM US$390,000 (see details below).

Figure 9: Overview of WARCIP Mauritania Implementation Arrangements

<table>
<thead>
<tr>
<th>Safeguards preparation and implementation</th>
<th>IDA</th>
<th>Counterpart</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of safeguards documents - ESIA/ESMP/RAP (Réalisation des documents de sauvegardes EIES/PGES/PAR)</td>
<td>240,000+150,000 =390,000</td>
<td>0</td>
<td>390,000</td>
</tr>
<tr>
<td>ESMP implementation (Provision pour la mise en œuvre des EIES)</td>
<td>0</td>
<td>150,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Afforestation compensation (Mesures de reboisement compensatoires)</td>
<td>50,000</td>
<td>0</td>
<td>50,000</td>
</tr>
<tr>
<td>RAP implementation (Provision pour la mise en œuvre des PAR)</td>
<td>0</td>
<td>240,000</td>
<td>240,000</td>
</tr>
<tr>
<td>WARCIP Permanent monitoring during preparation phase (Suivi permanent du projet)</td>
<td>20,000*</td>
<td></td>
<td>20,000</td>
</tr>
<tr>
<td>WARCIP Permanent monitoring during implementation phase (Suivi permanent du projet)</td>
<td>120,000+50,000 =170,000**</td>
<td></td>
<td>170,000</td>
</tr>
<tr>
<td>Institutional support to Line Ministry in charge of Environment and Sustainable Development (Suivi DCE)</td>
<td>30,000+50,000=80,000</td>
<td>0</td>
<td>80,000</td>
</tr>
<tr>
<td>Mid-term and Final evaluation (Evaluation à mi-parcours et finale)</td>
<td>30,000</td>
<td></td>
<td>30,000</td>
</tr>
<tr>
<td>Subtotal Safeguards preparation and implementation</td>
<td>740,000</td>
<td>390,000</td>
<td>1,130,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information and Awareness</th>
<th>IDA</th>
<th>Counterpart</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and Awareness of people in the terrestrial areas where works will take place as well as on security during works (Campagnes d’information et de sensibilisation sur la nature des travaux, l’implication des acteurs locaux, les enjeux environnementaux et sociaux, ainsi que sensibilisation sur la sécurité et l’hygiène lors des travaux)</td>
<td>60,000</td>
<td></td>
<td>60,000</td>
</tr>
<tr>
<td>Subtotal Information and Awareness</td>
<td>60,000</td>
<td>0</td>
<td>60,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>800,000</td>
<td>390,000</td>
<td>1,190,000</td>
</tr>
</tbody>
</table>

* included in the budget for the Technical Assistance to MEFPNT, ARE and APAUS to implement Open Access Regime & PPP for national backbone including transaction/legal, regulatory and economic/financial support ** Included in the budget for the Control / evaluation of backbone and Internet Xpoint and Carrierhotel/Datacenter works
Monitoring & Evaluation

52. Monitoring arrangements and data collection. The WARCIP Mauritania PIU will monitor and evaluate all project indicators, plus additional one as they see fit, under a detailed Monitoring and Evaluation Plan.

(a) PDO Level Results Indicators and Intermediate Results. The WARCIP Mauritania PIU will get its information from ARE but also directly from the operators or other stakeholders when necessary. ARE will bear the primary responsibility for collecting data from the operators and ISPs and will conduct ad-hoc surveys as appropriate (e.g. for the purpose of Increased access to ICT services: Number of localities with broadband Internet access (256Kbps) assessment); in order to ensure a smooth and regular collection of information, ARE will identify within each source of data (operators, ISPs) a focal point that will serve as ARE’s counterpart for M&E so that the person can anticipate data collection and the necessary resources and provide data to ARE. Indicators will be collected yearly as a minimum, but AEP will endeavor to collect them every 6 months. AREP will designate a focal point for M&E that will provide the WARCIP Mauritania PIU with collected monitoring and evaluation indicators.

(b) Environmental and Social Indicators. The WARCIP Mauritania PIU through its technical expert in charge of Environmental and Social Safeguards, assisted by two external environmental and social experts, will bear the primary responsibility for collecting data relative to verifiable indicators defined in the safeguard documents for the connectivity component financed under WARCIP Mauritania that will be measured as part of the project global monitoring plan.

53. Views of direct beneficiaries. The views of the 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, Internet Services Providers and private ICT firms, which ultimately are the main beneficiaries of the project’s outcome.

54. Indicators.

(a) PDO Level Results Indicators and Intermediate Results. The project includes 12 indicators to measure the success or not of this operation. The first 5 are PDO level indicators, measuring the progress toward PDO achievement. Each of these 5 indicators assesses a particular aspect of the Project Development Objective. At the end of the project, the success of this operation will be measured against the target values of the PDO indicators (see Annex 1). Intermediate Results Indicators will assist in measuring more specifically the results of Component 1 – “Supporting connectivity” and of Component 2 – “Creating an enabling environment for
connectivity; these indicators have been defined building upon lessons learned in previous APLs of WARCIP as well of CAB, RCIP and CARCIP. The WARCIP Mauritania PIU will be able to measure whether the implementation is on track or not by benchmarking the yearly targets of these indicators. If the project execution goes off track, the WARCIP Mauritania PIU must propose a list of corrective actions (see section on Reporting).

(b) Environmental and Social Indicators. The project includes 18 strategic indicators to follow the ESMF, complemented by 24 indicators to follow specifically the RAF. The WARCIP Mauritania PIU will be able to measure whether the implementation of environmental and social safeguards is on track or not. If the implementation goes off track, the WARCIP Mauritania PIU must propose a list of corrective actions (see section on Reporting).

