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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF 56.8 MILLION EUROS

(US\$70 MILLION EQUIVALENT)

TO THE

REPUBLIC OF CÔTE D'IVOIRE

FOR AN

E-AGRICULTURE PROJECT

May 4, 2018

Transport & Digital Development Global Practice
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2018)

Currency Unit = Euro

0.81126029 Euros = US\$1

FISCAL YEAR

January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

AFD	<i>Agence Française de Développement / French Development Agency</i>
AfDB	African Development Bank
AGEROUTE	<i>Agence de Gestion des Routes / Roads Management Agency</i>
AI	Artificial Intelligence
AIGF	<i>Agence Ivoirienne de Gestion des Fréquences Radioélectriques / Ivorian Agency for Radio Frequency Management</i>
ANADER	<i>Agence Nationale d'Appui au Développement Rural / National Agency for Rural Development Support</i>
ANOPACI	<i>Association Nationale des Organisations Professionnelles Agricoles de Côte d'Ivoire / National Association of Agricultural Professional Organizations of Côte d'Ivoire</i>
ANSUT	<i>Agence Nationale du Service Universel des Télécommunications / Universal Telecommunications Service National Agency</i>
APROMAC	<i>Association des Professionnels de Caoutchouc Naturel de Côte d'Ivoire / Association of Natural Rubber Professionals of Côte d'Ivoire</i>
ARPU	Average Revenue Per User
ARTCI	<i>Autorité de Régulation des Télécommunications de Côte d'Ivoire / Telecommunications Regulatory Authority of Côte d'Ivoire</i>
ATCI	<i>Agence des Télécommunications de Côte d'Ivoire / Côte d'Ivoire Telecommunications Agency</i>
AWPB	Annual Work Plan and Budget
CAPEX	Capital Expenditure
CCC	<i>Conseil Café Cacao / Coffee Cocoa Council</i>
CGAP	Consultative Group to Assist the Poor
CNRA	<i>Centre National de Recherche Agronomique / National Center for Agronomic Research</i>
CNTIG	<i>Comité National de Télédétection et d'Informations Géographique / National Committee of Remote Sensing and Geographical Information</i>
CPF	Country Partnership Framework
CTCI	<i>Conseil des Télécommunications de Côte d'Ivoire / Telecommunications Council of Côte d'Ivoire</i>
DA	Designated Account
DAF	Directorate of Administration and Finance
DBI	Doing Business Index
DFIL	Disbursement and Financial Information Letter
DGPPS	<i>Direction Générale de la Planification, du Contrôle des Projets et des Statistiques / General Direction of Planning, Project Control and Statistics</i>
DGTCP	<i>Direction Générale du Trésor et de la Comptabilité Publique / Directorate of Debt</i>
DPSP	<i>Direction de la Planification, des Statistiques et des Programmes / Direction of Planning, Statistics and Programs</i>
ECOWAP	Economic Community of West Africa Agriculture Program

ECOWAS	Economic Community of West African States
EHS / OHS	Occupational, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization of the United Nations
FIRCA	<i>Fonds Interprofessionnel pour la Recherche et le Conseil Agricole /</i> Interprofessional Fund for Research and Agricultural Council
FM	Financial Management
FRR	Financial Rate of Return
FY	Fiscal Year
GBV	Gender-based Violence
GDP	Gross Domestic Product
GRM	Grievance Redress Mechanisms
GRS	Grievance Redress Service
GSMA	GSM Association
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technology
IDA	International Development Association
IFC	International Finance Corporation
IFAD	International Fund for Agriculture Development
IFRs	Interim Financial Statements
IGF	<i>Inspection Générale des Finances /</i> General Inspectorate of Finance
IoT	Internet of Things
IPF	Investment Project Financing
IRRI	International Rice Research Institute
M&E	Monitoring and Evaluation
MFD	Maximizing Financing for Development
MICENUP	<i>Ministère de la Communication et de l'Economie Numérique et de la Poste /</i> Ministry of Communication and Digital Economy and Post
MINADER	<i>Ministère de l'Agriculture et du Développement Rural /</i> Ministry of Agriculture and Rural Development
MINEDD	<i>Ministère de l'Environnement et du Développement Durable /</i> Ministry of Environment and Sustainable Development
MINEFF	<i>Ministère des Eaux et Forêts /</i> Ministry of Water and Forests
MIRAH	<i>Ministère des Ressources Animales et Halieutiques /</i> Ministry of Animal and Fisheries Resources
MOD	<i>Maîtrise d'Ouvrage Déléguée /</i> Delegated Management Contract
NAIP	National Agricultural Investment Program
NDP	National Development Plan
NDVI	Normalized Difference Vegetation Index
NPV	Net Present Value

NRA	National Regulatory Authority
NRI	Network Readiness Index
NSRM	National Strategy for Rehabilitation and Maintenance
OCHA-CI	United Nations Office for the Coordination of Humanitarian Affairs- Côte d'Ivoire
ONDR	<i>Office National de Développement de la Filière Riz / National Office of Development of the Rice Sector</i>
OP / BP	Operational Policy / bank Policy
OPCV	<i>Office d'Aide à la Commercialisation des Produits Vivriers / Office of Assistance for the Marketing of Food Products</i>
PA	Project Account
PDO	Project Development Objective
PEFA	Public Expenditure and Financial Assessments
PIMA	Public Investment Management Assessment
PIU	Project Implementation Unit
PFM	Public Financial Management
PNSFR	<i>Programme National de Sécurisation du Foncier Rural / National Rural Land Security Program</i>
PPA	Preparatory Project Advanced
PPP	Public Private Partnership
PPSD	Project Procurement Strategy for Development
PSAC	Agriculture Sector Support Project
PSDEPA	<i>Plan Stratégique de Développement de l'Élevage, de la Pêche et de l'Aquaculture / Strategic Plan for the Development of Livestock, Fisheries and Aquaculture</i>
PSW	Private Sector Window
RAF	<i>Responsable Administratif et Financier / Finance officer</i>
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SE	Statement of Expenses
SEA	Sexual Exploitation and Abuse
SMEs	Small and Medium Enterprises
SMS	Short Message Service
SNDI	<i>Société Nationale de Développement Informatique / National Society of Computer Development</i>
SNDMA	<i>Stratégie Nationale de Développement de la Mécanisation Agricole / National Strategy for the Development of Agricultural Mechanization</i>
SNDR	<i>Stratégie Nationale de Développement de la Filière Riz / National Strategy for the Development of the Rice Sector</i>
SoE	Statement of Expenditures
SSA	Sub-Saharan Africa
TIC	<i>Technologie de l'Information et de la Communication / Information and Communication Technology</i>
ToR	Terms of Reference
TV	Television

UNCTAD	United Nations Conference on Trade and Development
UNDP-HDI	United Nations Development Programme- Human Development Index
USA	United States of America
VAT	Value-added Tax
VFM	Virtual Farmers' Market
WAAPP	West Africa Agricultural Productivity Program
WAEMU	West African Economic and Monetary Union
WB	World Bank
WEF	World Economic Forum
WFP	World Food Program



BASIC INFORMATION

Country(ies)	Project Name	
Cote d'Ivoire	CI: Cote d'Ivoire E-Agriculture Project	
Project ID	Financing Instrument	Environmental Assessment Category
P160418	Investment Project Financing	B - Partial Assessment

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input checked="" type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Disbursement-linked Indicators (DLIs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
25-May-2018	30-Jun-2023

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objective is to increase access to digital services and leverage digital platforms to improve farm productivity and access to markets.

Components

Component Name	Cost (US\$, millions)
Extending digital connectivity in rural and remote areas	31.50



Digital services for sustainable agricultural development	12.50
Rehabilitation and maintenance of rural access roads	19.50
Program implementation and monitoring	6.50

Organizations

Borrower:	Republic of Cote d'Ivoire
Implementing Agency:	Ministry of Digital Economy and Post

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	70.00
Total Financing	70.00
of which IBRD/IDA	70.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	70.00
IDA Credit	70.00

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	Total Amount
National PBA	70.00	0.00	70.00
Total	70.00	0.00	70.00

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2018	2019	2020	2021	2022	2023
Annual	0.00	4.15	6.71	13.26	22.09	23.79



Cumulative	0.00	4.15	10.86	24.12	46.21	70.00
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INSTITUTIONAL DATA

Practice Area (Lead)

Transport & Digital Development

Contributing Practice Areas

Agriculture

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
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b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
---	-----

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes
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SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category

Rating

1. Political and Governance

● Substantial

2. Macroeconomic

● Substantial

3. Sector Strategies and Policies

● Moderate

4. Technical Design of Project or Program

● Substantial

5. Institutional Capacity for Implementation and Sustainability

● Substantial

6. Fiduciary

● Moderate

7. Environment and Social

● Substantial

8. Stakeholders

● Moderate



9. Other

10. Overall

● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Safeguard Policies Triggered by the Project

	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04		✓
Forests OP/BP 4.36		✓
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

For the purpose of carrying out Component 3 of the Project, the PIU shall, no later than three months after the Effective Date, enter into a delegated management contract (“Delegation Agreement”) with AGEROUTE.

Sections and Description

No later than one (1) month after the Effective Date, the Recipient shall prepare under terms of reference acceptable to the Association, and furnish to the Association, an implementation manual for the Project.



Sections and Description

For the purposed of carrying out Sub-component 1.2 of the Project, the Recipient shall, following the completion of the necessary study on the economic and demographic profile, no later than two (2) months after the Effective Date, prepare under terms of reference acceptable to the Association, and furnish to the Association, an operations manual for the Project.

Conditions

Type

Effectiveness

Description

The PCU has recruited a financial management officer with qualifications and experience acceptable for the Association.



COUNTRY : CÔTE D'IVOIRE
CI: COTE D'IVOIRE E-AGRICULTURE PROJECT

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I. STRATEGIC CONTEXT

A. Country Context

- Côte d'Ivoire is a lower-middle-income economy with a widening urban/rural gap that hinders the achievement of shared prosperity and poverty elimination.** With a population of 23.7 million, the Gross National Income per capita (Atlas method) was US\$1,420 in 2015, which is 13 percent lower than the Sub-Saharan Africa (SSA) regional average (US\$1,637). Around 54 percent of Côte d'Ivoire's population lives in urban areas, and the population and the economy are highly concentrated around the economic capital Abidjan. Rural poverty has significantly increased since the end of the 1980s, and the rural/urban gap has widened.¹ Fifty-seven percent of the rural population lives below the national poverty line, whereas this rate is 21 percentage points lower for the urban population (36 percent). The northern regions are the most afflicted and the widening gap between the North and South of the country help explain Côte d'Ivoire's 172nd place in the world in the most recent global United Nations Development Programme- Human Development Index (UNDP-HDI) ranking (2016).
- The rural population has been particularly affected by the deterioration in governance and cuts in expenditures for social services, and lack access to basic infrastructure.** Since the political crises of the 2000s, the rural population has suffered from a combined deterioration in: (i) the governance structure;² and (ii) cuts in health and education expenditure under structural adjustment programs that aimed at reestablishing macroeconomic stability.³ The infrastructure gap between the more affluent urban areas and the poor rural areas is compelling: 33 percent of the urban population has access to improved sanitation facilities compared to 10 percent of the rural population; 88 percent of the urban population has access to electricity compared to 29 percent of the rural population.⁴ For information and communication technology (ICT), 16 percent of households in urban areas has access to the internet compared to only 2 percent in rural areas.⁵
- Unstable revenues and poor productivity of the rural economy, especially agriculture, hinders poverty reduction.** The agriculture sector is an important driver of Côte d'Ivoire's economy, accounting for 22 percent of gross domestic product (GDP) and more than 75 percent of exports. Three out of four working adults living in rural areas are employed in the agriculture sector.⁶ Despite its critical importance to the economy, the sector has had only a modest impact on income growth and poverty reduction in rural areas over the last decades. The agriculture sector – and especially primary products – are highly sensitive to fluctuations in international prices which in turn have an adverse and volatile impact on revenues for rural households.
- Côte d'Ivoire has implemented reforms that have significantly contributed to an overall improvement in governance and the business environment, making the country more attractive to private investment.** Although a relatively weak performer in terms of the World Bank Ease of Doing Business Index (DBI), the business environment in Côte d'Ivoire improved significantly during the last five years – from 177th in 2013 to

¹ World Bank, Côte d'Ivoire SCD (98178) – From Crisis to Sustained Growth, 2015 (pp.ix-x); IFAD, *Rural Poverty in the Republic of Côte d'Ivoire*

² "Good governance encompasses, *inter alia*, concrete measures against corruption, an improved public administration, and – as emphasized by stakeholders – enhanced access to justice, and more transparent and predictable relations between government and the private sector." (World Bank, Côte d'Ivoire SCD – From Crisis to Sustained Growth, 2015, p.xvii).

³ World Bank, Côte d'Ivoire SCD – From Crisis to Sustained Growth, 2015 (p.x) (98178).

⁴ World Bank, World Development Indicators (most recent year is 2015 for sanitation facilities – cf. *Table 3.12* – and 2012 for electricity).

⁵ Gallup Survey, 2015.

⁶ World Bank, Côte d'Ivoire SCD – From Crisis to Sustained Growth, 2015 (p.xiii); at a national level (urban and rural population), half of the population is employed by the Agriculture sector. (98178)



139th in 2017 based on DBI⁷ – making Côte d'Ivoire one of the ten fastest reforming countries two years in a row (2014 and 2015). The World Economic Forum (WEF) Global Competitiveness Index also captures this improvement, with Côte d'Ivoire rising from 131st in 2012 to 91st in 2016. The authorities remain focused on improving critical infrastructure, particularly in the energy and transport sectors, and increasingly in communications infrastructure, as well as the education and healthcare system.

B. Sectoral and Institutional Context

B.1. Rural economy and rural agriculture sector

5. **The rural economy is dominated by the agriculture sector, mainly: (i) export-oriented cash crops; and (ii) food crops as well as animal and fish production for domestic consumption.** Cocoa, coffee, rubber, oil palm, cotton, and cashews make up the cash crop sector. Côte d'Ivoire is the world's largest producer and exporter of cocoa beans and a significant producer and exporter of coffee and palm oil. Cash crops benefit from the bulk of agricultural investment and usually involve more sophisticated production techniques. However, cash crops suffer from limited value chain integration among farmers, intermediaries and processors, which prevents the country from increasing downstream transformation of its food production. Cash crop agriculture is potentially lucrative, but it also entails considerable risk, as volatile international commodity markets determine export prices. The food crop subsector consists primarily of plantains, yams, cassava, maize, rice, and livestock. It is characterized by traditional practices and receives little support from either the public or private sectors (except for rice and maize). The relatively strong performance of the food crop subsector is critical to food security in Côte d'Ivoire and has enabled the country to become self-sufficient in most key staple crops (except for wheat, rice and dairy). This subsector is often neglected in agricultural research and sector development strategies, and thus food production tends to be small-scale, traditional, and mostly informal. Prices of food crops are less impacted by international price volatility, and compared to cash crops often represent greater economic security but tend to offer more limited returns.

6. **Women in agriculture face challenges in Côte d'Ivoire.** With women being the sole owners of only 6.5 percent of the land, compared to 30.9 percent of men, they face limited access to credit and income-generating opportunities, overall.⁸ When looking at the poorest quintile, the challenge is even more apparent, with women owning 7.7 percent of land alone, compared to 50.3 percent of men. A recent Consultative Group to Assist the Poor (CGAP) survey of smallholder households also revealed interesting dynamics: smallholder households tend to be male-dominated (90 percent men versus 10 percent women), with women having limited decision-making roles in household agricultural activities. Households that are female-headed are typically led by widows.⁹ Early evidence on intra-household resource allocation in Côte d'Ivoire also shows that women and men respond differently to positive shocks. When rainfall increased for crops grown by women, household expenditure on food increased, suggesting increased well-being for the household, more broadly.¹⁰ With respect to the staple crops, women predominate in these value chains, although specific data are lacking. While limited, existing evidence also indicates gaps in agricultural productivity due to lower levels of labor input, when compared to men, as well as gaps in access to information.

⁷ World Bank, Ease of Doing Business in Côte d'Ivoire, 2017.

⁸ World Bank Group Gender Data portal source and Côte d'Ivoire gender consultation report.

⁹ Riquet et al. CGAP, National Survey and Segmentation of Smallholder Households in Côte d'Ivoire. 2017.

¹⁰ Duflo. Intra-household Resource Allocation in Côte d'Ivoire: Social Norms, Separate Accounts and Consumption Choices. 2004 in Learning on Gender and Conflict in Africa (LOGiCA) in Côte d'Ivoire Gender Background Note. 2013.

<http://documents.worldbank.org/curated/en/862941468261557867/C%3%B4te-dIvoire-gender-background-note>



7. **The traditional food crops are mostly produced in the poorer northern regions, whereas the cash crops are produced in the richer southern regions.** Adding to the North/South social and economic disparities, the country falls into two distinct agricultural regions: the dry savannah in the North and the forest region in the South. Rural poverty has traditionally been significantly higher in the North – where the potential for agriculture has not yet been realized – whereas the South benefits from higher and more reliable rainfall and better soils, and produces most of the export crops. However, both the North and South suffer from low agricultural productivity, high cost of inputs, considerable post-harvest losses, inadequate use of modern farming techniques, lack of modernization and mechanization, all hindering agricultural production.¹¹
8. **Poor performance in agriculture undermines shared prosperity and poverty elimination, with five major gaps hindering the development of the rural agriculture sector:**¹²
- a. **Gap #1: Lack of accurate data and weak enabling environment**– The agriculture sector lacks good and accurate data; for example, the latest available National Agricultural Census is now 16 years old (2001). Even though more recent targeted surveys conducted by third-parties are available¹³, the lack of accurate data collected by national agencies hinders the elaboration and implementation of sound policies and strategies, and prevents the design and conduct of impact evaluation research.¹⁴ The agriculture sector also suffers from an inadequate national and foreign investment framework, and the sector is still severely disadvantaged by a distortive policy framework (taxes on export commodities), coupled with a strong urban bias in development spending.
 - b. **Gap #2: Access to land** – Lack of access to land is a major cause of rural poverty in SSA, and Côte d'Ivoire is no exception. Small-scale producers of food crops have access to about half the amount of land available to large-scale producers of export crops and they suffer from low productivity because of the small size of their lands.¹⁵ The 1998 Law on Rural Land required farmers to register their land within ten years, but very few farmers had the knowledge, means, and skills to do so. A new law in August 2013 extended the deadline by ten years, but as of 2014 only 0.09 percent of the total agriculture land is registered (i.e. 20,000 out of 23 million hectares). Food insecurity risk is twice as high for farmers not owning property than for land owners¹⁶ and absence of land certificates is worse among women farmers who face additional gender-related constraints, including legal or social norms that prevent them from inheriting or simply owning land. As

¹¹ World Bank, Côte d'Ivoire SCD – From Crisis to Sustained Growth, 2015 (p.54).

¹² ECOWAS-UEMOA-CILSS, Alliance Globale pour l'Initiative Résilience AGIR, Rapport des Priorités Résilience Pays (PRP) Côte d'Ivoire, 2014; World Bank, Côte d'Ivoire SCD – From Crisis to Sustained Growth, 2015 (p.55-66).

¹³ See for example CGAP, National Survey and Segmentation of Smallholder Households in Côte d'Ivoire, 2017; IFC, Opportunities for Digital Financial Services in the Cocoa Value Chain, 2015; World Bank, Côte d'Ivoire Jobs Diagnostic, 2017.

¹⁴ Without much sector impact analysis, the sector has been subjected to ineffective policies including high indirect and direct taxes on export commodities which have prevented small farmers from earning more revenues: the 2015 World Bank SCD calculated that a 10 percent decrease in the export tax would boost net revenue by 22 percent, which in turn would improve the living conditions of roughly 4 million Ivoirians.

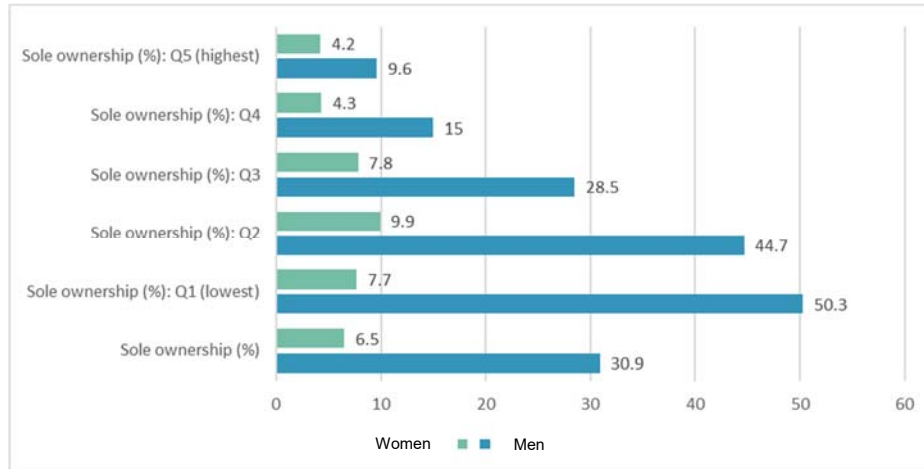
¹⁵ IFAD, Rural Poverty in the Republic of Côte d'Ivoire, accessed in January 2016; World Bank, Côte d'Ivoire SCD – From Crisis to Sustained Growth, 2015, (p.55): "Agriculture in Côte d'Ivoire is dominated by smallholder farmers, the majority of whom use traditional practices and rely on family labor. Data from the most recent Agricultural Census (2001) estimated that there are 8.3 million farmers nationwide, of whom 49 percent are women. The average cultivated area for each household is about 3.89 hectares, but 80 percent of households cultivate less than 2 hectares."

¹⁶ ECOWAS-UEMOA-CILSS, Alliance Globale pour l'Initiative Résilience AGIR, Rapport des Priorités Résilience Pays (PRP) Côte d'Ivoire, 2014.



highlighted below, the gaps between men and women in land ownership are large, across all quintiles (See Figure 1).

Figure 1: Rates of men and women who own land alone (by quintile, 2012)¹⁷



- c. **Gap #3 – Access to finance** – Côte d'Ivoire is one of the least developed countries in the region when it comes to rural development finance, and there is a lack of financing services for the agriculture sector. Access to credit by small farmers is acutely limited due to the virtual absence of financing structures such as rural microfinance institutions and rural banks. Moreover, private banks are reluctant to provide loans to rural small-scale farmers as they see them as cumulating too many risks: low levels of capitalization, unstable revenue flows, lack of formal credit history, difficulty in evaluating small farmers' repayment capacity, lack of collateral such as titled land, the influence of exogenous factors such as weather conditions, and the limited legal avenues for enforcing contracts. Where credit is available, interest rates are often too high compared to the average rate of return of farmers' investments. This translates into a low bank account ownership rate and a low percentage of adults having the possibility to benefit from a mortgage. The financing obstacle faced by the agriculture sector in Côte d'Ivoire is thus similar to the rest of SSA: only about 1 percent of commercial lending in SSA goes to agriculture, mostly to large-scale farmers.¹⁸ In addition, despite significant growth in mobile money over the last decade, there are still gender gaps in mobile money account ownership and usage: in Côte d'Ivoire 28 percent of male adults own a mobile money account compared to 20 percent of female adults¹⁹.
- d. **Gap #4 – Skills and technology**– In 2011, 62 percent of teenagers in the Northwest region were unschooled compared to the national average of 42 percent, and only 8 percent of young people aged 15-24 completed their secondary education compared to the national average of 27 percent.²⁰ The combination of low level of education and other gaps highlighted above contributes to a low usage of technology and agriculture inputs – such as equipment and fertilizers. Several market

¹⁷ World Bank Group Gender Statistics.

¹⁸ UNCTAD, Commodities & Development Report, 2015 (p.21).

¹⁹ Findex, 2014 figures, <http://datatopics.worldbank.org/financialinclusion/indv-characteristics/gender>.

²⁰ African Development Bank, Côte d'Ivoire Economic Outlook, 2015 (p.14).



failures characterize inputs markets, including: inconsistent rules and standards requirements, unrealistic standards, and lack of equipment and capacity at the rural level to ensure compliance. Moreover, the cost of technology and agriculture inputs for smallholders tend to be prohibitive due to several factors²¹: (i) weak bargaining power of smallholders; (ii) poor transportation and energy infrastructure; (iii) lack of market information; (iv) lack of knowledge of farmers concerning the use of inputs; and (v) limited access to finance.

- e. **Gap #5 – Physical capital**– While several crops such as cashew (*anacarde*), maize and tomatoes are produced in the northern regions, main markets destinations are located in the southern regions, including the port of Abidjan for exports and urban domestic markets – domestic market sometimes offer greater opportunities to smallholders than export markets.²² This implies that an efficient transportation network must be available throughout the whole territory to link production areas to: (i) the port of Abidjan international output market; and (ii) the domestic consumption areas spread around the country. Hence, having reliable infrastructures – such as road networks, storage facilities, electricity, and telecommunications – is essential to the efficiency of the agriculture sector. Currently, as much as 90 percent of the paved network in Côte d'Ivoire is between 15 to 40 years old, while routes coatings are generally designed and built for a lifetime of 15 years²³; as a consequence, about 40 percent of the road network is not or only partially useable.²⁴ In addition to the lack of reliable roads, the lack of efficient public transportation services also hinders the economic development of rural agriculture: smallholders often use public transportation such as passenger buses to take their products to distant markets, and this inadequate transportation mode leads to bruising and damage to the products, thus reducing its quality and market value. The electricity network is no better as all departments of the northern half of the country had coverage rates below the national average in 2011. Among them, five departments had less than 15 percent of their localities connected to electricity²⁵. The lack of reliable electricity is an impediment to well-functioning rural markets as limited access to storage facilities and unreliable electricity supply result in post-harvest losses. Most farmers often rely on open-air storage and need to sell quickly their products – sometimes at a significantly lower price – before they rot.²⁶

9. **The agriculture sector in Côte d'Ivoire is experiencing the adverse effects of climate change.** The negative effects of climate change include a decrease in rainfall²⁷, persistent dry seasons, and an increase of flooding incidents. Côte d'Ivoire experiences high risks of water scarcity and extreme heat as well as river flooding.²⁸ Climate projections (CMIP5²⁹) show that maximum daily temperatures, number of hot and very hot

²¹ UNCTAD, *Commodities & Development Report*, 2015 (p.19).

²² In Côte d'Ivoire transactions in local urban markets for staple foods represented about US\$1.1 billion compared with revenue of US\$0.63 billion from exports in 2009 (cf. UNCTAD, *Commodities & Development Report*, 2015, p.22).

²³ African Development Bank, *Côte d'Ivoire Economic Outlook*, 2015 (p.14).

²⁴ World Bank, *Côte d'Ivoire SCD – From Crisis to Sustained Growth*, 2015 (pp.58-59).

²⁵ African Development Bank, *Côte d'Ivoire Economic Outlook*, 2015 (p.14).

²⁶ In 2011, post-harvest losses represented nearly 30 percent of the total national food production estimated at 10.5 tons, leading the country to import food products to meet the needs of its population (the needs were estimated at around 11.1 tons in 2012).

²⁷ World Bank Climate Variability Tool, Consulted on February 25, 2018.

²⁸ ThinkHazard, Consulted on February 25, 2018.

²⁹ The CMIP5 experimental protocol was endorsed by the 12th Session of the WCRP Working Group on Coupled Modelling (WGCM) and is presented in the following document: Taylor, K. E., R. J. Stouffer and G. A. Meehl, 2009: A Summary of the CMIP5 Experiment Design



days, as well as the likelihood of annual severe droughts are expected to increase throughout the coming century.³⁰ Irrigation infrastructure have the potential to reduce the detrimental effect of climate change through ensuring reliability in water supply for agriculture, but currently suffer from a lack of monitoring and maintenance by public services as well as inadequate community involvement.

10. Several public and private institutions lead the agriculture sector, generating a fragmented knowledge base and negatively affecting the efficiency of the Government's actions in the sector. The agriculture sector is jointly supervised by the *Ministère de l'Agriculture et du Développement Rural* (Ministry of Agriculture and Rural Development - MINADER) and the *Ministère des Ressources Animales et Halieutiques* (Ministry of Animal and Fisheries Resources - MIRAH), with strong involvement of the *Ministère des Eaux et Forêts* (Ministry of Water and Forests - MINEFF) and the *Ministère de l'Environnement et du Développement Durable* (Ministry of Environment and Sustainable Development - MINEEDD). The MINADER and MIRAH both have their own internal statistics and planning departments³¹ and also supervise, with other ministries, several public institutions in charge of agriculture and rural development, including the *Agence Nationale d'Appui au Développement Rural* (National Agency for Rural Development Support - ANADER), the *Centre National de Recherche Agronomique* (National Center for Agronomic Research - CNRA), the *Fonds Interprofessionnel pour la Recherche et le Conseil Agricole* (Interprofessional Fund for Research and Agricultural Council - FIRCA), the *Office National de Développement de la filière Riz* (National Office of Development of the Rice Sector - ONDR), and the *Office d'Aide à la Commercialisation des Produits Vivriers* (Office of Assistance for the Marketing of Food Products - OPCV). There are also several trade associations, including the *Chambres d'Agriculture de Côte d'Ivoire*, the *Association Nationale des Organisations Professionnelles Agricoles de Côte d'Ivoire* (National Association of Agricultural Professional Organizations of Côte d'Ivoire - ANOPACI), the *Conseil Café Cacao* (Coffee Cocoa Council - CCC), the *Association des Professionnels de Caoutchouc Naturel de Côte d'Ivoire* (Association of Natural Rubber Professionals of Côte d'Ivoire - APROMAC), etc. The sector would thus greatly benefit from a stronger coordination in data and knowledge gathering, sharing, and dissemination.

11. To address the main gaps to fast and sustainable development of the agricultural sector, the Government has developed several strategies, including the National Agricultural Investment Program (NAIP) and the e-Agriculture Strategy. The NAIP is the agricultural pillar of the country's National Development Plan (NDP). The first NAIP (NAIP 1) was a US\$4 billion program over the 2010-2015 period, aimed at promoting a diversified mix of strategic cash and food crops for growth and food security. It was organized around six programs: (i) crops productivity and competitiveness; (ii) development of agricultural supply chains; (iii) sector governance; (iv) capacity building; (v) sustainable management of fisheries; and (vi) rehabilitation of forest and wood industry. The Government launched the second phase of the NAIP in November 2017 for the 2018-2025 period. The Government has also developed a comprehensive national e-Agriculture strategy in 2012, and updated it in 2014. This strategy has the aim of modernizing the country's agricultural sector and enhancing its productivity with an increase in the country's export of cocoa, coffee and other produce, and a decrease in food imports. The strategy requires suitable access to information services and data centers as part of an ICT package aiming to make real-time market information systems available via mobile phones and tablets. Finally, other sectoral strategies include: (a) the *Loi d'orientation agricole (Agriculture Law - Loi n° 2015-537 du 20 juillet 2015)*; (b) the *Stratégie Nationale de Développement de la filière Riz 2012-2020* (National Strategy for the Development of the Rice Sector - SNDR); (c) the *Plan Stratégique de Développement de l'Élevage, de la Pêche et*

³⁰ World Bank Group Climate Change Knowledge Portal, Consulted on February 25, 2018.

³¹ The *Direction Générale de la Planification, du Contrôle des Projets et des Statistiques* (General Direction of Planning, Project Control and Statistics - DGPPS, at MINADER) and the *Direction de la Planification, des Statistiques et des Programmes* (Direction of Planning, Statistics and Programs - DPSP, at MIRAH)



de l'Aquaculture (Strategic Plan for the Development of Livestock, Fisheries and Aquaculture - PSDEPA 2014-2020); (d) the *Stratégie Nationale de Développement de la Mécanisation Agricole* (National Strategy for the Development of Agricultural Mechanization - SNDMA); and (e) the *Programme National de Sécurisation du Foncier Rural* (National Rural Land Security Program - PNSFR).

B.2. Digital economy sectoral and institutional context

12. **The ICT institutions and the enabling environment have drastically improved during the last five years.** Each year, the WEF performs a global ranking of the ICT sector in each country by measuring the Network Readiness Index (NRI). One sub-index of the NRI is the 'ICT Environment sub-index' reflecting both the 'Political and regulatory environment' and the 'Business and innovation environment'. In 2012, Côte d'Ivoire ranked as one of the worst country in the world regarding the 'ICT Environment sub-index', being at the 130th place (out of 142 countries). In less than five years, Côte d'Ivoire has risen to the 72nd place (out of 139 countries) in 2016 for the 'ICT Environment sub-index' (on the overall NRI, Côte d'Ivoire has risen from 122nd to 106th during 2012-2016): no other country monitored by the WEF has enjoyed such a drastic rank increase during the 2012-2016 period for the "ICT Environment sub-index".

13. **The major improvement of the international ranking of the ICT sector in Côte d'Ivoire is partly explained by several reforms lead by the five main institutions that lead and supervise the ICT sector.** The *Ministère de la Communication et de l'Economie Numérique et de la Poste* (Ministry of Communication and Digital Economy and Post - MICENUP) is the Ministry in charge of the ICT and digital economy in Côte d'Ivoire. The MICENUP revamped the telecom law in 2012³² and the legislation is now aligned with regional recommendations and covers major areas such as convergence, universal service, license and authorizations, relevant markets and market power, and consumer protection.³³ The National Regulatory Authority (NRA) is the *Autorité de Régulation des Télécommunications de Côte d'Ivoire* (Telecommunications Regulatory Authority of Côte d'Ivoire - ARTCI),³⁴ a fully-equipped NRA dealing with licensing, consumer protection, wholesale market regulation, and telecom spectrum management. The three main additional institutions are: (i) the *Agence Nationale du Service Universel des Télécommunications* (Universal Service National Agency - ANSUT) that ensures the implementation of universal service programs on behalf of the state and manage investment operations funded by the state in the field of ICT; the *Agence Ivoirienne de Gestion des Fréquences radioélectriques* (Ivorian Agency for Radio Frequency Management - AIGF) focused on radio frequency management; and (iii) the *Société Nationale de Développement Informatique* (National Society of Computer Development - SNDI), a state-owned company under the supervision of the Prime Minister, in charge of Information Technology and Information System projects for the Government.³⁵ In 2017, the Government passed a General Law on the Information

³² Until 2012 the main legislation covering the telecommunication sector was the Law No. 95-526 of 7 July 1995 (*Code des Télécommunications*); as this legislation was outdated, it was fully revamped by Ordonnance n° 2012-293 of March 21, 2012.

³³ Moreover, the Government has introduced a tax break for the ICT sector in August 2015 with a value-added tax (VAT) exoneration and reduced custom duties for ICT and electronic equipment, and this measure should last until the end of 2018 (cf. Abidjan.net, *Les prix des ordinateurs, tablettes, téléphones portables vont baisser en Côte d'Ivoire*, November 2015).

³⁴ The ARTCI was created in 2013 by merging two institutions, the previous *Agence des Télécommunications de Côte d'Ivoire* (Côte d'Ivoire Telecommunications Agency - ATCI) – in charge inter alia of telecom spectrum management, licensing, and wholesale pricing – and the *Conseil des Télécommunications de Côte d'Ivoire* (Telecommunications Council of Côte d'Ivoire - CTCI) – in charge inter alia of monitoring the market competition dynamics, ensuring the compliance with the license obligations, and solving litigations.

³⁵ In 2011, the Government adopted the e-GOUV scheme, which consists of two major axes – e-Administration and e-Services. The SNDI is working to implement ICT solutions in all government activities, including finance, health care, and education, with



Society (*Loi d'Orientation sur la Société de l'Information*) that provides a framework to support the dissemination of information and communication technologies within the economy.