55. Reporting. The WARCIP Mauritania PIU will have overall responsibility for reporting to the MDEFPNT and to the National Connectivity Steering Commission. There technical expert in charge of M&E will liaise with ARE’s focal point as well as with environmental and social stakeholders and will put together the M&E report biannually 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. The report will be sent to the Bank for information.

Role of Partners

56. The proposed operation builds upon the Bank’s convening power and leverages IDA resources through co-financing resources made available by the European Investment Bank (EIB). EIB financed €8 million from the US$25 Million share of Mauritania into the new ACE sub marine cable in accordance with PPP and Open Access principles. EIB is co-financing the proposed network extensions under WARCIP Mauritania (shown in blue in the Figure below) as well as the IXP/carrier hotel/datacenter building under the same principles. The Bank and the EIB are discussing a Memorandum of Understanding (“MoU”) to cooperate and coordinate their respective arrangements in relation to procurement of goods and works and on safeguard matters. With respect to safeguard matters, the EIB requires the project’s compliance with its environmental and social requirements, some of which go beyond the scope of the Bank’s environmental and social policies. GoM confirmed it is willing and able to comply with all such policies and set forth such obligation in its safeguard documents. The Bank will not appraise, supervise or monitor any matter that is beyond the scope of its safeguard policies. It is expected that the MoU will be signed before Board. The financing partnership between the World Bank and the EIB is structured as follows:
57. **AfDB.** Following an identification mission in Nouakchott from January 14 to 20, 2013, AfDB is funding (i) a feasibility study for e-government applications identified in GoM’s 2012-2016 Strategy for ICT and Modernization of Public Service mentioned above (and that could be deployed nationwide using the connectivity deployed under WARCIP Mauritania), (ii) a feasibility for a technopole (combined technological and business center) as well as (iii) technical assistance on the legal and regulatory framework to foster harmonization at AMU level.  

Lending could be envisaged under FAD-13 to be launched early 2014.

58. **AU and ISOC.** The African Union (AU) has awarded the Internet Society (ISOC) a contract to deliver community mobilization (best practices) and technical aspects workshops (hands-on) to support the establishment of Internet exchange points (IXPs) in thirty (30) AU Member States as part of Phase I of the African Internet Exchange System (AXIS) project, which includes Mauritania. As part of the first phase of the project, ISOC organized an AXIS Best Practices workshop in Nouakchott, Mauritania on February 18 and 19, 2013. ISOC and the AU are providing resources and preparing materials for a Technical Aspects Workshop that will seek to build capacity in terms of the technical aspects and human capacity required to establish, maintain, and sustain an IXP in Mauritania. The host of the Best Practices workshop was the MDEFPNT. ISOC could work with the AU and the World Bank to define further actions to follow up on the Best Practices Capacity Building and Technical Aspects Workshops (as defined under the AXIS project) in Mauritania. ISOC would implement such additional Technical Assistance as a complement to the AXIS project.

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91 As a follow-up of a 2011 study commissioned by AMU ("Etude d’harmonisation du cadre légal et réglementaire du secteur des TIC dans les pays de L’UMA") with AfDB funding.
Annex 4: Operational Risk Assessment Framework (ORAF)
AFRICA: WARCIP Mauritania
Stage: Board

<table>
<thead>
<tr>
<th>Project Stakeholder Risks</th>
<th>Rating</th>
<th>Substantial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong>:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is already an experience with PPP in Mauritania for the ACE submarine cable and landing station. However, despite initial interest for a PPP on economically less interesting paths of the national backbone and identification of the preferred between the 2 main options to be considered through consultation between public and private stakeholders, there is a risk of private sector main stakeholders not having the same initial interest as GoM and resisting an attempt to boost facility-sharing at industry level.</td>
<td>Risk Management:</td>
<td>PPA resources are used to finance extensive legal, economic and regulatory technical assistance for GoM to implement in close interaction with the private sector the preferred PPP option singled out with all stakeholders through consultation (expanding the activities of the existing PPP IMT to the operation of backbone links and IXP/Carrier Hotel/Datacenter building, GoM retaining the property of the assets through a Holding Company for Digital Assets). GoM is also willing to consider proceeds of the universal access should there be financing needs in the initial years of operation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementing Agency Risks (including fiduciary)</th>
<th>Rating:</th>
<th>Substantial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong>:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The main capacity constraints are those related to the capacity of staff of Line ministry MDEFPNT to leverage the proposed operation to advance key priorities of the 2012-2016 Strategy and to make timely decision in conjunction with other beneficiaries regulatory authority ARE and universal access agency APAUS (leading to delays in implementation and slow disbursement).</td>
<td>Risk Management:</td>
<td>To ensure coordination with all beneficiaries of the project (MDEFPNT, ARE and APAUS) and involvement of other governmental stakeholders, a National Connectivity Steering Commission (“comité de pilotage du projet de connectivité nationale”) was established by Ministerial Decision n°679/MDEFPN from March 21, 2012, in charge of providing overall technical and operative guidance, direction and coordination during project implementation.</td>
</tr>
</tbody>
</table>

Because WARCIP Mauritania will support key strategic goals of the 2012-2016 Strategy for ICT and Modernization of Public Service, a small WARCIP Mauritania PIU will be set up in the line ministry with overall responsibility for smooth project implementation and coordination with the
Bank and EIB. The small PIU will be comprising of a procurement specialist, a financial and administration specialist, an accountant and a technical expert (also in charge of M&E, including environmental and social safeguards) financed by the project. The coordinator and the deputy coordinator of WARCIP will be chosen so as to coincide with senior governmental positions directly entrusted with implementing the 2012-2016 Strategy and financed by GoM counterpart funding. The WARCIP Mauritania PIU is nurtured during the PPA in the PIU of an existing Bank project (PRECASP), with PRECASP being responsible for compliance with Bank’s procurement, financial management and M&E (including safeguards) policies until evaluation by the Bank’s procurement and financial management specialists confirms that responsibilities can be handed over from PRECASP to WARCIP Mauritania. A similar arrangement has been successfully implemented in Mauritania in the transport sector.