14. **Although the ICT sector, and especially the mobile sector, is performing well in Côte d'Ivoire, it has mostly benefited the affluent urban and educated population.** The ICT sector in Côte d'Ivoire has consistently expanded during the last few years; it generated a total revenue of 982.5 billion FCFA in 2013 (US\$1.6 billion), contributed to 8 percent of the country's GDP, and provided around 5,400 direct jobs.³⁶ The recent performance of mobile service (voice and Short Message Service - SMS) in Côte d'Ivoire has been buoyant, driven by a healthy competition among the three main mobile operators (Orange, MTN, and Moov). The mobile connection penetration (number of total SIM divided by total population) reached 126 percent at the end of 2017, compared to 89 percent for West Africa region and 77 percent for SSA (Figure 2). Despite this robust mobile service performance an important share of the population is still offline. The World Bank indicator 'Internet users' (percentage of the population that have used the internet – from any location and with any type of device – during the last 12 months) show that only 27 percent of the population of Côte d'Ivoire has accessed internet at least once during the previous 12 months in 2016, compared to an average of 30 percent for lower-middle-income countries (Figure 3). Moreover, the use of internet – mostly through mobile broadband, as fixed broadband connectivity is marginal – is concentrated in the most affluent, educated and urban population centers. In 2014, 15 percent of the Côte d'Ivoire urban population used internet on a weekly basis, but this rate drops to only 3 percent for the rural Côte d'Ivoire population (Figure 4). In a similar fashion, only 1 percent of those having achieved at most primary education level use internet on a weekly basis compared to 19 percent for those having reached at least a secondary education level (Figure 5). And, while very limited sex-disaggregated data exist, GSMA's Intelligence Consumer Survey highlights the differences between men and women with respect to mobile phone ownership and internet usage. The report found that in Côte D'Ivoire, women are 9 percent less likely than men to own a mobile phone and 48 percent less likely to use the internet.³⁷ In addition, a small survey conducted in partnership with the World Wide Web Foundation found that among the 120 people who did not have access to the Internet, 88 percent were women.³⁸

the goal of providing, by the year 2020, all government services available online in developed countries (cf. IDAL, *ICT Ivory Coast market*, 2015, p.6).

³⁶ Cf. Journal du Net, *Les TIC (Technologie de l'Information et de la Communication / Information and Communication Technology) en Côte d'Ivoire*, December 2014 ; BizTech Africa, *Ivory Coast moves to close digital divide*, February 2015.

³⁷ GSMA. 2016. Connected Society, Consumer barriers to mobile internet adoption in Africa.

³⁸ World Wide Web Foundation. Women's Rights Online Report Card on Côte d'Ivoire: http://webfoundation.org/docs/2017/11/CI-GenderReport_English_Template_Screen.pdf.



Figure 2: Evolution of mobile penetration (combined 2G and 3G, % population, 2013-2017)



Data Source: GSMA Intelligence, World Bank Development Indicators.

Figure 3: % of internet users (with averages for income grouping of countries, 2006-2015)

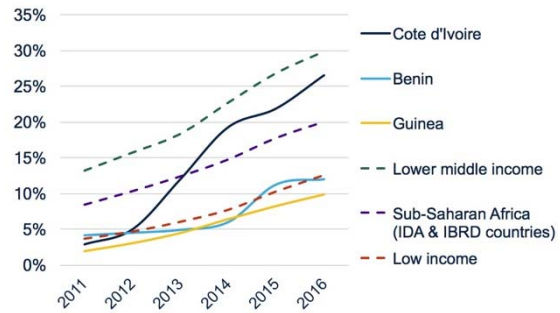


Figure 4: % of weekly internet use amongst rural vs. urban population (2014)

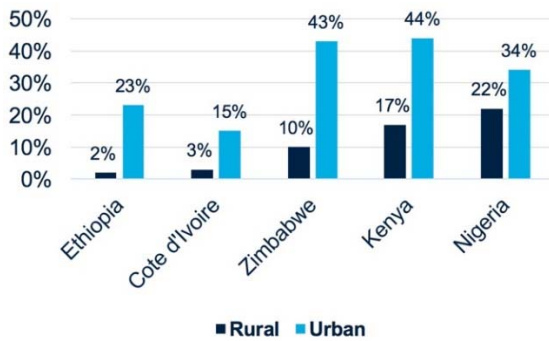
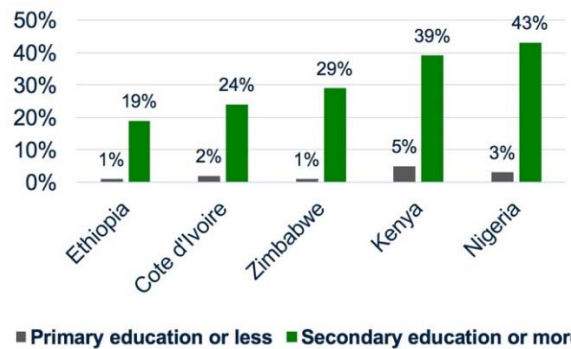


Figure 5: % of weekly internet use amongst different education level (2014)



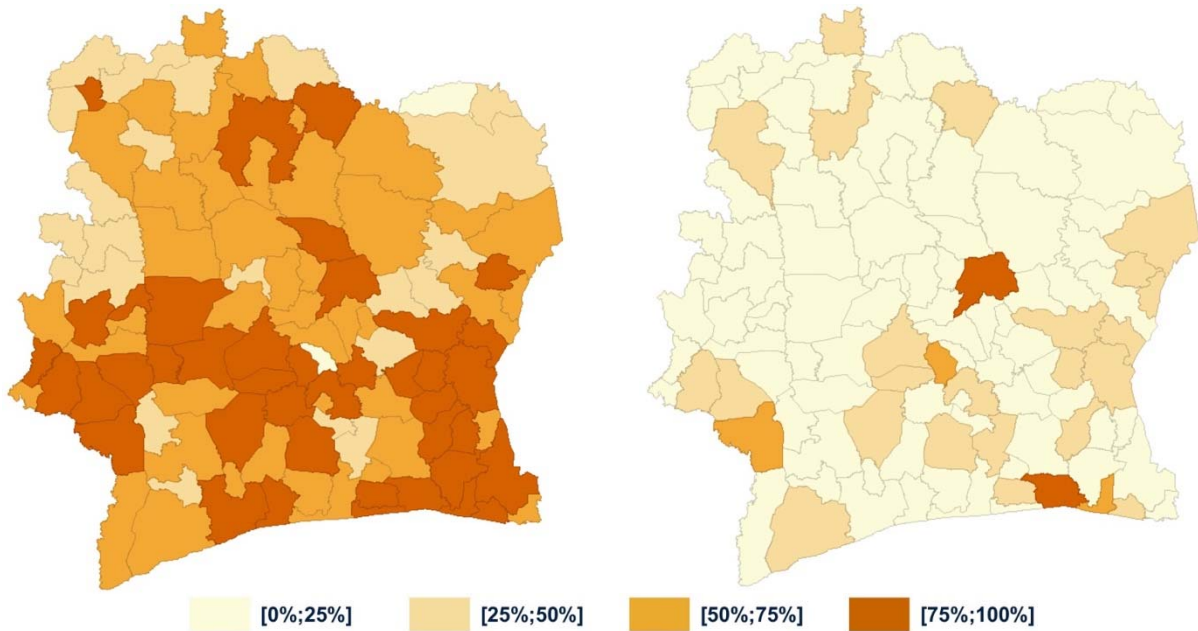
Data Source: Gallup, Africa Online – Media Use in SSA, 2015.

15. **On the supply side, there are significant mobile coverage gaps for rural areas.** The regulator ARTCI has identified that around half of the 8,518 localities (*localités*) in Côte d'Ivoire were not covered by any mobile service; the uncovered localities represent 23 percent of the total population. Mobile operators have confirmed that they reached their profitability frontier and that extending their coverage would not be sufficiently profitable at this stage due to: (i) the lower population density in rural areas which increases the Capital Expenditure (CAPEX) per subscriber; and (ii) the lower purchasing power of subscribers which drives down the Average Revenue Per User (ARPU). Mobile broadband coverage with 3 Gigabyte is even worse, with coverage maps showing vast swaths without any coverage. To counter this market failure, the ANSUT is currently deploying a national 7,000 km long fiber backbone to cover rural areas, and ARTCI is elaborating a “white zone” program to increase rural coverage. However, this will be insufficient to achieve mobile broadband coverage for all, as the number of mobile sites should be at least tripled: each operator has deployed between 1,600 and 2,000 mobile sites in Côte d'Ivoire, a relatively low number compared to European countries that achieved acceptable level of coverage and services (in Romania, a country that is 30 percent smaller in area and with a similar population size, the regulator calculated that 6,000 sites were required to cover 99 percent of the population).



Figure 6: 2G coverage by *département* (% pop., 2016)

Figure 7: 3G coverage by *département* (% pop., 2016)



Source: ICT Unit based on ARTCI data (base maps from United Nations OHCA-CI and CNTIG).

C. Higher Level Objectives to which the Project Contributes

16. **The proposed project is designed to contribute to the World Bank Group’s twin goals of ending extreme poverty and boosting shared prosperity.** The project will help the country achieve the twin objectives through enhancing climate resilience of the agriculture sector and promoting agricultural growth, inclusive of smallholder farmers. The proposed project is consistent with the World Bank Group’s Country Partnership Framework (CPF) (FY16-FY19)³⁹, and especially with ‘Focus Area One: Accelerating sustainable private sector-led growth’ which comprises four objectives that the project will directly or indirectly support.

17. **The e-agriculture project will directly contribute to two objectives of the CPF regarding (i) agriculture and (ii) infrastructure.** (i) The project will contribute to ‘Objective 1: Improve Productivity in Agriculture/Agribusiness Value Chains’. Unpredictable weather patterns, unreliable pricing information and crop failure due to drought and diseases are a few of the issues that digital services will help tackle in Côte d’Ivoire. The project will directly support the objective of improving productivity by promoting digital solutions that will: (a) provide small holder farmers with timely advice on all aspects of the seed to market agriculture value chain which would result in increasing efficiency of the use of water, fertilizer, pesticides, soil fertility, timing of harvest and marketing of products; and (b) enable public institutions to collect and gather agricultural and rural statistics for more efficient sector policies and strategy. (ii) The project will also contribute to ‘Objective 2: Strengthen Economic Infrastructure’. By extending ICT connectivity in rural areas, the project will directly

³⁹ World Bank 2015 - Cote d'Ivoire - Country partnership framework for the period FY2016-FY2019 - Report No. 96515-CI



enhance digital infrastructure and provide workarounds to inadequate logistics services. This will positively impact rural agriculture and economy by enabling easier access to consumer markets at competitive costs.

18. **The project will enhance resilience to climate change impacts**, for example, by enhancing farmers access to timely information on climate variability and droughts, therefore allowing farmers to adapt agriculture practices. The project will also provide connectivity to enable real time monitoring of water supply systems by public services and communities vulnerable to the impacts of climate change.

19. **The project will also indirectly contribute to two objectives of the CPF regarding (i) business environment and (ii) access to land.** (i) *'Objective 3: Improve Business Regulatory Framework and Access to Finance'* will be supported by extending the reach of ICT connectivity and facilitating the digitization of economic transactions. The expansion of ICT will support both: (a) the increase in mobile banking usage; and (b) the promotion of private sector growth with the ability for smallholders to get a credit with traditional banks thanks to a track record on which their financial performance can be assessed. (ii) *'Objective 4: Formalize and Enhance Regulatory Access to Land for Business and Agriculture'* will also be supported thanks to the development of ICT platforms providing cheap and reliable tools to register land and deliver land certificates. Enhancing the land registration process is fundamental to improving land security and supporting informed land transactions for both smallholders and private investors, and a prerequisite for shared growth.

20. **The proposed project will leverage ongoing World Bank operations in Côte d'Ivoire.** The World Bank has also been supporting the country's agricultural strategy implementation through the sub-regional West Africa Agricultural Productivity Program (WAAPP), which is being implemented in 13 countries of the Economic Community of West African States (ECOWAS). The development objective of the program is to generate and accelerate the adoption of improved technologies in the participating countries' in line with the sub-region's top agricultural commodity priorities, as outlined in the Economic Community of West Africa Agriculture Program (ECOWAP). Other development partners such as the International Fund for Agriculture Development (IFAD), Food and Agriculture Organization of the United Nations (FAO), the African Development Bank (AfDB) and others have been implementing similar projects in support of the sector strategy.

21. **The proposed operation will also serve as a pilot and reference for other e-agriculture initiatives launched by the Government of Côte d'Ivoire.** The innovative approach proposed by this project will test the robustness of some key features such as the use of large scale digital platforms and the adoption of sustainable digital services for e-agriculture. The establishment of a statistical database, automated monitoring and evaluation (M&E) systems, and granular georeferenced data on the agriculture sector will greatly help the Government refine sector policies and better leverage the Digital Economy.

II. PROJECT DEVELOPMENT OBJECTIVES (PDO)

A. PDO

The PDO is to increase access to digital services in rural communities and leverage digital platforms to improve farm productivity and access to markets.

B. Project Beneficiaries

22. The project beneficiaries are a target group of about 1.2 million inhabitants for Component 1 (i.e. around 55 percent of the total 2.2 million inhabitants in the northern part of the country that are still not covered by a



wireless network), and 6.1 million inhabitants for Component 2 (the 2.2 million population in the northern part of the country and the 3.9 million population in the middle of the country). The vast majority of these inhabitants are smallholder farmers. The 6.1 million inhabitants represent around a quarter of the total 23.7 million inhabitants in Côte d'Ivoire.

23. The criteria used to select the project area included the following aspects: above-average poverty rate and vulnerable population to support the overarching goal of poverty reduction; lack of market access for smallholders; lack of ICT coverage but presence of enabling infrastructures to reduce deployment costs; and exposure and vulnerability to the impacts of climate change. These criteria lead to a focus on the northern part of Côte d'Ivoire as well as the middle region, which represent the area of Côte d'Ivoire characterized by not only high levels of food insecurity and a high proportion of vulnerable groups, such as female-headed households, but also by significant potential for long-term sustainable agricultural development. Based on these criteria, the following areas are selected for the proposed project: (i) District of Denguélé; (ii) District des Savanes; (iii) Bounkani Region (District of Bouna); (iv) District of Sassandra-Marahoué; and (v) District of Gôh-Djiboua. Value-chains identified by the MINADER as priorities (with an emphasis on staple food) are: (a) maize, manioc, rice; (b) plantain, yam (*igname*); (c) shea (*karité*); and (d) poultry.

C. PDO-Level Results Indicators

24. The PDO Level Results Indicators are:

- a. People provided with access to the Internet, of which people who benefitted from an improved access to internet, of which people who benefitted from a new access to internet, disaggregated by gender ;
- b. Farmers reached with agricultural assets or services, of which women;
- c. Percentage of increase in revenues for the targeted beneficiaries .

25. Intermediary indicators will include: (i) volume of sales of selected crops; (ii) the reduction in postharvest losses by selected producer organizations supported by the project; (iii) the number of kilometers of feeder roads rehabilitated and maintained; and (iv) Share of women within the newly established cooperatives/producers organizations (led by women).

III. PROJECT DESCRIPTION

A. Project Components

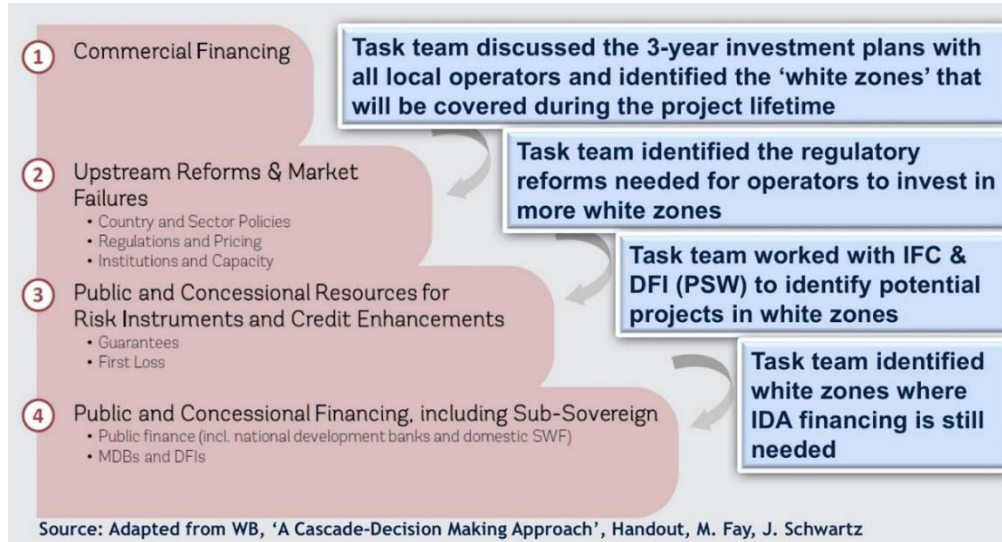
26. To achieve the PDOs, the proposed project includes three main components and a fourth component to support program implementation and monitoring.

27. **Component 1 Extending digital connectivity in targeted rural and remote areas (estimated cost US\$31.50 million equivalent)** – This component will support the review and improvement of the digital service environment through provision of technical assistance to strengthen capacity of key stakeholders in defining, enhancing and enforcing an enabling environment conducive to providing digital services in rural areas. This component will also support the extension of digital infrastructure in rural areas, with a focus on increasing the number of female smallholders and female-headed households that will be able to access both mobile services (voice and SMS) and the internet. This component is designed around the Maximizing Financing for



Development (MFD) approach (Figure 8) to leverage private investments and optimize the use of public funding. A set of criteria (cf. Annex 1) was established for: (i) the identification of target areas; and (ii) infrastructure financing.

Figure 8: Cascade-decision making approach used by the team to structure Component 1



- a. **(Sub-component 1.1) Review and improvement of the digital services enabling environment: legal and institutional framework (estimated cost US\$3.30 million)** – Sub-component 1.1 will consist of technical assistance to strengthen key stakeholders (i.e. ICT Ministry MICENUP, the Regulatory Authority ARTCI, the universal service agency ANSUT) in defining, enhancing, and enforcing an enabling environment conducive to providing ICT coverage in rural areas. This subcomponent will fund a legal review of the current environment and identify bottlenecks that hamper private investment (stage 2 of the cascade approach, see Figure 8 above).
- b. **(Sub-component 1.2) Supporting the extension of digital infrastructure in targeted rural areas (estimated cost US\$28.20 million)** – In areas where public funding is not immediately needed, International Finance Corporation (IFC) may envisage to partner with potential investors, using the new Private Sector Window (PSW) IDA Facility to go beyond its standard market/risks framework (stage 3 of the cascade approach, see Figure 8 above). Although IFC involvement in the proposed project is not guaranteed, a joint World Bank/IFC team holds regular meetings with the Client to determine the best approach. In areas where public subsidy is needed (stage 4 of the cascade approach, see Figure 8 above), the project will implement competitive awards of “least-cost” capital subsidies through a “least-cost subsidy auction” tender process to private operators in order to subsidize ‘Open Access’ broadband infrastructure in targeted areas which are commercially not viable (Digital infrastructure ‘Open Access’ refers to a best practice whereby the infrastructure is caricaturized by a wholesale, transparent, non-discriminatory, fair, and effective access for all market players, cf. Annex 1 for more details). IDA funds will be managed by the MICENUP according to a Manual of Operations developed for the sole purpose of white zones coverage. When designing the Public-private Partnership (PPP), the guiding principle is that public intervention should limit as much as possible the risk of crowding out or replacing private investments, of altering commercial investment incentives, and ultimately of distorting competition.