| Resp: Client | Stage: Preparation | Due Date: 04/30/2013 | Status: In progress – not yet due |
| Risk Management: |
| The Bank will fund targeted TA and capacity building activities as part of the operation throughout project preparation and implementation. The strategy for implementation support (see Annex 5) has also been developed to provide mitigation measures to capacity risk. |

| Resp: Client | Stage: Preparation/Implementation | Due Date: 09/30/2013 | Status: In progress – not yet due |
| Risk Management: |
| The Bank will fund targeted capacity building activities as part of the program throughout the project preparation and implementation, either in the framework of a general support to capacity building of the public sector (e.g. via PRECASP) or should an urgent need arise via the WARCIP Mauritania contingencies. |

| Governance |
| Rating: Substantial |
| Description: |
| As there has not always satisfactory adherence to the public procurement laws and regulations, particularly with regards to an open and competitive process, GoM has recently reformed the public procurement laws and regulations. However, the recently created Public Procurement Commission in charge (amongst other sectors) of ICT remains in need for technical support. |

| Project Risks |
| Rating: Substantial |
| Description: |
| Mauritania has set up a PPP with the 3 mobile operators to finance and operate according to open access principles a landing station of the ACE submarine cable to have direct access to international connectivity. These PPP negotiations were difficult, and hence the same may be expected for the PPP negotiations for the missing links of the national backbone that are deployed on economically less interesting paths. |
| Risk Management: |
| PPA resources are used to finance extensive legal, economic and regulatory technical assistance for GoM to implement in close interaction with the private sector the preferred option singled out with all stakeholders and confirmed by GoM at appraisal. It is expected that the transactional process will be well advanced before Board. |

| Resp: Client | Stage: Preparation/Implementation | Due Date: 09/30/2013 | Status: not yet due |
The Mauritanian fiber optic backbone will comprise of infrastructure built by the incumbent Mauritel, infrastructure by private companies such as mining or utilities making available excess capacity to operators as well as missing links set up and operated under a PPP. There is a risk of not having a fully redundant national network if appropriate open access and interconnection regulation is not enforced by the regulatory authority ARE.

While GoM has confirmed its commitment to counterpart funding for the PIU and for the environmental and social safeguards that cannot be financed by the project, some delays in availability of funds may be experienced.

Social & Environmental

Description:
The exact path of the fiber and the location of the associated technical sites are not yet known: there is a risk of adverse social and environmental impact of the project.

The Line Ministry and the PIU have limited capacity for safeguards. Given that a lot more will be required for ensuring compliance from safeguards instrument preparation and reviews to implementation, there will be the need for capacity building.

Risk Management:
PPA resources are used to financed technical assistance to ARE on key regulatory tools (definition and implementation of fiber optic interconnection and sharing regulation tools; assessing technical, financial and operational conditions to access fiber made available by third parties) required by the new electronic communications law expected to be approved in Council of Ministers by End of April 2013.

Resp: Client / PIU | Stage: Preparation | Due Date : 09/30/2013 | Status: In progress - not yet due

Risk Management:
The Ministry of Finance will be responsible for including the counterpart funding in the Finance Laws and for channeling the subventions to the PIU according to a specific schedule in order to mitigate risks of untimely availability of counterpart funding.

Resp: Bank | Stage: Preparation | Due Date : 04/8/2013 | Status: achieved

Risk Management:
As neither the exact path alongside existing roads nor the exact location of the neutral carrier hotels / national and regional IXPs have been defined yet, and Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) has been prepared, consulted upon, and disclosed for each country prior to Project appraisal. These documents were reviewed and cleared by the World Bank and made public in the country as well as in the Bank InfoShop. Once the final paths and sites are chosen and the specific civil works identified an Environmental and Social Assessment including an ESMP, and a RAP, as and when necessary will also be prepared.

Resp: Client / PIU | Stage: Preparation | Due Date : 03/12/2013 | Status: achieved

Risk Management:
A technical expert in the PIU financed by the project will be in charge of M&E, including environmental and social safeguards: he will coordinate the implementation, the monitoring (control and audit) of social and environmental aspects and be an interface between the project, local authorities and other stakeholders. Arrangements for environmental and social safeguards supervision will be defined and agreed upon with GoM as well as funding requirements prior to Project Appraisal. Relevant provisions of the safeguard documents will be included in the PIM. Bank will fund targeted capacity building activities as part of the program throughout the project implementation. Input from Bank’s environment and social specialists will also be provided under implementation support (see Annex 5) to support the PIU and the Line Ministry in charge of Environment in monitoring effective implementation of safeguards.

Resp: Client / Bank | Stage: Preparation/ Implementation | Due Date : on going | Status: In progress - not yet due
The Project will involve PPP schemes: there is a risk that responsibilities for social and environmental safeguards are not precisely defined.