28. **Regions identified as priority for Component 1 through the selection criteria** – Three districts have been identified by the Client as priority for Component 1: (i) the regions Kabadougou and Folon; ii) the regions Poro, Tchologo, and Bagoué; and iii) the Bounkani Region. These six regions are particularly affected by low connectivity and productivity issues (see Figure 6 & Figure 7 above), including related to climate change impacts. The project will not be able to cover the three regions entirely, the cascade-decision making approach will be used to narrow down the geographical scope of Component 1.

29. **Component 2 Digital services for sustainable agricultural development (estimated cost US\$12.50 million equivalent)** – This component will be strengthening the capacity of farmers in climate smart production management and marketing and facilitating the formation or consolidation of farmer groups into more formal structures. It will also support the strengthening of the capacity of agricultural agencies. The component will also support the strengthening of the digital platform for the MINADER, and development of local content, applications, and services, leveraging Internet of Things (IoT - connected objects) and Big Data; as well as strengthening the digital ecosystem and e-agriculture. This component will focus on female entrepreneurship, specifically increasing access among women to economic opportunities through agribusiness. It will build upon previous support provided by the West Africa Agricultural Productivity Program (PAAO/WAAPP – P129565). The WAAPP helped establish an electronic extension platform (e-Extension) that will be strengthened and operationalized through this component.

- a. **(Sub-component 2.1) Smart agriculture and producer organizations (US\$1.50 million)** – This sub-component supports farmers organized around a commodity of common interest and builds their capacity in climate smart production management and marketing, etc. The project will identify farmers who are engaged in agricultural production of the selected commodities in the targeted project areas and build their capacity in climate smart agricultural production, management and marketing, etc. This approach has been utilized extensively as the initial step in on-farm productivity improvements, and provides an effective means to deliver training, inputs and marketing support to smallholder farmers. This activity involves targeting, enrollment, organization into producer organizations and registering producers and producer organizations digitally. The project will facilitate the formation or consolidation of farmer groups into more formal structures, if desired by group members. With a focus on targeting women, it will provide basic digital literacy skills as well as business development skills training using digital platforms to help project beneficiaries with financial literacy, business planning, negotiation, and marketing, etc. A targeted public education campaign, and behavioral change communication will help the small farmers and producer organizations become aware of the benefits, and practice the learnings from the trainings to use digital tools and platforms. The project will analyze and address possible obstacles for women to meaningfully participate in and benefit from POs as well as identify locally relevant climate change impacts and focus capacity building to equip farmers with the knowledge and practical skills to become more resilient to these impacts.
- b. **(Sub-component 2.2) Capacity building in digital solutions in agriculture (US\$2.40 million)** – The main objective of this sub-component is to strengthen the capacity of the MINADER and relevant agricultural agencies at all stages of data collection and management to improve the design, implementation and evaluation of policies and programs for sustainable agricultural development at the national and local levels. This data to decision-making value chain consists of the collection of relevant data, validation and processing of data, and dissemination and use of this data for decision-making in the design, implementation and evaluation of programs and policies in the agricultural sector. More specifically, the sub-component will provide technical assistance to: (i)



identify the various institutions in the public, private, non-governmental sector at the national and targeted districts level who are involved in the data to decision making value chain in the agricultural sector; (ii) support the capacity strengthening of MINADER staff and such relevant agencies in digital tools and applications for data collection and management; (iii) provide technical assistance to improve the enabling environment for agricultural data, including a review of current status of policies, laws and regulations make recommendations for the revision of laws and regulations; and (iv) review and upgrade as needed the current strategy and action plan for the development, dissemination and use of agricultural data.

- c. **(Sub-component 2.3) Digital platform for the MINADER (US\$2.50 million)** – The main objective of this sub-component is to strengthen the MINADER communication system. The existing communication system is lacking modern technology and appropriate services coverage. The project will leverage Big Data technologies and enable the free flow of data, information and knowledge throughout all project stakeholders, fetching data outside Côte d'Ivoire when needed in universities and research labs. The sub-component will also help establish reliable data flows between the MINADER in Abidjan and all its decentralized offices. This data exchange links will allow for consolidation, validation of agriculture-related data.
- d. **(Sub-component 2.4) Digital ecosystem and e-agricultural services (US\$6.10 million)** – The main objective of this sub-component is to provide close to real time agricultural advisory services to small-scale farmers in the project areas for increased productivity. This sub-component will tackle the problems faced by small-scale farmers in the targeted project areas: (i) lack of easily accessible, affordable and useful close to real time, reliable and relevant data, information and knowledge services on agriculture and climate to obtain timely advice to improve crop and livestock productivity and income generation; (ii) lack of digital skills and low levels of literacy, little or no access to learning opportunities to relevant information and knowledge to access local, national, regional and international markets; and (iii) very low levels of internet connectivity at affordable prices to enable access to various information and knowledge materials which are freely available on the world wide web. The following activities are proposed to address the above problems through the strengthening of the existing e-extension platform. As aforementioned, the World Bank-funded WAAPP helped establish an electronic extension platform (e-Extension) that will be strengthened through this component. The sub-component will specifically aim to: (i) establish and operationalize call centers and voice message services for agricultural information and knowledge in the selected value chains; (ii) promote awareness and information campaigns for small-scale farmers in selected value chains, targeted end-users of the e-agriculture services; (iii) finance the acquisition of necessary equipment and materials, including computers, software and communication materials necessary of the good functioning of the e-extension platform; and (iv) provide the local agriculture extension services agency (e.g. ANADER) with a toll-free number for a more efficient outreach from farmers. Support will be provided to pilot: (i) community owned data, information and knowledge services; and (ii) community radio stations in project districts to enable rural households to exchange information and knowledge and obtain daily updated on climate, markets and new technologies. The project will also promote digital innovation systems for agriculture through: (i) establishment and operationalization of an Agricultural Observatory; (ii) the design and organization of App Challenges to develop or enhance digital solutions for agriculture e-services; and (iii) technical assistance and financial support to scale up and mainstream relevant digital solutions emerging for the App Challenges.

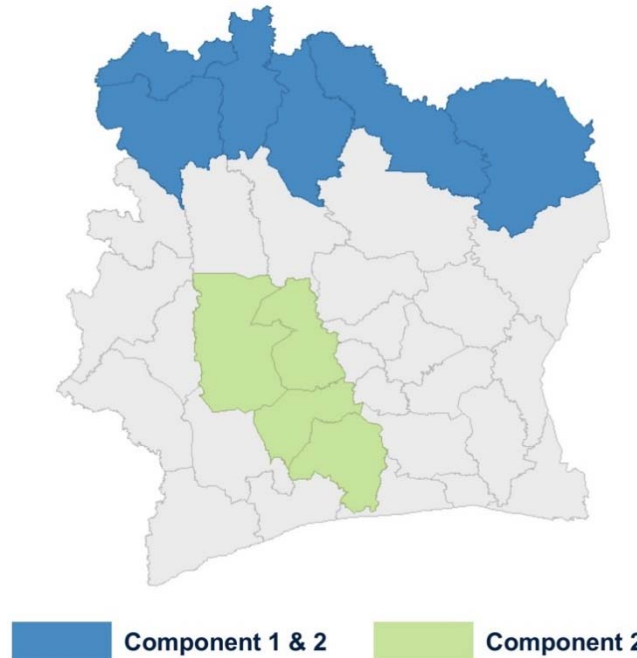


30. **Regions and value-chains identified as priority for Component 2 through the selection criteria** – Value-chains identified by the MINADER as priorities (with an emphasize on staple food) for this component are: (a) maize, manioc, rice; (b) plantain, yam (igname); (c) shea (karité); and (c) poultry. Taking into account the regions where these value-chains are predominant, the component will target the following districts and regions: regions already included in Component 1 – District of Denguélé, District des Savanes, and the Bounkani Region (District of Bouna) – plus the District of Sassandra-Marahoué, and the District of Gôh-Djiboua. These crops fall to a large extent under the informal agriculture sector. Producers and farmers of these crops are predominantly women.

31. **Component 3 Rehabilitation and maintenance of rural access roads (US\$19.50 million equivalent)** – This component will finance the technical feasibility studies, environmental and social assessments and works related to the rehabilitation of about 560 km rural roads and the maintenance of 2,240 km rural roads over a period of four years. The total maintained linear of rural road will be about 2,800 km (560 km/year). To enhance resilience of the project to impacts of climate change and natural disasters, the rehabilitation and maintenance of roads will include improvements in the drainage structures to ensure all-weather/season practicability based on the spots improvements approach and an adequate level of service for the project area road. The materials and design standards for road rehabilitation have an emphasis on reducing risk of flooding and associated destruction of housing and facilities. The drainage works will be designed in a technically sustainable manner to avoid any negative impact and provide high levels of protection. Furthermore, the project will adopt a resilience strategy based on reducing the risk of catastrophic failure, such as using submersible roads where needed. A large experience on this strategy was gathered through the Agriculture Sector Support Project (PSAC-[P119308]) and other infrastructures projects funded by the World Bank. The project will also implement a climate and natural hazards monitoring, early warning and incidence response system. This component will tackle the problems of access to markets for small-scale farmers in project targeted areas and reduce vulnerability of serviced population during flooding and landslides season. The high level of service provided by the roads is expected to attract more means of transport, thus improving person and goods displacement and a decrease of transport cost on these roads. The typology of the proposed road infrastructure works is very similar to works financed under the PSAC that attracts national small and medium enterprises (SMEs) and creates jobs for the vulnerable population. It will focus on critical rural roads allowing access to targeted production zones and markets in the areas of Divo, Daloa, Gagnoa, Korhogo, Boundiali and Bouna.



Figure 9: Regions identified as a priority for Component 1 & Component 2



Map source: ICT Unit, base maps from United Nations OHCA-CI and CNTIG.

32. **Component 4 Program implementation and monitoring (US\$6.50 million equivalent)**– This component will support the setting up of a dedicated Project Implementation Unit (PIU) and will also cover training, office equipment, operating costs, audits and communications as well as M&E, environmental and social studies, grievance redress mechanisms (GRM), their implementation and/or the monitoring of their implementation.

B. Project Cost and Financing

33. The project is financed through an IDA credit of US\$70 million equivalent. A Project Preparation Advance (PPA) in the amount of US\$2.1 million was used from the proposed project resources to fund project preparatory work.

Project Components	Project cost	IDA Financing	Trust Funds	Counterpart Funding
Component 1. Extending digital connectivity in rural and remote areas	31.50	31.50	N/A	0
1.1 Review and improvement of the digital economy enabling environment: legal and institutional framework	3.30	3.30		



1.2 Supporting the extension of digital infrastructure in rural areas	28.20	28.20		
Component 2. Digital services for sustainable agricultural development	12.50	12.50	N/A	0
2.1 Smart agriculture and producer organizations	1.50	1.50		
2.2 Capacity building in digital solutions in agriculture	2.40	2.40		
2.3 Digital platform for the MINADER	2.50	2.50		
2.4 Digital ecosystem and e-agricultural services	6.10	6.10		
Component 3. Rehabilitation and maintenance of rural access roads	19.50	19.50		
Component 4. Program implementation and monitoring	6.50	6.50	N/A	0
Total Costs				
Total Project Costs	70.00	70.00		
Total Financing Required	70.00	70.00		0

C. Lessons Learned and Reflected in the Project Design

34. **Component 1** – The project draws on lessons learned from previous similar projects, including those financed by the World Bank, for example in Europe⁴⁰, Latin America, Africa, and Asia (including Australia⁴¹). Past projects with a similar component financed by the World Bank include: Nicaragua Rural Telecom (P089989), Madagascar Regional Communications Infrastructure Program (P094103), Tanzania Regional Communications Infrastructure Program (P111432), Uganda Energy for Rural Transformation Project (P069996), and Papua New Guinea 3G Network Upgrade (P107782). The World Bank also released a 2010 report on Lessons Learned and Best Practices related to “reversed auction” mechanisms, with a chapter dedicated to the ICT sector. Coverage and access to telecommunications has dramatically increased due to privatization and competition (especially in the wireless sector). Despite this, in most countries in the world – including Organisation for Economic Co-operation and Development (OECD) countries with a large territory – there are still a fraction of the population in rural areas that do not have access to ICT services due to major investment and operational constraints. Following the cascade approach and lessons learned from past experience, the project focuses on fostering

⁴⁰ Cf. European Radio Spectrum Policy Group – Report on Improving Broadband Coverage (2011); Body of European Regulators for Electronic Communications – Report on facilitating mobile connectivity in “challenge areas” (2017).

⁴¹ Cf. Australian Government, Department of Communications and the Arts – Mobile Black Spot Programme (2014 & 2016).



private investment through different approaches, ranging from the identification of legal and regulatory bottleneck to the use of public funds to stimulate investments. When using public funds, the project ensures that four key principles – in line with international best practices and the cascade approach – are translated in the proposed activities: (i) principle of market failure (targeted rural areas are suffering from a market failure, i.e. that operators do not cover the targeted area and do intend to do so in the medium term, even with the enhancement of the legal regulatory framework); (ii) principle of general interest as set out by the World Bank's overarching twin goals and the PDO (this will be achieved by striking a balance between targeting areas with the maximum economic impact, and the areas with the poorest and most vulnerable population); (iii) principle of public funding limited to the minimum necessary (by ensuring the best 'value for money' usage of public funds with the implementation of PPPs through a competitive tender process that will select the 'most economically advantageous offer'); and (iv) principle of Open Access (the private entity deploying and managing the infrastructure will provide effective wholesale access under fair and non-discriminatory conditions to all ICT operators authorized to operate in Côte d'Ivoire).

35. **Component 2** – The project draws on lessons learned from previous similar projects and on the key success factors identified by the FAO, namely using the adequate technology, fostering trust with farmers, using a bottom-up approach, ensuring sustainability, enhancing inclusiveness of women and youth, and defining clear policies to follow. The project specifically reflects lessons learned by ensuring the ownership of the project through the identification of the demand for digital services and the leveraging of local talents and knowledge, and by addressing the access to production zones with the rehabilitation of rural roads as well as its maintenance.

- a. **Identifying the demand for digital services.** One of the key lessons learned from the multitude of e-agriculture initiatives launched in West Africa is that off-the-shelf solutions imposed on the users rarely last beyond the pilot phase. There are several reasons to that: (a) off-the-shelf solutions rarely consider local constraints faced by the end users (e.g. language, literacy, connectivity), so the beneficiaries generally stop using it at the end of the pilot; (b) ready-to-use digital solutions never respond exactly to the specific needs of the targeted population, as the beneficiaries use the service during the pilot phase but abandon it once the pilot is over, and as a result, there is no uptake of the demand which never reaches the critical mass of users necessary to make the service financially viable; and (c) the pilots often propose the new digital service for free without a proper business plan to ensure sustainability beyond the pilot.
- b. **Leveraging local talents and knowledge.** As mentioned above, the design of Component 2 draws lessons from many e-agriculture initiatives launched in the past few years. Most of them failed after a year because the users, mostly farmers and producers, were not convinced of their efficiency. When exchanging with farmers in Côte d'Ivoire who participated in previous e-agriculture pilots, the issue of adoption was the main factor of failure. The proposed solutions may have worked somewhere else, but the design and development was rarely adapted to the local demand. Component 2 of the proposed project will rely almost entirely on local talents and start-ups to design and develop solutions based on farmers' demands and using connected objects (IoT technologies) whenever necessary. In addition, this component will take advantage of Big Data schemes (leveraging relevant information and knowledge available through the entire ecosystem: research labs, universities, practitioners, MINADER's databases, etc). Through a series of workshops throughout the implementation, representatives of farmers and producers will meet with local developers to define their specific needs.



36. **Component 3** - This operation will complement the PSAC (P119308) pilot rehabilitation and maintenance program of 5,800 km of rural access roads. The pilot is already being implemented under the World Bank/*Agence Française de Développement* (French Development Agency - AFD) and Inter-professions fund. An emergency road rehabilitation program is also implemented under the World Bank-funded Emergency Infrastructure Renewal Project (PRI-CI – P124715).
- a. **Addressing access to production zones issues.** Lessons from the PSAC pilot operation informed the design of a National Strategy for Rehabilitation and Maintenance (NSRM) for the country's rural road network, based on a partnership between the Government and inter-professions, including joint planning, joint financing, and sharing of roles and responsibilities in implementing an annual priority rehabilitation and maintenance program. This new distribution of roles and responsibilities has contributed to better alignment of project interventions with beneficiaries' needs, which would eventually allow sustainability of activities in the long term.
 - b. **Ensuring regular maintenance.** Maintenance of the rehabilitated assets is necessary to increase the impact and the benefits of the proposed investments. The project will finance a maintenance program of the rehabilitated roads over a period of four years. This will help lay the foundation for adequate future maintenance. Beyond project closing, the gradual disengagement of World Bank funding will be replaced by supplychains and local cooperatives contributions. Another challenge is the lack of financial or technical capacity for smallholders and farmers to support road rehabilitation activities. To mitigate this risk, it is proposed that (i) the Roads Management Agency's (*Agence de Gestion des Routes* – AGEROUTE) support implementation of this subcomponent under a delegated management contract (*Maîtrise d'Ouvrage Déléguée* or MOD – Delegated Management Contract) to be signed with the MINADER; and (ii) the involvement of the private sector; through the new NSRM; in the financing and management of the road maintenance.
 - c. **Gender-Based Violence (GBV) and labor influx.** While national contractors' presence and capacity in Northern Côte d'Ivoire is sufficient for the type of work (rehabilitation and maintenance of access rural roads) that will be funded by the project, some contracts may involve labor influx through the contracting of firms coming from other regions and the involvement of workers that are not from the area. To mitigate the risks associated with the labor influx including the risk of GBV, all infrastructure contracts executed under this project will include explicit contractual clauses prohibiting GBV, including the enforcement of a code of conduct by all workers. The code of conduct will be translated in all relevant languages and will be displayed in the contractor's main facilities in such a way that local populations are also informed. Specific reporting mechanisms of GBV incidents will also be established through the GRM, the supervision engineers, the PIU and the project's safeguards specialists.
37. **Gender equality in agriculture.** In Côte d'Ivoire, women control only 7 percent of total cultivated area in 2016 and they face constraints with respect to property rights on the land they farm (10 percent of women hold a land title versus 25 percent of men)⁴². Due to linkage between women's property rights, agricultural investments and the well-being of the household, especially that of children, this figure is cause for concern. Unequal access to inputs also emerges as a key challenge: fertilizer was used on 8 percent of land cultivated by women versus 17 percent for men. Women's plots also benefit from less labor than men's. However, over the past decade this gender gap has been declining due to a reduction in the constraints faced by women, with

⁴² Cf. a recent study conducted by Donald, Lawin and Rouanet exploring gender gaps in access to land, property rights and agricultural productivity in Côte D'Ivoire.



increased use of fertilizers and pesticides. Another dimension of the gender gap relates to the types of crops that women and men produce. Women are more likely to cultivate food crops as opposed to cash crops (only 8 percent of female-headed households produce export crops, and female-headed households control only 5 percent of cultivable land dedicated to export crops despite accounting for 15 percent of households). To address the gender gaps in agricultural productivity, interventions should aim to alleviate constraints related to the use of fertilizers, pesticides as well as labor—both family and wage labor. In addition, policymakers should prioritize women's property rights if they hope to address the productivity of female-headed households, and agricultural productivity. Indeed, one of the lessons learnt from past project is that gender gap issues need to be addressed in a cross sectoral context and should not be the purview or sole responsibility of a single agency or Government institution.

38. **Gender-targeted interventions.** With the support of the Africa Gender Innovation Lab (GIL), the project is exploring the potential to implement one or more gender-targeted intervention under Component 2. These interventions would aim to leverage newfound access to the Internet to boost take-up of digital services among female farmers and increase their impact on women's economic empowerment. If implemented, they would address issues such as:

- (i) **Representation:** Increasing the visibility of role models for female farmers. The project could explore how participation and program impact varies according to the gender of the extension agent featured in the e-extension videos, picture-based extension services and other materials. The project could also promote in-person female role models as leaders and internet users within communities.
- (ii) **Labor:** Labor poses the main barrier to achieving equality in agricultural productivity between men and women across many SSA countries. ICT-based applications offered by the project could target female farmers' labor constraints, helping them to identify workers and coordinate labor hiring and payment. The digital services could also allow women to rent labor-saving technology by connecting them with owners of tractors or other agricultural machinery.
- (iii) **Capacity:** Providing services on digital literacy, confidence, and skill development tailored to female farmers. The project could additionally help female farmers navigate negotiations with agricultural buyers. This could be achieved by providing information crucial to negotiations (e.g., yield forecasts based on a mapping of their land plots), or by explicitly integrating negotiation skills training in the suite of agricultural e-services offered.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

39. **The project will be implemented by the MICENUP, in coordination with the MINADER.** The PIU will be anchored at the MICENUP and headed by the Coordinator for the National e-Agriculture Program. A focal technical team will be established at the MINADER to oversee the implementation of Component 2 under the coordination of the PIU. The Coordination team is familiar with project management and has extensive experience with other donor funded programs. In addition, the team on the MINADER side is very familiar with World Bank-funded operations and will be able to advise their counterpart at the MICENUP. Nonetheless, a full assessment of both ministries implementing units has been carried out to ensure they have the appropriate



capacity strengthening for project execution and fiduciary management. A Steering Committee will oversee the implementation and will provide strategic guidance to the project whenever needed.

40. The project will implement a program for the rehabilitation and maintenance of rural roads linking the main production areas of Divo, Daloa, Gagnoa, Korhogo, Boundiali and Bouna. The program will align with the mechanism proposed by the new National Road Maintenance Strategy⁴³ that has already been developed and will be adopted in 2018. Thus, priority roads will be identified each year by AGEROUTE and the producers and beneficiaries. However, since the producers do not yet have sufficient capacity to carry out rural road rehabilitation activities, AGEROUTE will be responsible for the implementation of the program under a delegated management contract (“Delegation Agreement”) to be signed with the PIU.

B. Results Monitoring and Evaluation

41. **Progress toward the achievement of the overall PDO will be measured based on the PDO-level and intermediate results indicators.** The M&E system will be used to collect relevant data and information pertaining to measuring results, including project outcomes and quality of project execution. The World Bank team will conduct an annual evaluation to review the progress against results indicators, based on data supplied by the PIU. The PIU will be responsible for developing a detailed M&E plan, specifying standard protocols and guidelines for data collection and use for the duration of the project, and will organize trainings for relevant stakeholders in the M&E plan. Progress reports will be closely reviewed by the steering committee set up in Côte d'Ivoire and comprising all public and private stakeholders. The PIU will provide quarterly monitoring tables and progress reports on all PDO- and intermediate-level results indicators as well as any additional country-level indicators specified in the M&E plan to the World Bank during routing implementation-support missions (see also Annex 2 for a detailed review of the M&E aspects).

C. Sustainability

42. The MFD approach will ensure the financial and economic viability of the investments in white zones. The purpose of the MFD approach proposed in Component 1 is to optimize the use of public funding to make the investment commercially viable in the long term. By increasing demand, Component 2 will reinforce the commercial viability of the infrastructure.

43. The development of e-agriculture services will be based on their long-term viability. Among all the criteria used to select the proposed services and platforms, sustainability will be one of the key aspects looked at by the MINADER. Over the past decade, many e-agriculture pilots and initiatives have been launched with limited impact and very low viability. This is due to several factors: (a) there is often lack of ownership with off-the shelf solutions pushed to the users, or replicated from other countries or context; (b) the pilot provides the technical solutions for free or without any cost-recovery plan. Then, the users are not ready to pay after the pilot is over; and (c) the technology adoption and digital literacy have been an obstacle to scale-up, so the pilots rarely reached a critical mass of users ensuring the financial viability of the service. Component 2 of the proposed e-agriculture project will address the three issues in parallel by providing customized training to the users, build

⁴³ Strategie Nationale d'Entretien et de Développement du Réseau des Routes Rurales (SNEDRR) de la Côte D'Ivoire, 2017



the viability of the service in the initial design, and ensuring ownership by involving the end user in the design of the service.

44. The project is promising for small producers and beneficiary populations. Improved rural access roads will greatly facilitate market accessibility and evacuation of agricultural products. They also allow for a reduction in duration in travel times and transport costs bringing efficiency in the value chain. From the experience of the PSAC, an important gain in job creation has been created through the creation of local and sub-regional SMEs. The PSAC has allowed the beneficiaries (smallholders in targeted regions) to obtain more regular revenues, reassuring and attracting new service providers, SMEs. In return, these SMEs have created jobs opportunities for young men and women in rural areas.

45. In addition, the participative approach privileged in Component 3, and the emphasize on local ownership through the active participation of the local populations in the works and the proposed maintenance schemes, will contribute strongly to the durability of the infrastructure. Capacities of producers will be enhanced in environment and social management safeguards implementation. This will help them for future projects and prevent or minimize negative environmental and social impacts resulting from project activities.

D. Role of Partners

46. The World Bank is collaborating with various donor partners to ensure the complementarity with other initiatives in the e-agriculture sector. At the sub-regional level and in Côte d'Ivoire, there are a variety of donors with a longstanding interest in e-agriculture, and agriculture modernization in general, including the AFD and the AfDB. The World Bank is in discussions with these donors to identify how their efforts in rural development could best complement the World Bank's e-agriculture efforts and vice versa. The World Bank is also coordinating with private operators such as Orange, Moov and MTN, which have already developed solutions to address some of the issues identified during project preparation. In addition, the operators are interested in providing new financial services to such vulnerable populations. Finally, several private initiatives from Ghana and Senegal are also being consulted on the issue of productivity improvement through e-services.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

47. **The overall risk is rated substantial, due to the innovative cross-sectoral approach.** The country and macro-economic contexts present substantial risks. The January 2017 unrest showed some remnants of the political crisis, although officially over for years. However, this project will be implemented within the framework of the National e-Agriculture Strategy of the Government of Cote d'Ivoire. This project is fully aligned with government priorities and this is expected to mitigate any risks of political turnover and ownership.

48. **Risk to Technical Design of Project.** The design of this operation presents also several substantial risks: risk to PPP and risk due to the cross-sectoral aspect of this project. The risk to PPP is mainly due to the uncertainties of the demand in the regions targeted by the project: low population density and disposable income. This may undermine the appetite of private investors. In addition, this project will be coordinated by three Ministries (MICENUP, Infrastructure and MINADER) and will involve new implementation schemes such



as the organization of “app challenge” to create content for the project beneficiaries. This innovative design may affect the project implementation on the short term. In order to mitigate these risks, the project has carried out extensive dialogue with potential private investors and private operators during the preparation. The Task Team also relies on existing institutions such as the ARTCI and the ANSUT to make informed decisions on the selection of communities targeted by the project. In parallel, the Task Team constantly involves both Ministries (MICENUP and MINADER) to ensure strong ownership on both sides. Finally, the Task Team will rely on the extensive experience of the World Bank in the organization of app challenge across Africa, and directly engage with the programmers/startup community in Côte d'Ivoire to shape the design of sub-components and activities funding app challenges and local content development.

49. **Institutional Capacity for Implementation and Sustainability.** The project faces substantial risks related to institutional capacity and sustainability. The MICENUP has little experience in managing donor-funded projects, and none in managing WB-funded operation. In addition, this project, due to its innovative features and design, also faces risks to development outcomes (sustainability). In order to mitigate these risks, the project will be implemented by the MICENUP in close collaboration with the MINADER, which has extensive experience in WB-funded operation. In addition, during the preparation phase, the MICENUP has received training in fiduciary aspects and project management. Regarding sustainability, the project is designed to establish a permanent innovation platform on which the local startups and the digital ecosystem in general will be able to build and develop their services. All services developed under the project will be tailored and provided under a commercial scheme proposed by the developers, including the recovery of user fees (see Section IV.C)

50. **Social and environmental impacts.** Section VI.E details the potential social and environmental impacts and risks. Most environment-related risks are due to infrastructure construction (Components 1 and 3). Some social risks are linked to the strongly gender-focused aspects of this project. Annex 6 describes the monitoring framework this project will be implemented within, to mitigate some risks of exclusion based on gender.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

51. **Component 1 – The project is viable financially and economically.** The results for the project *without* public capital support are: (i) the financial rate of return FRR (C) is 7 percent; (ii) the break-even point occurs in 14 years; and (iii) the Net Present Value (NPV) is US\$ -3.1 million (with a discount rate of 8 percent). These results show that although FRR (C) is positive, telecommunication operators would not invest in this project alone because it would not provide the minimum rate of return that private mobile operator companies usually expect (around 12 to 16 percent depending on the socio-economic context). Therefore, public financing is needed to make the project possible.

52. The results for the project *with* public capital support are: (i) the FRR (K) is 13 percent; (ii) the break-even point occurs in 12 years; and (iii) the NPV is US\$17.7 million (with a discount rate of 8 percent). These results show that the project becomes acceptable for private operators; moreover, the fact that the FRR on national capital FRR (K) is in the lower range of the expected rate of return for standard mobile telecommunications projects and that the break-even point occurs in the long-term (12 years) show that the public capital support is not over-proportionate.



53. It needs to be noted here that although last-mile operators were consulted in advance, there is a certain level of uncertainty with regards to the final level of revenues that will be generated by the infrastructure. This is acknowledged in the design of the project, which requires the inclusion of a claw-back mechanism into the PPP contract that would apply in case revenues are higher than originally foreseen.
54. Because of the lack of socio-economic data at the local level, the economic analysis is limited to two direct measurable effects, namely the extra fiscal revenue earned by the Government thanks to the project and the local salaries paid to local staff to ensure the maintenance and security of staff. The extra fiscal revenue is limited to the VAT at an 18 percent rate, and the local salaries are evaluated by considering a full-time equivalent staff for each site, paid at the minimum legal wage of US\$100 per month. These two direct revenues amount to a total cumulated value of US\$56.7 million, which is in line with the public capital support of US\$27.0 million provided by the project for financing digital infrastructures in targeted rural areas.
55. **Component 2 – The project is viable financially and economically.** Based on the experience of similar projects using the latest advances in ICT tools and applications to improve efficiency at all stages of the agricultural value chain, the proposed activities of the digital services for sustainable agricultural development component would yield high financial and economic returns. It would also bring several benefits, with the reduction in gender inequality, empowerment of women, development of skilled agricultural extension and advisors, localized content, promoting digital literacy, promoting startups in various aspects of IT applications in agriculture, peer to peer knowledge exchange, collaboration between institutions involved in the agricultural sector, etc. However, due to the lack of available agricultural data the financial and economic returns – as well as the overall benefits –cannot be easily quantified.
56. The project would enhance the capacity of the MINADER and other relevant government institutions at the national and local levels in all aspects of the data to decision making value chain for the focus agricultural products. Skills of the staff would be enhanced in the use of a wide range of IT tools and applications – such as data collection using mobile phones, interpretation and use of Normalized Difference Vegetation Index (NDVI) images, satellite weather data, and ability to leverage these with appropriate decision support systems. Together, this would help in providing practical recommendations by the agricultural extension and advisory staff to project farmers to address day to day problems during the entire crop cycles resulting in increased efficiency of the use of inputs, productivity and incomes.
57. The project's bottom-up approach is expected to result in the development of high quality content (defined as data, information and knowledge) which is most useful and locally relevant to address the needs of the farmers. Crowd sourcing techniques where users can call a phone service to get answers for their specific questions would become a part of a knowledge base, which can then be queried by other users. The project would further disaggregate mobile subscriptions by income, gender, etc., to get a better understanding of the main problems being faced by small holders at every stage of the value chain of the focus agricultural products - who is using the content, how to make it more relevant for users and help in providing practical solutions which the farmer can adopt.
58. Regarding the digital services for sustainable agricultural development component, data for carrying out a detailed economic and financial analysis, (such as crop, farm budgets, with and without project conditions, estimates of incremental production, incomes, savings in time and increase in efficiency in all stages of the agricultural value chain, current and projected financial and economic prices of inputs and outputs, detailed investment and operating costs, etc.) are in the process of being collected. Evaluations of e-agricultural services which have been carried out in developed and developing countries demonstrate that investments made in



these activities yield high economic and financial returns. Three examples from United States of America (USA), Ghana and Bangladesh have been provided in the annex as illustrations.

59. **Component 3 – Rehabilitation and maintenance of the rural access roads have a positive economic and social rationale.** The rehabilitation and maintenance increase the level of connectivity and social cohesion. In addition, the rehabilitated roads will reduce transport costs, freight rates, vehicle operating costs, and travel times, facilitating the expansion of agriculture, trade, and access to markets. The lack of accessible rural roads identified in the project areas contribute to farmers losing large quantities of their perishable products. By improving access roads, the program will contribute to increasing the production and income as well as food security for people in project targeted areas. The economic cost and benefits will be assessed for each stretch of road included under the project as part of the selection process (see Annex 5).

B. Technical

60. **Component 1 –** The technical design of Component 1 builds on lessons learned and best practices of similar projects that have been implemented in other countries⁴⁴, as well as the recent 2018 report on “Innovative Business Models for expanding Fiber-Optic Networks and Closing the Access Gaps” sponsored by The Digital Development Partnership of the Transport & Digital Development Global Practice. The infrastructure component is designed around four core principles (evidence of market failure, general interest as set out by the PDO, public capital funds limited to the minimum necessary, and open access PPPs). The bidding specifications will be technology neutral in order to allow as many operators as possible to participate in the bid, and will not have a technology-based bias that could favor one operator over the others⁴⁵. The bidding will request only minimum specifications, such as minimum internet speed, number of locations to be covered, size of population to be covered, and standard telecommunications services to be delivered such as voice and messaging services. The private operators will be able to select the design of their choice, which could include, among others: (i) passive telecom towers to facilitate the deployment of active mobile antennas by mobile network operators; (ii) a fully active Radio Access Network deployed by a mobile network operator, who provides a local roaming access to other mobile network operators; (iii) low-cost ‘microsite’ alternative deployed by third-parties for rural areas targeted by the project who then sell their services to mobile network operators; and (iv) other types of wireless access such as satellite access. The technical design is consistent with international best practice. Lastly, the design of the project is based on a model of competitive, private-sector delivery wherever possible. This is fully consistent with international experience which shows that this is a more cost-effective way of delivering ICT services than the Government becoming directly involved in service delivery itself.

61. **Component 2 –** Component 2 will face the challenge of keeping abreast with the rapid advances in information technology tools and applications – whose costs are declining and increasing in functionality and

⁴⁴ Nicaragua Rural Telecom (P089989), Madagascar Regional Communications Infrastructure Program (P094103), Tanzania Regional Communications Infrastructure Program (P111432), Uganda Energy for Rural Transformation Project (P069996), and Papua New Guinea 3G Network Upgrade (P107782).

⁴⁵ The project will nevertheless focus mostly on wireless network access. As in most other Sub-Saharan African countries, the wired network is lagging well behind the wireless infrastructure in the delivery of telecom and ICT services in Côte d’Ivoire. Wireless networks, especially mobile telecommunications networks, are thus the most relevant technology to ensure access to digital services in rural areas. Another wireless technology worth considering is satellite broadband, even though it may not provide the reliability and bandwidth of a mobile network.



efficiency especially in the consumer space. These developments are largely driven by the private sector. Since the project would rely on private sector providers through partnerships or contracts, ensuring technology neutral solutions and technical specifications which allow for flexibility, scalability and adaptation to the local conditions, the risk of technological obsolescence is minimized. Hardware and software standards that are incorporated into information network design and communication would follow internationally-accepted standards, such as: Distributed computing environment; Open Software, effective use of available communication facilities and bandwidth. Emphasis will be placed on close monitoring of the contract implementation for compliance with the terms and conditions of the bidding documents and contracts. Regards the e-agricultural services, the proposed digital solutions have been well tested, and lessons learnt from failures and successes have been incorporated in the design of each of the proposed activities. Efforts will be made to design appropriate digital solutions to provide location specific advisory services to a large number of farmers – as ANADER has insufficient technical staff to provide extension services to the 5.5 million active agriculture population. Acceptance and adoption of the e-agricultural services by the small holder farmers – especially the illiterate – would pose a project risk throughout the project implementation period. This risk would be minimized through continuous public awareness of both the positive and negative effects of technology applications - using various forms of communication media, regular training of beneficiaries, participatory needs assessments and developing mechanisms for local ownership of content and new types of community owned business models for the development and delivery of e- agricultural services by trusted knowledge providers.