**Program & Donor**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rating: Moderate</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Bank and the EIB will jointly co-finance the 4 fiber optic missing links (Link 1: 531km Nouakchott-Atar-Choum ; Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa ; Link 3: 280km Aioun-Nema ; Link 4 – 43km Selibaby-Mali border) as well as the neutral carrier hotel. For joint co-financing, donors contribute towards financing the same individual contract/expenditure/invoice: there is a need for complete harmonization among donors with regard to procurement and attendant anti-corruption policies as well as for safeguard policies. Project is partly dependant on successful interconnection with Mali.</td>
<td></td>
</tr>
</tbody>
</table>

**Risk Management:**

Appropriate technical clauses will be prepared and included in the biddings/binding documents for the PPP when necessary, to ensure the execution of agreed environmental and social safeguards measures and implementation of the recommendations in the instruments.

| Resp: Client | Stage: Preparation/Implementation | Due Date : 04/09/2013 | Status: not yet due |

| Resp: Bank | Stage: Preparation | Due Date : 05/30/2013 | Status: In progress - not yet due |

| Resp: Bank | Stage: Preparation/Implementation | Due Date : 09/30/2013 | Status: In progress - not yet due |

**Delivery Monitoring & Sustainability**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rating: Substantial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operators may be unwilling to disclose key financial and performance information. Capacity of PIU and of regulatory authority ARE for M&amp;E needs to be strengthened. Furthermore the country has not a culture of monitoring and evaluation.</td>
<td></td>
</tr>
</tbody>
</table>

**Risk Management:**

A technical expert in the PIU financed by the project will be in charge of M&E. Training and TA will be made available for M&E for this technical expert as well as for its counterparts within the regulatory authority ARE. The system will be designed in such a way as not to affect the operators’ competitiveness.

| Resp: PIU/Client | Stage: Preparation/Implementation | Due Date : on going | Status: In progress - not yet due |
### Description:
The Line ministry MDEFPNT and the regulatory authority ARE have commissioned (after ICB) a renowned law firm to assist in the drafting of a new Law that will revise the outdated legal and regulatory framework. There is a need to avoid delays in this new Law being enforced.

### Risk Management:
The Bank is supporting the Line ministry MDEFPNT and the regulatory authority ARE in FY13 under TA P132810. Approval of draft Law by GoM in Council of Minister is expected by Mid April 2013. A legal covenant for the project with September 30, 2013 is proposed. In addition a TA for FY14 is considered.

<table>
<thead>
<tr>
<th>Resp: Client / Bank</th>
<th>Stage: Preparation /Implementation</th>
<th>Due Date : 04/30/2013</th>
<th>Status: Not yet due</th>
</tr>
</thead>
</table>

### Description:
Incumbent operator Mauritel (subsidiary of Maroc Telecom) is not yet interconnected with its fiber optic Nouakchott – Nouadhibou to Maroc Telecom on the other side of the Northern border of Mauritania. Failure to put in service the strategic terrestrial backbone linking all Maroc Telecom’s subsidiaries (Mauritania, Mali, Burkina Faso) may negatively impact Mauritel’s interest for WARCIP Mauritania.

Since the project takes Mauritania more tightly into ECOWAS, even though it has previously moved toward AMU, there could be resistance in some circles to this move.

### Risk Management:
Pursuant to the ACE landing station in Nouakchott being RFS, the availability of cross border connections to Morocco, to Mali and to Senegal via already existing fibers are key for disseminating the new international connectivity. The team will closely monitor the situation under its ongoing ICT policy dialogue with GoM.

<table>
<thead>
<tr>
<th>Resp: Client</th>
<th>Stage: Preparation/Implementation</th>
<th>Due Date : 12/31/2013</th>
<th>Status: Not yet due</th>
</tr>
</thead>
</table>

### Description:
Even if possible political concerns with respect to AMU vs. ECOWAS cannot be ignored, Mauritania is already closely aligned with the 15 ECOWAS countries in terms of ICT policy and regulation through its membership in WATRA. Secondly, there is already an existing cross border interconnection with Senegal and the incumbent Mauritel is about to open an interconnection with Mali. There is therefore little likelihood that this could cause delays or cancellation of the cross border links foreseen in the project, but the team will closely monitor the situation under its ongoing ICT policy dialogue with GoM.

<table>
<thead>
<tr>
<th>Resp: Client</th>
<th>Stage: Preparation/Implementation</th>
<th>Due Date : on going</th>
<th>Status: In progress - not yet due</th>
</tr>
</thead>
</table>

### Overall Risk Following Review

<table>
<thead>
<tr>
<th>Implementation Risk Rating:</th>
</tr>
</thead>
</table>
Strategy and Approach for Implementation Support

1. The strategy for implementation support (IS) has been developed based on the nature of the project and its risk profile, taking into account the specificities of the EIB jointly co-financing the connectivity component of the WARCIP Mauritania project. It will aim at making implementation support to the client more flexible and efficient, and will focus on implementation of the risk mitigation measures defined in the ORAF.

2. Resources under the PPA are expected to ensure that the policy, regulatory, environmental and social safeguards, as well as requisite capacity are in place before Board. The PPA is also expected to ensure that the Government has the requisite Transaction, Legal and Regulatory experts to ensure open access as well as effective structuring of PPPs to own and manage communications infrastructure.

3. 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.

Implementation Support Plan

4. The Bank team members will be based either in Washington DC, 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, jointly with EIB semi-annually initially, with possibility for annual visits in later years of the project. Ongoing exchanges of information with AfDB will be organized, as required by the preparation of the partner’s project. Detailed inputs from the Bank team are addressed below:

(a) 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 support and conduct supervision visits whenever needed. The team will liaise with the legal department on a need basis to support the review on PPP instruments, licenses and corporate/contractual documents developed under the project.

(b) Procurement. Implementation support by a Procurement specialist based in the region will include: (a) reviewing procurement documents and providing timely feedback to the WARCIP Mauritania PIU; and (b) monitoring procurement progress against the detailed Procurement Plan. In addition to the prior review supervision to
be carried out from Bank offices, the capacity assessment of the Project Implementation Unit (PIU) has recommended supervision missions every six months to visit the field and to carry out during one of these missions, post review of procurement actions.

(c) **Financial management.** Supervision of the financial management arrangements will be risk-based. Given the Moderate risk rating associated with existing Financial Management Arrangements, one site supervision visit will be conducted each year by the Bank in addition to the review of IFR and the audited financial statements. The following implementation support plan is proposed. The objective of the implementation support plan is to ensure the project maintains a satisfactory financial management system throughout the project’s life.

<table>
<thead>
<tr>
<th>FM Activity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desk reviews</strong></td>
<td></td>
</tr>
<tr>
<td>Interim financial reports review</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Audit report review of the program</td>
<td>Annually</td>
</tr>
<tr>
<td>Review of other relevant information such as interim internal</td>
<td>Continuous as they become available</td>
</tr>
<tr>
<td>control systems reports.</td>
<td></td>
</tr>
<tr>
<td><strong>On site visits</strong></td>
<td></td>
</tr>
<tr>
<td>Review of overall operation of the FM system</td>
<td>Annual for Implementation Support Mission</td>
</tr>
<tr>
<td>Monitoring of actions taken on issues highlighted in audit reports,</td>
<td>As needed</td>
</tr>
<tr>
<td>auditors’ management letters, internal audit and other reports</td>
<td></td>
</tr>
<tr>
<td>Transaction reviews (if needed)</td>
<td>As needed</td>
</tr>
<tr>
<td><strong>Capacity building support</strong></td>
<td></td>
</tr>
<tr>
<td>FM training sessions</td>
<td>During implementation and as and when needed.</td>
</tr>
</tbody>
</table>

(d) **Environmental and Social Safeguards.** The Bank team will supervise the implementation of the agreed Environmental Management Plan and provide guidance to the WARCIP Mauritania PIU to address any issues. Field visits may be required, but this will be confirmed on a need basis.

(e) **Other Issues.** Sector level risks will be addressed through policy dialogue with GoM and other beneficiaries ARE and APAUS.

(f) **Operation.** The TTL will provide day-to-day supervision of all operational aspects, as well as coordination with the client and among Bank members. If needed, a consultant may be used to support this role.
5. **The main focus of implementation support by the Bank team** is summarized below:

<table>
<thead>
<tr>
<th>Time</th>
<th>Focus</th>
<th>Skills Needed</th>
<th>Resource Estimate</th>
<th>Partner Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>First 6 months</td>
<td>Transaction/Legal Advisory Work</td>
<td>Procurement, FM, Program Coordinators Experienced Transaction and Legal Teams</td>
<td>$1.15 m</td>
<td>In collaboration with EIB</td>
</tr>
<tr>
<td>12-36 months</td>
<td>Control / evaluation of backbone and Internet Xpoint and Carrierhotel/Datacenter works</td>
<td>Procurement, FM, Program Coordinators In collaboration with EIB Experienced Technical Teams</td>
<td>$1.20 m</td>
<td>In collaboration with EIB</td>
</tr>
<tr>
<td>Project duration</td>
<td>Strengthening of regulatory and policy capacity and improving sector efficiency</td>
<td>Regulatory and ICT specialists</td>
<td>$2.60 m</td>
<td></td>
</tr>
</tbody>
</table>

**Skills Mix Required**

<table>
<thead>
<tr>
<th>Skills Needed</th>
<th>Number of Staff Weeks</th>
<th>Number of Trips</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task team leader and ICT Policy Specialist</td>
<td>8 SWs annually</td>
<td>Fields trips as required.</td>
<td>Washington, DC or Country office based</td>
</tr>
<tr>
<td>Procurement specialist</td>
<td>3 SWs annually first twelve months 2 SWs annually</td>
<td>Fields trips as required.</td>
<td>Country office based</td>
</tr>
<tr>
<td>Financial management specialist</td>
<td>2 SWs annually</td>
<td>Fields trips as required.</td>
<td>Country office based</td>
</tr>
<tr>
<td>Social specialist</td>
<td>1 SW first twelve months 0.5 SWs annually afterwards</td>
<td>Fields trips as required.</td>
<td>Country office based</td>
</tr>
<tr>
<td>Environment specialist</td>
<td>1 SW first twelve months 0.5 SWs annually afterwards</td>
<td>Fields trips as required.</td>
<td>Country office based</td>
</tr>
<tr>
<td>Legal support</td>
<td>1 SWs annually</td>
<td>Fields trips as required.</td>
<td>Washington, DC based</td>
</tr>
</tbody>
</table>

Note: SW – Staff-Week
## Partners

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Country</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIB</td>
<td>Luxembourg</td>
<td>Co-financier of 4 missing links and IXP / Carrier Hotel / Datacenter</td>
</tr>
<tr>
<td>AfDB</td>
<td>Tunis</td>
<td>AfDB is funding a feasibility study for e-government applications identified in GoM's 2012-2016 Strategy for ICT and Modernization of Public Service mentioned above (and that could be deployed nationwide using the connectivity deployed under WARCIP Mauritania) and may consider financing the roll-out of some of them at a later stage.</td>
</tr>
<tr>
<td>AU</td>
<td>Addis Ababa</td>
<td>The African Union (AU) has awarded the Internet Society (ISOC) a contract to deliver community mobilization (best practices) and technical aspects workshops (hands-on) to support the establishment of Internet exchange points (IXPs) in thirty (30) AU Member States as part of Phase I of the African Internet Exchange System (AXIS) project, which includes Mauritania. As part of the first phase of the project, ISOC organized an AXIS Best Practices workshop in Nouakchott, Mauritania on February 18 and 19, 2013. ISOC and the AU are providing resources and preparing materials for a Technical Aspects Workshop that will seek to build capacity in terms of the technical aspects and human capacity required to establish, maintain, and sustain an IXP in Mauritania. The host of the Best Practices workshop was the MDEFPNT. ISOC could work with the AU and the World Bank to define further actions to follow up on the Best Practices Capacity Building and Technical Aspects Workshops (as defined under the AXIS project) in Mauritania. ISOC would implement such additional Technical Assistance as a complement to the AXIS project.</td>
</tr>
</tbody>
</table>
Annex 6: Economic and Financial Analysis