C. Financial Management

62. The financial management (FM) arrangements for the project have been designed with consideration for the country's post-conflict situation while considering the World Bank's minimum requirements under World Bank Policy and Directive for Investment Project Financing (IPF); which describes the overall FM World Bank policies and procedures.

63. In 2014, the Government has adopted a strategic framework for Public Financial Management (PFM) reforms aims at addressing the PFM challenges highlighted in more recent assessments of the PFM system. The World Bank cannot thus, at this period rely 100 percent on the public expenditure framework for this project. The Government requested to use a ring-fenced financing mechanism for the fiduciary aspects of the project. A new PIU anchored at the MICENUP under the National Coordinator for the E-Agriculture Program, has been proposed by the Government to manage the project. The FM team of the PIU to be established under the responsibility of the National Coordinator for this project, will manage the overall FM aspects of the project.

64. An assessment of the Directorate of Administration and Finance (DAF) of the MICENUP, was conducted during the project preparation to check whether this directorate could manage the proposed project. The main finding arising from this assessment conducted in February 2018 was that the DAF is not familiar with World Bank-financed projects including FM procedures. However, the DAF follows the country public expenditure chain for budget execution and financial reporting through SIGFIP and ASTER, the Government budget and accounting software. The DAF faces similar challenges and weaknesses described in various report on the country PFM systems. None of the staff of the DAF including the Financial controller (*Contrôleur financier*) and the Public accountant (*Agent comptable*) assigned to the MICENUP are familiar with World Bank-financed project procedures and requirements. However, the assessment revealed that the procurement plan and the budget of the project preparation advance (PPA - US\$2.1 million) managed by FM team of the PSAC include the recruitment of the key staff and the design and implementation of the FM tools (e.g. manual of procedures, accounting software, training of the new PIU 's key staff).



65. The overall FM risk is rated Substantial. This is due to (i) the lack of experiences and familiarity of the DAF of the MICENUP with Bank-FM procedures; and (ii) the design of the project which involves several sub-components and activities as well as the multiplicity of actors with beneficiaries based in remote and geographically dispersed locations within the country. The project will be supervised on a risk-based approach.

66. Due to the critical areas for operationalization of the FM team of the new PIU associated with the risk level, the conclusion was that the MICENUP could manage World Bank funds once the following measures are implemented prior and after the project effectiveness: (i) appoint, on a competitive basis, the key FM staff including the Finance officer (*Responsable Administratif et Financier* - RAF) and the accountant; (ii) draft the FM procedures manual; and (iii) acquire and install the accounting software and train the users of the software. In line with the Use of Country System as stipulated in the decree n° 475 governing the modalities of donors-financed project implementation in Côte d'Ivoire: (a) a financial controller and a public accountant (two civil servants from Ministry of Finance) will be assigned to the new PIU; and (b) the Internal audit function of the project will be managed by the General Inspectorate of Finance (*Inspection Générale des Finances* - IGF). Finally, MICENUP will be required to prepare and submit (a) an annual work plan and budget (AWPB) not later than November 30 of the year preceding the year the AWPB should be implemented; (b) interim un-audited financial statements (IFR) on a quarterly basis; and (c) audited annual financial statements (e.g. audit reports prepared by independent external auditors).

67. A designated account (DA) in XOF managed by the Directorate of Debt (*Direction Générale du Trésor et de la Comptabilité Publique* - DGTCP) will be opened at the central bank (BCEAO). A Project Account (PA), managed by the public accountant assigned to the PIU, will be opened in a commercial bank under terms and conditions acceptable to the World Bank. This PA will be used to pay for all the expenditures related to the Components 1 and 2. No IDA funds will be transferred to other agencies involved in the implementation of the project activities for them to make payments of expenditures. Interest incomes on the PA will be deposited into a sub-account opened in a commercial bank and used according to the FM manual.

D. Procurement

68. The Borrower will carry out procurement for the proposed project in accordance with the World Bank's "Procurement Regulations for IPF Borrowers" (Procurement Regulations) dated July 2016 and revised in November 2017 under the "New Procurement Framework (NPF)", and the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated July 1, 2016 revised in November 2017, and other provisions stipulated in the Financing Agreement. Procurement shall be carried out by (a) PSAC implementation unity has been entrusted the fiduciary management of the project (procurement and FM) during the preparation phase (PPA); and (b) the PIU at the MICENUP after effectiveness.

69. The assessment included the following aspects: (i) experience in procurement; (ii) Fiduciary staff; (iii) filing of procurement documents; and (iv) existence of a manual of procedures on procurement. PSAC implementation unit has experience in World Bank procurement procedures; (ii) and has a manual of procedures in accordance with World Bank requirements; and (iii) one procurement specialist with experience with World Bank procedures. A detailed procurement description and institutional arrangements can be found in Annex 2 and 5.

70. All procuring entities as well as bidders, and service providers, i.e. suppliers, contractors and consultants shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with Paragraph 3.32 and Annex IV of the Procurement Regulations.



71. As part of the preparation of the project, the Borrower (with assistance from the World Bank) has prepared a Project Procurement Strategy for Development (PPSD) which describes how procurement activities will support project operations for the achievement of PDOs and deliver Value for Money (VfM). The procurement strategies are linked to the project implementation strategy at sub-regional, country, and the state levels ensuring proper sequencing of the activities. They consider institutional arrangements for procurement; roles and responsibilities; thresholds, procurement methods, and prior review, and the requirements for carrying out procurement. They also include a detailed assessment and description of government capacity for carrying out procurement and managing contract implementation, within an acceptable governance structure and accountability framework. Other issues taken into account include the behaviors, trends and capabilities of the market (i.e. Market Analysis) to respond to the procurement plan.

72. The contractual arrangements (delegated management contract) between AGEROUTE and the Ministry of Agriculture for this project will be based on the existing arrangements in place under other infrastructure projects funded by the World Bank: the PRICI (P124715 & P156253), ALTTFP (P116323) and PIDUCAS (P151324), PESAC (P119308). The overall performance of these contracts were satisfactory. Currently, the responsibility for road maintenance falls under the Ministry of Economic Infrastructure through its road agency Ageroute, which has good expertise in planning and implementing maintenance, whenever proper budgetary resources are available.

73. The financing of digital infrastructure through Component 1 will be carried out by the PIU through International Competitive Bidding using “least-cost subsidy auction” (i.e. “reversed auction”) mechanisms: this method is included in the New Procurement Framework and awards the contract to the bidder requesting the smallest amount of public subsidy (IDA funding). Zones to be covered will be prioritized based on the report funded under Activity 1.2.3 (see Annex 1). Tenders will be technology-neutral and only proposed targets in terms of coverage and quality of service.

E. Social (including Safeguards)

74. **Social development:** The project is expected to have overall positive social impacts especially for communities in the target areas and mainly for farmers, including small and middle producers of staple food producers which count many women. The project will use an inclusive approach to leverage local talents, to provide and develop solutions tailored to the needs of local users. This approach will allow considering the concerns of users, regularly adapting solutions to user’s needs, building capacities and ensuring the durability of the actions.

75. **Involuntary Resettlement:** Activities envisaged to the extension of ICT coverage in rural areas and to rehabilitation of rural roads under this project will involve land acquisitions and lead to the implementation of involuntary resettlement. Given the fact that the exact location of investment sites is not yet known, a resettlement policy framework, in accordance with the World Bank Safeguard Policy on Involuntary Resettlement (OP/BP 4.12) was developed as a due diligence measure. The Resettlement Policy Framework (RPF) has been reviewed, properly consulted upon and disclosed in Côte d'Ivoire and on the World Bank website on March 13, 2018. The RPF will serve as a guide for the preparation and implementation of eventual resettlement action plans that will also be reviewed, consulted and disclosed in the country and on the World Bank's website prior to the commencement of any work.

76. The RPF sets out the policies, principles, institutional arrangements, likely categories of affected people, eligibility criteria and categories, compensation matrixes and rates, methods of valuing affected assets, community participation and information dissemination, GRM and effective monitoring and evaluation, etc. The



Social Specialist within the PIU shall ensure the effectiveness of the implementation of the measures of the framework.

77. **GRM and beneficiary feedback:** The Results Framework includes an indicator on “Beneficiaries that feel project investments reflected their needs (%) (including perception by women),” to ensure that beneficiaries directly inform project implementation as it will track beneficiaries’ satisfaction with the quality and relevance of services delivered through digital platforms. A GRM will be implemented through the same platforms with the aim of addressing complaints and grievance in a timely manner. A variety of tools such as web-based surveys, text-based surveys, robocalls can be used to collect feedback on general or specific service from beneficiaries. In addition, the use of mobile phones by producers has been successfully tested in the world to effectively collect information on service delivery, especially in the remote area. A dashboard is also a critical tool to visualize the results for the highest level of decision makers (i.e., MICENUP and MINADER), for effective decisions and actions, and to make it available to the public.

78. **The project will contribute to closing the gender gaps regarding access to formal economic opportunities** as in the construction sector through the promotion women’s participation in road rehabilitation and maintenance through gender sensitization of the contractor, under Component 3, and by developing guidelines for gender-sensitive recruitment strategies in roadworks and conducting gender sensitive communication strategies for the recruitment of women.

79. **The project will mitigate the risk of Sexual Exploitation and Abuse (SEA) by minimizing labor influx** through the inclusion of specific requirements in the bid documents that encourage hiring of Ivoirian workers from the vicinity of the project area. This approach was adopted successfully in other World Bank-funded projects, for instance the RBMMPII (P083325), where project labor was estimated to be about 90 percent local, on average.

80. **The project will engage a Gender-based Violence (GBV) specialist to enhance the GRM** to adequately and promptly address any potential project related grievance related to SEA. If the GRM directly receives a complaint of SEA, it will be recorded, and the survivor will be referred to the GBV specialist for assistance. The GBV specialist will keep pertinent information confidential to protect the privacy of survivor(s). The project will strengthen the GRM to receive project-related complaints, including SEA. If the survivor agrees, the GRM will immediately report the case to the Government and to the World Bank in a confidential manner.

F. Environment (including Safeguards)

81. Activities under the project are expected to provide environmental benefits to the people in the project area. These benefits include better access to ICTs in the agricultural sector, improvement of surveillance of environmental conditions and monitoring of agriculture and livestock, existence of a reference system for all interventions in the field of hydro-agricultural improvements at national level, contributing to the sustainability and profitability of hydro-agricultural improvements, anticipating decision-making by stakeholders or the Government. The negative impacts could include loss of plant species, production of waste, risks of erosion and pollution of soils, water and air, risks of work and traffic accidents, noise nuisance, etc.

82. The project was rated as a Category B and triggers three safeguards policies. In order to prepare for addressing the potential negative impact, the Government has prepared two appropriate safeguards instruments: An Environmental and Social Management Framework (ESMF) and a RPF. The ESMF outlines an environmental and social screening process for component's activities. It also includes: Guidelines for an Environmental and Social Impact Assessment (ESIA); Environmental Guidelines for Contractors as well as sub-contractors; and a summary of the World Bank's safeguard policies. It also contains chapters to take into account



Physical Cultural Resources matters. That means guidance and guidelines have been included in the ESMF to this end.

83. The ESMF has been prepared, in full compliance with national legal and regulatory framework and World Bank safeguard policies, including a broad consultation framework involving all relevant stakeholder groups, both public and private, as well as civil society. After consultations, it has been disclosed within the country on February 7, 2018 and at the World Bank website in March 13, 2018. A GRM will be set up (see Paragraph 78) to allow stakeholders and interested parties to bring up any concern regarding the project to the PIU with the aim of finding a solution.

84. Safeguards documents include guidelines on Occupational, Health and Safety (EHS/OHS) and clearly mentions that the company Environmental and Social Management Plan (Works-ESMP) must be approved by the PIU and their partners prior to the works commencement. Moreover, the bidding documents and the contracts for main contractors as well as the sub-contractors must also include sections related to EHS/OHS. With respect to potential labor influx (see Paragraph 35.c), the project will establish guidance and rules for (i) contractors to enhance the ESMPs and workers contracts will include measures for managing the potential impacts of such an outside workforce on the local community. Specific details will be prepared during the investment activities for contractors who will bring in workers and operators from outside the area, and these are likely to be housed in work camps during construction.

85. To ensure that the safeguard instruments prepared in line with policies triggered by the project are implemented properly, the PIU will hire an environmental safeguard specialist and a social safeguards specialist. The environmental safeguards specialist must have additional experience in EHS/OHS, and the social safeguards specialist in GBV, Social inclusion and any labor related risk. Both specialists will be fully in charge of all aspects of environmental and social safeguards aspects and will regularly monitor all safeguard requirements. More specifically, the two specialists, the whole PIU, the implementing agencies as well as the other stakeholders will ensure that children are not employed in civil works as labor force. World Bank implementing support missions will also include environmental and social safeguards specialists to ensure that all safeguard issues are addressed properly, in a timely manner.

G. World Bank Grievance Redress

36. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level GRMs or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

Project Development Objective(s)

The Project Development Objective is to increase access to digital services and leverage digital platforms to improve farm productivity and access to markets.

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	End Target
Increase access to digital services in rural areas					
People provided with access to the Internet		Yes	Number	5,000,000.00	6,000,000.00
Number of people that benefitted from new access to Internet service.		Yes	Number	0.00	1,000,000.00
Number of people that benefitted from the improved Internet service.		Yes	Number	0.00	1,000,000.00
People provided with access to the Internet - Female		Yes	Number	400,000.00	500,000.00
Leverage digital platforms to improve farm productivity and access to markets					
Farmers reached with agricultural assets or services		Yes	Number	0.00	1,000,000.00
Farmers reached with agricultural assets or services - Female		Yes	Number	0.00	700,000.00
Beneficiaries that feel project investments reflected their needs (%)			Percentage	0.00	80.00
Percentage increase in revenues of the targeted beneficiaires			Percentage	0.00	10.00



Intermediate Results Indicators by Components	DLI	CRI	Unit of Measure	Baseline	End Target
Component 2 - Digital services for sustainable agricultural development					
Beneficiaries of job-focused interventions		Yes	Number	0.00	10,000.00
Beneficiaries of job-focused interventions - Female		Yes	Number	0.00	7,000.00
Share of women within the newly established cooperatives/producers organizations (led by women)			Percentage	0.00	90.00
Increase in share of women in leadership roles (among the targeted beneficiaries)			Percentage	0.00	20.00
Component 3 - Rehabilitation and maintenance of rural access roads to access production areas					
Roads rehabilitated		Yes	Kilometers	0.00	2,800.00
Roads rehabilitated - rural		Yes	Kilometers	0.00	2,800.00



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	People provided with access to the Internet
Definition/Description	
Frequency	Annual
Data Source	Mobile operators
Methodology for Data Collection	
Responsibility for Data Collection	ARTCI
Indicator Name	Number of people that benefitted from new access to Internet service.
Definition/Description	
Frequency	6 months
Data Source	Survey / MINADER / Rural agents
Methodology for Data Collection	
Responsibility for Data Collection	MINADER / PIU



Indicator Name	Number of people that benefitted from the improved Internet service.
Definition/Description	
Frequency	6 months
Data Source	Survey / MINADER / Rural agents
Methodology for Data Collection	
Responsibility for Data Collection	ARTCI / MINADER
Indicator Name	People provided with access to the Internet - Female
Definition/Description	
Frequency	6 months
Data Source	Survey
Methodology for Data Collection	
Responsibility for Data Collection	PIU



Indicator Name	Farmers reached with agricultural assets or services
Definition/Description	
Frequency	6 months
Data Source	Survey / ANADER / Rural agents
Methodology for Data Collection	
Responsibility for Data Collection	MINADER / PIU
Indicator Name	Farmers reached with agricultural assets or services - Female
Definition/Description	
Frequency	6 months
Data Source	Survey / ANADER / Rural agents
Methodology for Data Collection	
Responsibility for Data Collection	MINADER / PIU



Indicator Name	Beneficiaries that feel project investments reflected their needs (%)
Definition/Description	GRM indicator measuring the alignment of the proposed approach with the beneficiaries expectations
Frequency	6 months
Data Source	Survey / Rural agents
Methodology for Data Collection	
Responsibility for Data Collection	PIU
Indicator Name	Percentage increase in revenues of the targeted beneficiaires
Definition/Description	
Frequency	Annual
Data Source	Survey
Methodology for Data Collection	
Responsibility for Data Collection	PIU



Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Beneficiaries of job-focused interventions
Definition/Description	
Frequency	Annual
Data Source	Survey / Rural agents
Methodology for Data Collection	
Responsibility for Data Collection	PIU
Indicator Name	Beneficiaries of job-focused interventions - Female
Definition/Description	
Frequency	Annual
Data Source	Survey
Methodology for Data Collection	
Responsibility for Data Collection	PIU



Indicator Name	Share of women within the newly established cooperatives/producers organizations (led by women)
Definition/Description	
Frequency	Annual
Data Source	Rural Agents/ANADER
Methodology for Data Collection	Annual reports from ANADER
Responsibility for Data Collection	ANADER
Indicator Name	Increase in share of women in leadership roles (among the targeted beneficiaries)
Definition/Description	
Frequency	Annual
Data Source	Rural agents/ANADER
Methodology for Data Collection	Survey
Responsibility for Data Collection	ANADER



Indicator Name	Roads rehabilitated
Definition/Description	
Frequency	6 months
Data Source	AGERROUTE
Methodology for Data Collection	
Responsibility for Data Collection	AGERROUTE / PIU
Indicator Name	Roads rehabilitated - rural
Definition/Description	
Frequency	6 months
Data Source	AGERROUTE
Methodology for Data Collection	
Responsibility for Data Collection	AGERROUTE / PIU



ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Côte d'Ivoire CI: Côte d'Ivoire E-Agriculture Project

1. Côte d'Ivoire is one of the few countries in West Africa which has developed an e-agriculture strategy as an important step towards the modernization of the country's agricultural sector, increase its productivity and improve governance. Implementation of this strategy has been given highest priority to realize Côte d'Ivoire's national vision to become an emerging country by 2020. The main objective of the e-agricultural strategy is to use ICT tools and applications to increase the country's income from export of cocoa, coffee and other products, decrease its dependence on food imports and strengthen food security. It was developed over the course of more than one year between 2012-2013 using a comprehensive participatory approach involving the Ministries responsible for Digital Economy, agriculture and commerce and national multi-stakeholder workshops to build consensus and prioritize projects. An interdepartmental committee of experts guided and supervised the development of this strategy which involved the ANOPACI (the professional body of agricultural professionals), agricultural educational and research institutes, ICT for development experts and relevant development partners. The e agricultural strategy focuses on the development of the following broad areas:

- a. Upgrading of digital infrastructure and equipment;
- b. Modernizing the agricultural information systems;
- c. Digital applications and services for agriculture;
- d. Enabling legal and institutional framework;
- e. Comprehensive ICT capacity development program; and
- f. Development of a national communication system for the MINADER.