1. Construction of missing links to Mauritania's regional and national fibre optic backbone is the most cost-effective long-term solution for improved access to broadband and other communications services in the territory of Mauritania as well as for providing important alternative routes to international connectivity in the region. Financial analysis was performed for the proposed missing links in Mauritania. Without a reliable and affordable broadband network in place, the benefits of Mauritania’s recent investment in the ACE submarine cable and landing station according to PPP and Open Access principles will not be fully realized: (i) areas of the country will not have access to the low cost international connectivity now available at Nouakchott and the areas already covered by fibre will be vulnerable to high costs and service interruptions due the lack of alternative routes and of a redundant ring structure to the network; and (ii) important alternative routes to international connectivity will not be provided for landlocked country Mali and potential upstream traffic via Mali from Niger and Burkina Faso, as well as a potential restoration route for Senegal. With the ACE international connectivity made Ready For Service since December 2012, the capacity in use is expected to increase rapidly due to the lower prices expected. This will create substantial additional pressure to ensure reliability of service, and new demand from the population in areas that expect to benefit similarly from the developments, but do not yet have access to low cost national fibre infrastructure. The analysis considered a variety of technical options and concluded that terrestrial fiber cable has an advantage over satellite and radio wave alternatives in terms of price and quality of service to disseminate international connectivity throughout the country and to its borders.

92 Based on the report and financial model developed by Sofrecom on behalf of APAUS (see: *Etude de faisabilité technico-économique d’un réseau national de fibres optiques en Mauritanie*, 2011), complemented by the business model developed by the Consultant CADMOS/JIDCOM/PROGRESSUS/BIRD&BIRD advising GoM on the PPP (see: *Présentation de différentes options envisageables de « PPP (Partenariat Public Privé) / Accès Ouvert au Réseau » pour la construction et l’exploitation des tronçons du backbone national financés dans le cadre du projet WARCIP Mauritanie, 2013*) as well as economic and financial analysis conducted jointly with EIB.

93 The Government of Mauritania has set up a Public Private Partnership (PPP) with the 3 mobile operators (incumbent Mauritel having been privatized some years ago) to finance and operate according to open access principles the landing station of the ACE submarine cable. It is the first time ever that Mauritania will have direct access to international fiber optic connectivity.

94 Satellite alternatives are more costly and suffer from lower quality of service 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 some 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. A new type of satellite service that is 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 03B, has yet to launch any satellites and is still much more costly when compared to the fiber options, so it was also eliminated from further consideration as a solution for the regional and national backbone links, although in the future in some remote areas it may have value for providing localised connectivity where there is no fiber.

95 Micro wave alternatives are also less cost-effective than fiber for broadband services. Operators indicate in addition that the use of terrestrial fiber instead of existing radio wave transmission links will also have a significant positive impact on the quality of service of voice calls (as more calls will be successful).
2. Operators and GoM have identified key missing links of the regional and national fibre optic backbone that they would be willing to build and operate under a PPP with Open Access to provide the potential for a rapid and massively improved access to broadband communications in Mauritania and in the sub-region. The analysis made in closest interaction with GoM and the operators finds that four proposed routes, deploying a total of an additional 1577 kilometers of terrestrial fiber links (shown in blue in the Figure below) in accordance with PPP and Open Access principles to augment the existing fiber infrastructure comprising of the dorsal single track Morocco Border-Nouadhibou-Nouakchott-Aleg-Kiffa-Aiou-Mali Border link built and operated by incumbent Mauritel\(^{96}\) as well as the other fibers in the North and in the South built by non telecom firms (Nouakchott-Rosso-Senegal Border by Manantali Energy Project; Nouadhibou-Choum-Zoueratt by Mining company SNIM) would create a reliable regional and national backbone with a ring topology covering most of the population in Mauritania, and linking to newly available low cost international capacity via the ACE. As a cross-check on the viability of investment by comparing fibre to the use of satellite, just purchasing the domestic capacity that is required on satellite would cost more than USD$20 million a year, compared to a one-time fibre investment of about USD$39.5 million for the links. The conclusion is that the opportunity to consolidate the regional and national fibre network at virtually the same time as the arrival of new international connectivity via the ACE submarine cable in Nouakchott maximizes the viability of Mauritania’s broadband agenda. Given that world-wide demand for affordable bandwidth continues to exceed supply, and that Burkina Faso, Mali and Niger also require alternate sources of international capacity that could be delivered via Mauritania\(^{97}\), and Senegal needs restoration capacity, there is very little likelihood of the network being under-used, as long as the regional and national backbone can deliver the wholesale bandwidth at a competitive price and where it is needed.

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\(^{96}\) This dorsal single track link was built by Maroc Telecom primarily to connect with its subsidiaries in the sub-region (Mauritel in Mauritania, Malitel in Mali and Onatel in Burkina Faso).