2. The following regional areas and crops have been selected as the main targets of the project because : (i) these crops and livestock products are predominant; (ii) they have low levels of productivity as compared to their full potential and what could be achieved; (iii) the crops are the basic sources of livelihoods of majority of the population who are engaged in agriculture - mainly women; (iv) the regional areas have high level of poverty incidence and high rates of unemployment especially among the young people; (v) the regional areas suffer from poor transport and communication infrastructure. Based on these criteria, the following areas are selected for the proposed project: (i) District of Denguélé; (ii) District des Savanes; (iii) Bounkani Region (District of Bouna); (iv) District of Sassandra-Marahoué; and (v) District of Gôh-Djiboua. Value-chains identified by the MINADER as priorities (with an emphasize on staple food) are: (a) maize, manioc, rice; (b) plantain, yam (*igname*); (c) shea (*karité*); and (d) poultry.

3. **Component 1 – Extending digital connectivity in targeted rural and remote areas (US\$31.50 million equivalent)** – Rural and remote areas represent a challenge for mobile coverage in Côte d'Ivoire, since the private mobile network operators deem these areas as not profitable enough. Two key factors contribute to the non-profitability of these rural and remote areas for private operators: (i) on the supply side, increased cost of deploying and maintaining sites in rural areas, especially with the higher cost to haul equipment (poor trackway access), lack of reliable electricity grid, higher cost to connect the mobile site to the core network ("backhauling"), and the need to keep a decentralized maintenance team. Compared to urban areas, the cost is also increased in case of difficult terrain such as mountains and forests, with a higher proportion of obstacles



and natural clutter, meaning a greater density of sites can be needed to cover an area appropriately (when setting aside capacity considerations); and (ii) on the demand-side, reduced economic benefits due to reduced purchasing power of rural households compared to urban households, and due to reduced population density (i.e. for a given coverage radius mobile antennas cover less inhabitants in rural areas compared to urban areas as rural households are more disseminated). Because the demand-side is dependent on macro socio-economic factors, the proposed project will have limited leverage on this matter. The proposed project will thus focus on the supply-side to extend connectivity in rural areas by: (Sub-component 1.1) improving the ICT enabling environment; and (Sub-component 1.2) supporting the extension of ICT coverage in rural areas targeted by the project using open access PPP arrangements.

4. **Guiding principle for designing the activities under Component 1** – The proposed component implies the use of public funds to support the extension of ICT infrastructures through the award of “least-cost” capital subsidies through a competitive “reversed auction” tender process to private operators in order to extend digital connectivity in targeted areas which are commercially not viable. As this component relies on the use of public funds to stimulate private sector investment, its design was guided by four key principles – in line with international best practices and the cascade approach – that have been translated in the proposed activities:

- a. **Principle of market failure** – The proposed project will ensure that targeted rural areas are suffering from a market failure, i.e. that operators do not cover the targeted area and do not intend to do so in the medium term (even with the enhancement of the legal and regulatory framework or with a new round of private investments to increase coverage);
- b. **Principle of general interest as set out by the PDO** – The proposed project will target areas that best support the achievement of the PDO by striking a balance between targeting areas with the maximum economic impact, and the areas with the poorest and most vulnerable population.
- c. **Principle of public funding limited to the minimum necessary** – The target areas should have the enabling infrastructures to reduce deployment costs (i.e. electrical network, transport axis to convey equipment, and fiber backbone to connect the deployed ICT infrastructure to the core network). The project design will ensure the best ‘value for money’ usage of public funds with the implementation of a PPP through a competitive tender process that will select the ‘most economically advantageous offer.’ It should be clear from the outset that the ‘most economically advantageous offer’ will not be solely based on final bid price to select the bidder requesting the lowest amount of public funds; rather, price and indicators measuring the different quality aspects of the offer will be considered.
- d. **Principle of Open Access** – The private entity deploying and managing the infrastructure with the support of public subsidies should respect the principle of ‘Open Access’, whereby the subsidized infrastructures is characterized by: (i) an access provided at the wholesale level for all market players allowed to operate in the market; (ii) transparency on the terms of the open access arrangements; (iii) non-discriminatory terms between market players willing to access the wireless network access infrastructure on the wholesale market; (iv) wholesale tariff-related obligations, with fair and reasonable wholesale tariffs in light of the costs incurred by the undertaking; and (v) enforcing effective access (to tackle potential deficient quality of service or delays in the provision of wholesale products or discrimination against non-affiliated retail provider).

5. **(Sub-component 1.1) Review and improvement of the digital services enabling environment: legal and institutional framework (US\$3.30 million)** – Sub-component 1.1 will consist of a series of technical assistance to strengthen capacity of key stakeholders (i.e. ICT Ministry MICENUP, the Regulatory Authority ARTCI, the



universal service agency ANSUT) in defining, enhancing, and enforcing an enabling environment conducive to providing ICT coverage in rural areas.

- a. **Activity 1.1.1. Technical assistance to perform a diagnostic of the legal bottlenecks to increase private ICT investments** – This technical assistance will provide a legal and regulatory due diligence to identify and alleviate the legal and regulatory bottlenecks for the extension of ICT services in rural areas. It will focus on *inter alia*: (i) the extension and fostering of the general authorization regime for the electronic communications sector; (ii) the technological neutrality of telecom licenses; (iii) the opening and functioning of telecom wholesale markets, especially the national backbone and backhaul capacity wholesale market and the Tower Companies wholesale market; (iv) the possibility for third-parties to deploy Radio Access Network (RAN) low-cost alternative and open-source platforms for rural areas, and sell their technology and services to mobile network incumbents (whose supply chains may be closely tied to large equipment suppliers and may face regulatory constraints on spectrum usage); (v) the regulatory incentives for passive network-sharing (e.g. opening up a passive telecom tower to host several active masts from different mobile operators) and active network-sharing (e.g. with the provision of local roaming at the wholesale level); (vi) the increase in service competition with the possibility for all telecom actors – including Internet Service Providers – in providing voice services (e.g. Voice over IP VoIP); (vii) the review of the definition and enforcement of coverage obligations in the context of rural areas, including the opportunity to consider local roaming provisioning in the achievement of coverage obligations; and (viii) the opportunity to adopt a regulation to relax the regime for the installation of telecommunications infrastructures in targeted rural areas.
- b. **Activity 1.1.2. Technical assistance to review and improve the institutional framework** – This technical assistance will review the role and responsibilities as well as the decision-making process especially between the Ministry of ICT (MICENUP) and the universal service agency (ANSUT) for achieving ICT coverage in rural areas.
- c. **Activity 1.1.3. Technical assistance to elaborate a strategy to increase the supply of alternative national fiber optic networks from non-telecom network operators** – The increase in bandwidth capacity supply with fiber optics in rural areas is one of the factors that lead to the reduction of infrastructure deployment cost for telecom operators. These national backbone fiber optics networks are usually deployed by private or public telecom actors (ANSUT in Côte d'Ivoire) for their own use and for national capacity resell on the wholesale market. However, other non-telecom network operators also deploy fiber for their own use (e.g. electricity company deploying fiber to monitor its grid network). The technical assistance will focus on defining an alternative national fiber optic network strategy to increase the supply on the capacity wholesale market for telecom operators.
- d. **Activity 1.1.4. Technical assistance to increase the regulator's capacity ARTCI in defining, monitoring and enforcing mobile operators' coverage obligations** – Defining, monitoring and enforcing mobile operators' coverage obligations is one of the key objectives of the sectoral regulatory agency ARTCI. Coverage obligations are meant to create incentives for operators to start commercially viable operations in less attractive markets. The technical assistance will provide a diagnostic of the existing coverage obligations and of the capacities of the ARTCI in monitoring and enforcing them, and will provide recommendations on how coverage obligations definition, monitoring, and enforcement could be enhanced to further increase the coverage of mobile networks in rural areas.



- e. **Activity 1.1.5. Technical assistance for the MICENUP to monitor the take-up of ICT services in rural areas** –The various technical assistance above are focused on supply-side measures to promote the supply of mobile broadband networks and services in rural areas – especially the areas targeted by the project. This technical assistance will focus on the demand side to facilitate the use of mobile broadband and the access of digital services and content by the largest number of citizens and rural smallholders possible. The technical assistance will assess the need to demonstrate the benefits of digital services and content for the targeted beneficiaries and help create more demand for digital services and content. It will assess the barriers to ICT adoption with a specific focus on language literacy (currently a vast amount of the information and content online is in text-based form, making it difficult for someone without basic language literacy to take full advantage of being online) and digital literacy (the ability to effectively and critically navigate, evaluate, and create information using a range of digital devices and technologies). Finally, it will assist the MICENUP in elaborating its Digital Adoption Strategy to identify the key measures to ensure that every citizen has the opportunities, skills and knowledge to use online services (e.g. supporting ICT training and education, both in schools and for adults; setting up public access points providing information on the use of digital services for people who are disadvantaged due to geography, weak economic conditions, or a low level of digital skills).
 - f. **Activity 1.1.6. Technical assistance for preparatory studies (PPA)** – This activity includes all preparatory studies and consultancies included in the PPA (around US\$1 million) for the preparation of Component 1 implementation. It includes, inter alia, the development of the Operational Report on the subsidy model for the digital infrastructure (Sub-component 1.2), economic and demographic assessment of the targeted zones, and the technical assessment of the proposed infrastructure projects.
6. **(Sub-component 1.2) Supporting the extension of ICT coverage in targeted rural areas using Open Access PPP arrangements (US\$28.20 million)** – Sub-component 1.2 will consist of a series of technical assistance activities and financial support to increase the extension of ICT coverage in rural areas targeted by the project.
- a. **Activity 1.2.1. Technical Assistance to map the ICT availability in the country, and more specifically in the targeted rural areas** – The ICT mapping technical assistance will focus on gathering data related to the deployment of ICT services in the targeted areas and presenting them in a friendly manner to policy makers. It will focus on:
 - i. **infrastructure-mapping and service-mapping**, with the current status of the ICT infrastructure itself (i.e. mobile sites, power electricity availability, trackway access, backhauling availability) and the service availability (i.e. 2G and 3G availability, bandwidth, retail prices);
 - ii. **demand-mapping**, with the demand typology and quantification for ICT services (voice, SMS, data) to address end-users needs (e.g. rural smallholders and local public administrations) and deliver e-Agriculture services in a satisfactory manner;
 - iii. **investment-mapping**, with the existing and potentially planned investments in ICT infrastructure by the private and public sector (e.g. fiber backbone extension).
 - b. **Activity 1.2.2. Technical assistance #7 to segment targeted rural areas in different profitability categories for the private sector and identify the appropriate regulatory and financial incentives** – Given international evidence of the success of the private competition in delivering ICT services, the proposed project aims to achieve the goals of extending rural coverage whilst also seeking to



minimize distortion of a competitive market. Ensuring competitive neutrality is important to enhance economic efficiency and benefit consumers. The proposed project will assist the Government in structuring a cascade approach to define what market mechanisms can deliver in a certain time frame ICT coverage for the targeted rural areas. Based on the ICT mapping exercise , the targeted rural areas will be categorized as one of the following four types:

- i. **Areas which will be covered by commercial financing (no market failure)** – These are “niche” urban and suburban areas in the targeted rural areas (e.g. *chef-lieu de Préfecture*) of relatively high demand where mobile operators would expect to compete and make a reasonable profit by covering them.
 - ii. **Areas which will be covered with upstream regulatory reforms (weak market failure)** – These are areas that need regulatory reforms and incentives to reduce deployment costs. They are usually characterized by a lack of demand to support multiple national operators each rolling out their own networks independently (e.g. in the event of multiple operators rolling out, at least one would make a loss). Therefore, in these areas, operators may lack a clear business case for deciding to roll out independently. This lack of certainty may result in no operators rolling out, and the area remaining uncovered. However, the level of demand may be sufficiently high to support at least one network without public funding. This means that by engaging in some form of network-sharing, operators could remove the risk and uncertainty of rolling out independently and jointly cover the area instead. The coverage of these areas will be ensured thanks to the output of the technical assistances in Sub-component 1.1.
 - iii. **Areas which will be covered with public and concessional resources for risk instruments and credit enhancements (moderate market failure)** – Even with some network-sharing scheme incentives, there will remain areas where operators will be reluctant to jointly engage in extending their network coverage due to the commercial risks and low profitability
 - iv. **Areas which will be covered with public funds supporting Open Access PPP projects (strong market failure)** – These are areas with the highest deployment costs and the lowest levels of demand. In these areas, “least-cost” capital subsidies will be competitively awarded through an Output-Based Aid tender process to private operators in order to extend the coverage of ICT infrastructures on an open access basis (i.e. a wholesale, transparent, non-discriminatory, fair, and effective access for all market players).
- c. **Activity 1.2.3. Technical assistance #8 to elaborate an “Operation Manual” for use of public funds supporting open access PPP projects in rural areas** – An “Operation Manual” is being prepared with Preparatory Project Advanced (PPA) funds and will be reviewed and refined before any disbursement occurs for open access PPP projects (i.e. the award of “least-cost” capital subsidies through a competitive “reversed auction” tender process to private operators in order to extend digital connectivity in targeted areas which are commercially not viable). The Manual will describe the Open Access PPP Project’s major transaction cycles and fund flow processes, authorization procedures for transactions, financial and accounting policies for the Open Access PPP Project, budgeting procedures, financial forecasting procedures, procurement and contract administration monitoring procedures, and auditing arrangements including:
- i. the prioritization of the targeted rural areas;
 - ii. the access services offered (in particular voice, SMS, and internet);



- iii. the infrastructures that will be financed to provide the expected services in the rural areas concerned, with the technical architectures and specifications;
 - iv. the terms of the open access PPP arrangement, including the contributions from the public and private parties and the governance mechanisms to ensure compliance with the contract (e. g. claw back mechanism);
 - v. the contract award mechanism, including the structuring of the contracts⁴⁶, eligibility rules for bidders, and eligibility and evaluation rules for submitted projects (not only amount of public funds requested but also population and geographical coverage, services delivered and speeds, guarantees of quality of service, compliance with open access principles, commitments made by other private actors to access the deployed infrastructure via the wholesale market, etc.);
 - vi. public communication of results; and
 - vii. effective implementation and monitoring of the contracts with the financing of the private entity.
- d. **Activity 1.2.4. Technical assistance to review and strengthen the “Operation Manual”** – The review and strengthening of the Open Access PPP Project Operation Manual will leverage on the Open Access PPP Strategy (cf. below) to fine-tune the implementation rules with the revised investment plans from the mobile operators.
- e. **Activity 1.2.5. Technical assistance to elaborate an “Open Access PPP Strategy” for use of public funds for supporting digital access infrastructure deployment in rural areas** – The Government will enable open access⁴⁷ wireless network rollout in rural areas targeted by the project with moderate to strong market failure (cf. above) by providing the awards of “least-cost” capital subsidies through a competitive “reversed auction” tender process to private operators. The technical assistance will guide the action of the Government by defining the short-list of key features of the PPP projects to be supported by public funds for the targeted areas.
- i. **The key characteristics of the competitive “reversed auction” tender process to award “least-cost” capital subsidies to private operator.** In this investment gap funding mode, the public authority contracts with a private sector partner who finances, designs, builds, owns and operates the wireless network access infrastructure on an open access basis. A capital subsidy is provided to the private sector operator through grants which are paid during deployment or through the operational life of the contract.
 - ii. **The type of wireless network access infrastructure to be supported by the public funds,** which can consist of: passive telecom towers to facilitate the deployment of active mobile antennas by mobile network operators; a fully active Radio Access Network deployed by a mobile network operator, who provides a local roaming access to other mobile network operators; low-cost ‘microsite’ alternative deployed by third-parties for rural areas targeted by the project who then

⁴⁶ E.g. a single contract for all targeted areas or several tenders to allocate funds for providing coverage in different predefined geographic areas.

⁴⁷ As a reminder, the open access principle characterizes a private infrastructure subsidized by public funds whereby the private operator provides a wholesale, transparent, non-discriminatory, fair, and effective access to the subsidized infrastructure for all market players.



sell their services to mobile network operators; other types of wireless access such as satellite access.

- iii. **The governance model**, to ensure that Côte d'Ivoire sets up and implement a future-proofed and cost-effective governance mechanism for any contract(s) awarded for the digital infrastructure to ensure that the open access principle is fully enforced. The governance model will detail which public entity will closely monitor the contract(s) with its open access obligations, and will cover complementary aspects with regard to: (i) legal considerations; (ii) how any decision-making process might work over the duration of the contract, taking into account possible changes to the contract(s); (iii) the monitoring, investigative and sanctioning arrangements in place for the monitoring authority over the duration of the contract(s), with potential claw-back mechanisms of the public funds; and (iv) how the awarded contract can be future proofed to minimize the risk of disputes and possible appeals mechanism(s) in case of disputes (e.g. revisions and amendments to the contract requested by the private or public party, dispute between private telecom operators related to the wholesale market).