\(^{97}\) While these countries have other neighbors from which to obtain international capacity, most of them will be likely to route at least 20-30% of their traffic via Mauritania to maintain their restoration links in a fully redundant regional network. Low pricing for ACE capacity from Mauritania may attract even more demand as a primary route for these countries since, at least initially, the Mauritanian operators that have invested in ACE are likely to have substantial excess international capacity available.
3. **Demand studies have been conducted to assess and confirm pending demand for key missing links of the regional and national fibre optic backbone**, using a combination of “quantitative” data from a broadband demand forecasting tool and “qualitative” data on major trends in connectivity demand because capacity requirements have the potential to continue to advance rapidly as prices drop, access device affordability improves, ICT literacy increases and more relevant local applications are developed. Due to pent-up demand, extrapolating trends in current broadband subscriber growth will tend to under-estimate the future broadband user-base, and there are similar considerations regarding extrapolating capacity requirements per user. 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 100Mbps and even 1Gbps in some advanced countries. If Mauritania is to have the opportunity to catch up, at least partially with these developments over the next decade, then we can expect a relatively high level of growth in bandwidth use both for international and domestic broadband traffic. Three scenarios have been developed; the reference case shows 24 Gbps international bandwidth in 2025, which EIB confirmed to be in line with the assumptions in their own economic model made at the time of the financing of the Mauritanian submarine cable landing station.
a. In terms of demand for international connectivity originating in Mauritania, previous experience with submarine cables shows a rapid increase in demand when price of bandwidth decreases and availability increases, as indicated by bandwidth price elasticity curves based on available data. Submarine cable SAT-3 pricing, for which the most data is available, has shown a clear relationship between volume and tariffs. The Figure below compares the price of...
access on SAT-3 (per E1 half-circuit to Sessimbra, Portugal) against the volume of international bandwidth sold, and shows the effect that price decreases between 2004 and 2006 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 becomes increasingly affordable for customers and businesses and penetration increases. French island Réunion is also included here as a particularly clear case, which shows that when price was US$20,466 per Mb the volume was just 4 Mbps, but when it decreased to US$1,967 volume increased to 180 Mbps. If the price were to drop further to US$500 per Mb, the model projects that the volume would increase to 1.656 Gbps. If the price were to decrease to US$250 per Mbps per month, the volume is projected to grow to 5.02 Gbps, 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.98

b. **In terms of national connectivity originating in Mauritania, availability of a redundant national backbone and of a regional/national IXP will fuel a rapid increase in demand.** Availability of affordable broadband fuels the production and exchange of local video and picture content. Content caching (such as YouTube), data hosting and cloud based services will also inevitably migrate onto the Mauritanian backbone, further increasing demand for local bandwidth from the commercial sector. To this must be added the educational and research sectors, which have particularly large bandwidth requirements – for exchange of

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98 Although detailed pricing information has not been tracked in Kenya, with a drop in the wholesale price of capacity by a factor of over 10 following the arrival of competing submarine cables in Mombasa, there has been an extremely rapid growth in international capacity used.
high definition instructional materials and big data sets for environmental, biological and physical research. A commonly available 3G broadband package allows 1Gbits per day. This translates to 4hrs per day at 70Kbps, enough to watch 1-2hrs of TV quality video/basic audio – still insufficient to meet basic learning and entertainment demands\textsuperscript{99}. In addition, the IXP / Carrier Hotel / Datacenter building coupled with counterpart funding to set up the national datacenter will boost e-government applications traffic.

c. **In terms of regional connectivity, experience shows that all operators set up redundant routes to international connectivity in order to take advantage of more competitive rates and to increase the reliability of their broadband services.** The analysis takes the conservative approach that Mauritania will be a secondary route with neighboring country operators (in Senegal, Mali, Burkina Faso and Niger) with 12% of total international traffic delivered in 2025 from the Mauritanian submarine landing station transiting from the sub-region.

4. **Due diligence has been made on the investments associated with the proposed routes under WARCIP Mauritania, confirming a total Capital Expenditure (CAPEX) of US$ 39.5 million\textsuperscript{100} (including contingencies of 7%).** The estimated average total CAPEX per km for the project is US$25,048 to be compared with an Average Cost per Km to Deploy Fiber Optic Networks (Excluding Highest and Lowest) in Africa of US$27,846 (according to a sample historical data available to the Bank’s ICT unit). More recent data indicate that this Average Cost is currently below US$20,000 per km in standard soil conditions. Detailed soil analysis currently undertaken by APAUS along the roads that will be followed by the fiber optic cables confirmed that Link 1 is more costly because of high proportion of very solid soil along the path and Links 2 and 4 because of high proportion of floodable soil along the path. Link 3 by contrast is much closer of a standard type of soil along the path\textsuperscript{101}.

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\textsuperscript{99} In Kenya 130,000 broadband subscribers exchange about 1Gbps of traffic at peak times over the national Internet exchange point – this already translates to 75Kbps of off-net traffic, assuming 10% of the subscriber base is up/downloading at any one time.

\textsuperscript{100} The Component 1 - Supporting Connectivity foresees a total of US$40.7 million exclusive of taxes, of which (i) US$39.5 million for building 4 fiber optic missing links (Link 1: 531km Nouakchott-Atar-Choum ; Link 2: 723km Rosso-Boghe Kaedi-Selibaby-Kiffa ; Link 3: 280km Aioun-Nema ; Link 4 – 43km Selibaby-Mali border) and (ii) US$1.2 million for establishing national and regional Internet Exchange Point (IXP\textsuperscript{100}) in a neutral carrier hotel. The US$1.2 million (3% variation) does not change the conclusions of the Economic and Financial Analysis conducted on the 4 fiber optic links.

\textsuperscript{101} See: Preliminary Survey report from Quantum Services for APAUS (Rapport de survey Mai 2012, Projet Réseau National Fibre Optique Mauritanie).
5. **Main assumptions of financial analysis are as follows for the base case scenario on a study period of 10 resp. 20 years**\(^\text{102}\).
   - A total US$39.5 million of cable investment in 2014.
   - A discount rate of 10% on financing, to be consistent with the assumptions in EIB’s own economic model made at the time of the financing of the Mauritanian submarine cable landing station and to represent the long term inflation in Mauritania.
   - Revenues from the cable deployments begin in 2015. An average bandwidth sale price of US$181/Mbps/month dropping to $75/Mbps/month in year 25 is assumed in the base case scenario. In the optimistic scenario price fall more rapidly, and more slowly in the conservative scenario to cater for the dynamic relation between prices and volumes.
   - Due diligence conducted by the consultant financed under the PPA in charge of the business case confirmed that the traffic routing matrix developed in the Sofrecom study for APAUS is appropriate.
   - Because of the ring topology of the backbone, half of the traffic originated in Zouerate, Rosso, Kiffa, Nema and Koubbeni is carried over the links built under WARCIP (the remainder being carrier over the existing links).
   - 12% of total international traffic delivered in 2025 from the Mauritanian submarine landing station transiting from the sub-region in a total of 24 Gbps international bandwidth (which EIB confirmed to be in line with the assumptions in their own economic model made at the time of the financing of the Mauritanian submarine cable landing station).
   - Annual maintenance costs are 2% of CAPEX.
   - Fees for the operating company are 10% of revenues.

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\(^{102}\) Economic life of a fiber optic cable is generally considered to be more than 20 years and of associated civil work (when according to standard engineering rules with trenches and ducts) more than 40 years.
6. The WARCIP Mauritania project will result in a suitable economic return for Mauritania over a 20 years period. All scenario as well as sensitivity analysis on the CAPEX show positive IRR after 20 years. Base case and optimistic case have a positive NPV indicating an IRR after 20 years equal or greater than 10%, and the conservative case with 9.7% is very close to 10% IRR. The project would be cash flow positive between 2032 and 2034 depending on the scenario. In case of higher CAPEX all scenario show IRR between 8 and 9%, whilst in case of lower CAPEX all scenario show IRR between 12% and 15%. However, as the missing links will be procured according to ICB, it is expected that the CAPEX are unlikely to exceed $39.5 million. In the base case scenario, assuming a discount rate of 10%, the project is estimated to have a NPV of $US2 million over 20 years and an IRR of 11%, breakeven payback occurring in 2032. In the optimistic case scenario, assuming a discount rate of 10%, the project is estimated to have a NPV of $US6 million over 20 years and an IRR of 11%, breakeven payback occurring in 2032. The financial analysis confirms GoM and private sector preliminary view that the proposed routes are appropriate candidates for a PPP.

7. Impact of improved broadband connectivity will provide significant potential to decrease retail prices for broadband services in Mauritania either via fixed broadband (DSL, WiMax) or mobile (3G) broadband access networks for residential and very small businesses. Membership in the ACE submarine cable and roll out of a national fiber backbone, if accompanied with robust regulation to ensure competitive pricing releases demand, has potential to provide low cost broadband access to a broad range of the population and very small businesses because broadband demand is very sensitive to changes in price, and even small reduction in price can generate substantial demand and penetration in the country. Recent research\textsuperscript{103} indicates for example that a compound annual decline of 3% in cost of broadband access in the Africa and Middle East region could increase penetration rate by more than 4 times

\begin{table}[h]
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\begin{tabular}{|l|c|c|c|c|}
\hline
 & 2023 & & 2033 & \\
 & NPV & IRR & NPV & IRR \\
\hline
Link 1 Choum-Atar-Nouakchott & -11,487 & -18% & -8,669 & 1% \\
Link 2 Rosso-Boghe-Kaedi-Selibaby-Kiffa and Link 4 Mali cross border & -5,543 & 3% & 11,399 & 16% \\
Link 3 Aioun-Nema & -3,739 & -6% & -580 & 9% \\
Base case & -20,769 & -4% & 2,149 & 11% \\
Base case with CAPEX down 20% & -12,614 & 0% & 10,857 & 13% \\
Base case with CAPEX up 20% & -28,922 & -7% & -6,557 & 8% \\
Optimistic case & -17,306 & -1% & 5,964 & 12% \\
Optimistic case with CAPEX down 20% & -9,152 & 3% & 14,672 & 15% \\
Optimistic case with CAPEX up 20% & -25,460 & -4% & -2,742 & 9% \\
Conservative case & -22,854 & -6% & -1,204 & 10% \\
Conservative case with CAPEX down 20% & -14,699 & -2% & 7,504 & 12% \\
Conservative case with CAPEX up 20% & -31,007 & -9% & -9,910 & 8% \\
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\end{tabular}
\caption{Results of financial analysis for proposed routes in WARCIP Mauritania}
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Source: CADMOS/JIDCOM/PROGRESSUS/BIRD&BIRD

8. Broadband internet has also 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 Kbps (OECD, 2002)) were on average 10 percent 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 percent 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.

9. Economic Benefits to Mauritania of Investment in broadband networks. Recent evidence suggests that increasing overall service coverage and promoting access to telecommunications services provide a substantial economic benefit to low and middle income countries. World Bank research on the economic multiplier effect of increased broadband penetration rates, presented in the chart below, indicates that each 10% increase in broadband penetration increases overall GDP growth in developing countries by 1.38%. Although causality in the relationship between broadband and growth is hard to prove with the data available, analysis suggests high likelihood of causality. The multiplier for broadband penetration is far higher than for any other major telecommunications service. Lower-cost broadband connectivity provided by Membership in the ACE submarine cable and roll out of a national fiber backbone can be expected to encourage substantially higher broadband penetration in Mauritania, thereby increasing GDP growth.

104 The multiplier effect describes how an increase in some economic activity starts a chain reaction that generates more activity than the original increase.