- f. **Activity 1.2.5. Financing digital infrastructures targeted rural areas (around US\$27.00 million) –** Once all the technical assistance of this sub-component will be achieved, this activity will accelerate the provision of ICT services in remote areas. World Bank support for this activity will establish and institute a competitive and transparent process to involve the private sector in providing wireless network access infrastructure in targeted rural areas of Côte d'Ivoire. It will focus on supply side interventions through a competitive award of public funds through a “least cost subsidy auction”, by selecting the most economically advantageous offer (i.e. a combination of a reverse tender process favoring the bidder asking for the lowest amount of public funds and a standard tender process favoring the bidder achieving the best output) to private actors that will be responsible for installing, operating, and maintaining the wireless network access infrastructure on an Open Access basis⁴⁸.

7. **Component 2 - Digital Services for sustainable agricultural development (US\$12.50 million equivalent)**

– The project will aim to promote a better use of Digital Service in rural areas within the main economic activities of the targeted regions. The proposed activities will lay the foundation for better technology diffusion for improved productivity and sustainable agricultural systems as well as better access to markets information. The activities will also help improve data, information and knowledge services management in planning, design, implementation, and delivery of agricultural services to stakeholders in agriculture value chains – especially smallholders – through the use of appropriate digital tools and applications, including data-driven agronomy, location-based services, IoT, and AI, etc. It will also help develop access to markets through the rehabilitation of selected rural access roads in the targeted regions. It will build up on previous support provided by the West Africa Agricultural Productivity program (PPAAO/WAAPP). The WAAPP helped establish an electronic extension platform (e-extension) that will be strengthened and operationalized through this component.

8. **Guiding principle for designing the activities in Component 2** – The principles underlying the design of this component are based on international best practices and have been considered as one of the main action lines of The World Summit on the Information Society (WSIS) implementation process focusing on e-agriculture.

⁴⁸ As a reminder, the open access principle characterizes a private infrastructure subsidized by public funds whereby the private operator provides a wholesale, transparent, non-discriminatory, fair, and effective access to the subsidized infrastructure for all market players.



The following six action points for e-agriculture beyond 2015 were endorsed during the WSIS+10 high-level events in 2014:

- a. Foster the development and implementation of national e-agriculture strategies focusing on providing reliable and affordable connectivity and integrating ICTs in rural development to support food security and eradication of hunger;
- b. Foster collaboration and knowledge sharing in agriculture through electronic communities of practice, including the establishment of e-agriculture communities, in order to showcase and promote models, methodologies, good practices and the adoption of Open Access and interoperability standards for effective and equitable use of ICTs for sustainable agriculture and rural development;
- c. Promote the creation and adaptation of content to local conditions in local languages from reliable and trusted sources, ensuring equitable and timely access to agricultural knowledge by resource-poor men and women farmers, foresters and fisher-persons in rural areas;
- d. Foster digital literacy of institutions and communities in rural and remote areas taking into consideration local needs and constraints by providing appropriate learning opportunities for all which will enhance individual and collective decision-making skills for increasing productivity;
- e. Promote the use of ICTs to reinforce the resilience capacity of states, communities and individuals to mitigate and adapt to natural and man-made disasters, food chain challenges, socio-economic and other crises, conflicts and transboundary threats, diseases, and environmental damages; and
- f. Promote Public-Private Partnerships in cooperation with relevant Civil Service Organizations (CSO's), Non-Governmental Organizations, (NGO's), cooperatives, farmer organizations, academia, research institutions in the agricultural sector (which also includes forestry and fishery) for inclusive, efficient, affordable and sustainable ICT services and initiatives in agriculture and rural development which will promote the wide scale use of ICT and foster sustainable agri-business models and development.

9. **(Sub-component 2.1) Smart agriculture and producer organizations (US\$1.50 million)** – This sub-component supports farmers organized around a commodity of common interest and builds their capacity in climate smart production management and marketing, etc. The project will identify farmers who are engaged in agricultural production of the selected commodities in the targeted project areas and build their capacity in climate smart agricultural production, management and marketing, etc. This approach has been utilized extensively as the initial step in on-farm productivity improvements, and provides an effective means to deliver training, inputs and marketing support to smallholder farmers. This activity involves targeting, enrollment, organization into producer organizations and registering producers and producer organizations digitally. The project will facilitate the formation or consolidation of farmer groups into more formal structures, if desired by group members. It will provide basic digital literacy skills as well as business development skills training using digital platforms to help project beneficiaries with financial literacy, business planning, negotiation, and marketing, etc. A targeted public education campaign, and behavioral change communication will help the small farmers and producer organizations become aware of the benefits, and practice the learnings from the trainings to use digital tools and platforms. The project will analyze and address possible obstacles for women to meaningfully participate in and benefit from POs as well as identify locally relevant climate change impacts and focus capacity building to equip farmers with the knowledge and practical skills to become more resilient to these impacts.



10. **(Sub-component 2.2) Capacity building in digital solutions in agriculture (US\$2.40 million)** – The main objective of this sub-component is to strengthen the capacity of agricultural institutions at all stages of the “data to decision-making” value chain to improve the design, implementation and evaluation of policies and programs for sustainable agricultural development at the national and local levels. The “data to decision-making value” chain consists of the collection of relevant data, validation and processing of data, and dissemination and use of this data for decision-making in the design, implementation and evaluation of programs and policies in the agricultural sector. The project will support the development, testing, deployment and scaling up of appropriate ICT tools and applications for each of the process stages at the national and local levels.

- a. **Activity 2.2.1. Institutional landscape of agricultural “data to decision-making” value chain** – Technical assistance will be provided to: (i) identify the various institutions in the public, private, non-governmental sector at the national and targeted districts level who are involved in the data to decision making value chain in the agricultural sector; (ii) describe the current status of the types of data being collected and their availability, accessibility of agricultural data, methods used to collect, validate, process, analysis, use, store, security and disseminate the data, and the uses of data for decision making; (iii) carry out an overview of information technology tools and applications used at every stage of the data to decision making value chain; (iv) assess skills of staff, training programs for staff on all aspects of the data to decision making value chain; and (v) carry out an overview of the organization, governance, linkages between various organizations, contractual arrangements for data, information and knowledge sharing and exchange.
- b. **Activity 2.2.2. Capacity building of project beneficiaries at local levels in digital tools and applications** – This activity will: (i) carry out a detailed skill gap analysis of professional and non-professional staff in IT tools and applications in the MINADER at the national and targeted districts level, identify areas needing skill development in IT tools and applications in all aspects of the data to decision value chain; (ii) provide appropriate training in relevant ICT tools and applications needed for modernizing the agricultural sector in Côte d’Ivoire; (iii) support the continuous training of selected staff in the MINADER at the national and targeted districts level in a wide range of ICT tools and applications (such as design of agricultural data bases, maintenance, management, remote sensing, GIS, Big data analytics, machine learning, AI, virtual reality, other areas for possible funding by the project).
- c. **Activity 2.2.3. Strategy and action plan for data availability (information flow) to decision-making to improve beneficiaries' incomes** – This activity will review the current status of policies, laws, regulations and policies to enable the development of reliable, relevant and timely dissemination of agricultural data for use by policy makers and development organizations involved in the development of sustainable agriculture. This activity will identify gaps in existing legislation and make recommendations for the revision of laws and regulations, placing emphasis on principles of open and non-discriminatory access. It will also provide technical assistance to: (i) review the current strategy and action plan for the development, dissemination and use of agricultural data to promote data-driven agronomy; (ii) assess their timeliness and relevance to designing development programs and policies for in the selected value chains; (iii) provide recommendations for improvement; and (iv) support the implementation of the updated strategy and action plan. The expected output will be an updated strategy and action plan for data to decision making to design, monitor and evaluate development programs and policies.

11. **(Sub-component 2.3) Digital platforms for the MINADER (US\$2.50 million)** – The main objective of this sub-component is to establish a communication system which enables the free flow of data, information and



knowledge using traditional and modern information and communication technology tools to increase awareness and improve decision making of all players in the seed to market value chain in Côte d'Ivoire. The framework used to achieve the above broad objective of this sub-component is a modular concept using Multi-media to develop and disseminate Multi-disciplinary agriculture data, information and knowledge from Multiple sources to Multiple users with built in dynamic user needs assessment and feedback mechanisms – in short, the Four M modular approach for agricultural data, information and knowledge system⁴⁹. Côte d'Ivoire's experience is marked by the disparate nature of its agricultural information system. New issues and challenges that mark out its agricultural economy require that agricultural information systems be federated and strengthened in favor of sustainable development in rural areas affecting even the smallest producer. Today, Côte d'Ivoire has information systems for agricultural statistics (MINADER), rural land management (MINADER), environmental management (MINSÉDD), water and forest management (MINEF), agro-meteorological and crop management (CNRA), strategic watch system (MINADER, ANADER, CNRA, etc.), etc.), virtual libraries (MINADER, CNRA), SIM-OCPV and SIM-BV (MIRAH). Several private initiatives, such as ICT4DEV's GELICO platform, are contributing to modernizing the activities of several agricultural cooperatives. These public and private digitization initiatives need to be synergized and strengthened to meet the sustainable development challenges of agricultural producers in line with the expectations of the e-agriculture project. The project will therefore contribute to the provision of agro-meteorological services and agricultural research data, the digitization and archiving of existing data and the establishment of a digital library of agricultural data, the implementation of the Geographic Information System for Hydro-Agricultural Development (SIGAHA), the implementation of an agricultural strategic watch system and a web portal for the project as well as on the various digital building blocks (application systems, platforms and applications) of the existing agricultural information system to make them available and efficient within the project areas.

- a. **Activity 2.3.1. ICT infrastructure needs assessment of users in the agricultural value chain** – This technical assistance activity will carry out a detailed assessment of the data, information and knowledge and communication infrastructure needs of a wide range of end-user's (for example, staff involved in both policy making and operations in the agricultural sector at all levels of the Ministry – from Central to regional and local levels, subsistence and commercial farmers, farm organizations, public and private institutions involved in the agricultural sector, agro-industries, universities, research institutes, consumers, etc.). A variety of participatory processes directly involving the various end-users will be used to define and prioritize their data, information and knowledge needs, demand and nature of information, local problems, constraints, and the expectations of the various users from the communication system.
- b. **Activity 2.3.2. Development of user specific information and knowledge products and of a modern communication center in MINADER** – Prepare proposals for the design and development of user and media specific multidisciplinary information packages from a variety of sources – focusing on those which are in great demand, relevant and useful to the end-users, translate specialized information into easy to understand format in everyday terms familiar to each target

⁴⁹ The multi-users are the staff involved in both policy making and operations in the agricultural sector at all levels of the Ministry – from National to District to Regional to Community levels, subsistence and commercial farmers, farm organizations, public and private institutions involved in the agricultural sector, agro-industries, universities, research institutes, consumers, etc. The multi-sources are the national and international agricultural research institutes, universities and academies, input suppliers, producer organizations, agricultural departments, foreign and local data banks, etc. Multi-media consists of print, TV, video, web-sites, social media phones, tablets, films, exhibitions and fairs, etc. Multi-disciplinary consists of laws and regulations, status and changes of reforms in various sectors, best practices in agriculture and livestock, market prices and business intelligence, finance, economics, accounting, relevant technologies, environment, etc.



audience and is of practical value, convert to digital format, prepare proposals for training of relevant staff to enhance their skills for appropriate selection of media and packaging appropriate information. The activity will also prepare proposals for the modernization and/or establishment of a communication center and electronic network using relevant and appropriate video conferencing technologies in the MINADER at the national and district levels, taking into consideration design features, such as : (i) ease of use; (ii) use of best available contemporary technology; (iii) ease of expansion and reconfiguration; (iv) security of high value data and information; (v) effective use of available communication bandwidth; and (vi) integration with existing international and domestic services.

- c. **Activity 2.3.3. Dissemination of agricultural information and knowledge products using multi-media** – Assess the suitability of the type of communication media to be used to disseminate agricultural information – such as agricultural reforms being initiated by the Government, types of assistance being provided by various Government programs to farmers, pricing and subsidy policies, etc., to various types of users – from the wide range of available communication media (viz., print, Television (TV), video, web-sites, social media, phones, tablets, folk-lore, drama, films, exhibitions and fairs, etc). Prepare proposals for training for selected staff at various levels of the MINADER, in the preparation of farm-level messages and information packages for suitable types of media for dissemination. For example, information addressing general concerns, such as spread of locusts, pests, climate related information, floods, etc. could be disseminated using radio, TV, SMS, print, electronic bill boards, etc.

12. **(Sub-component 2.4) Digital ecosystem and e-agricultural services (US\$6.10 million)** – The main objective of this sub-component is to provide close to real time agricultural advisory services to small-scale farmers in the project areas for increased productivity. This sub-component will tackle the problems faced by small-scale farmers in the targeted project areas: (i) lack of easily accessible, affordable and useful close to real time, reliable and relevant data, information and knowledge services on agriculture and climate to obtain timely advice to improve crop and livestock productivity and income generation; (ii) lack of digital skills and low levels of literacy, little or no access to learning opportunities to relevant information and knowledge to access local, national, regional and international markets, (iv) very low levels of internet connectivity at affordable prices to enable them to access various information and knowledge materials which are freely available in the world wide web. The following activities are proposed to address the above problems and support the achievement of the objective of this sub-component.

- a. **Activity 2.4.1 Develop and implement agricultural apps for climate smart agriculture & to strengthen linkages from farm to national and global markets** – The project will support the adaptation of tested applications (apps) which link farmers to markets. Many organizations in the public and private sector are currently involved in testing a variety of web enabled mobile based applications to link small farmers to markets. One of many examples is the Virtual Farmers' Market (VFM), which is an app-based e-commerce platform where farmers' surplus and buyers' demand for crops are advertised and traded. The main objective of VFM is to provide a transparent, open and trustworthy space for smallholder farmers and buyers to negotiate fair prices and sell their products. This is an initiative by the World Food Program (WFP) Innovation Accelerator which provided seed funding in July 2016 to prototype and pilot the VFM platform with farmers from rural areas in three districts in Zambia. Early experiences include the Maano - Virtual Farmers Market app which was launched in May 2017 and targeting 2,500 Zambian farmers during the 2017 harvest season.



- i. Carry out a detailed review and assessment to identify similar recent apps which have been tested and proved successful in Côte d'Ivoire and other relevant countries, which are being tested and show promise of being scaled up, prepare proposals for collaboration and scaling up, and identify opportunities for the design and development of new apps using mobile phones and other devices and prepare proposals for possible funding by the project;
 - ii. Identify other digital services (apps) which are useful to the subsistence farmers to increase crop productivity and incomes, improve market linkages and value chains,
 - iii. Review and assess the use of current digital services for improving agricultural productivity and incomes being used in Côte d'Ivoire – their strengths and weaknesses;
 - iv. Recommend and support the implementation of the most suitable apps which could be adapted and/or scaled up to provide digital services to small-scale farmers.
- b. **Activity 2.4.2 Strengthen the platforms of farmers market price** – In order to address market coordination challenges, the project will support the strengthening of existing market price and information platforms that fosters the capacity of smallholder farmers to meet the volumes and quality targets specified by customers (e.g. agribusiness firms). It will therefore build on existing public Market Information platforms, strengthen them and ensure synergy with private platforms in order to best control the economic transformation cycles of agriculture for the benefit of the beneficiaries (producers, organizations, structures, institutions, private companies, agro-industrial companies) of its ecosystem.
- c. **Activity 2.4.3 Technical Assistance to establish a permanent platform for the organization of app challenges** – This activity will ensure the sustainability of the local content development scheme beyond the closing date of the proposed project. The developers' community in Côte d'Ivoire will establish a platform funded by both the developers, the beneficiaries, and all potential stakeholders to enable constant demand-offer dialogue, and foster innovation.
- d. **Activity 2.4.4 Development of digital innovation ecosystem for agriculture** – Côte D'Ivoire's innovation ecosystem is relatively underutilized which offers immense potential for job creation and spurring digital entrepreneurship at both low and high skill levels. The project will help establish an Agricultural Observatory which is an information asset that is updated daily and consists of localized agricultural meteorological information designed to deliver actionable insights across the agricultural value chain. The Agricultural Observatory will be anchored in an appropriate institution that will be established as a Centre of Agricultural Intelligence. This activity will also include strengthening the capacity of relevant institutions to operationalize the Agricultural Observatory. The project proposes to support and partner with Côte D'Ivoire's technology hubs and universities to help increase their innovative outputs, expand operations, including the development of new digitally enabled services, local content, and scaling up of emerging innovations. More specifically, the project proposes to encourage local software developer communities, universities, and digital entrepreneurs to showcase their skills relevant to the development of digital solutions to challenges faced by the agricultural sector through the organization of a series of App Challenges. The intent of organizing App Challenges is to – (a) encourage women smallholding farmers and entrepreneurs to participate in the events, and (b) to harness and scale-up the outcomes of the challenges to develop innovative applications to provide farmer community easy access to agricultural e-services and market information. The App Challenges will challenge participants to innovate and come up with solutions using content from the Agricultural Observatory and other relevant sources that have



the potential to either add value to existing applications in the marketplace or offer completely new and digital approaches to solving traditional problems. The project will emphasize support for greater female participation in the Challenges by incentivizing women students, farmers, and entrepreneurs to associate and collaborate during the ideation process. This is expected to result in (i) use of ICT based solutions to improve rural livelihood; (ii) increase digital awareness; (iii) mobilization of local digital champions, start-ups, entrepreneurial farmers, and university students to associate and collaborate to develop innovative solutions; and (iv) systematically capture lessons learned with a view to replicating the ecosystem in other sectors. This activity will also promote the use of Geographical Information System (GIS). Some of the App Challenges will center around the use of GIS data in collecting and disseminating farmer-centric information. GIS will also be used to look at the proposed rural road network vis-à-vis the location of target beneficiaries and corresponding markets. This activity will support:

- i. Design and organization of App Challenges to develop or enhance digital solutions that provide local content to improve rural livelihoods;
- ii. Technical assistance and financial support to scale up and mainstream relevant digital solutions that emerges from App Challenges; and
- iii. Initiatives to engage women entrepreneurs to participate in digital innovative programs that aim to improve rural economy of Côte d'Ivoire.

- e. **Activity 2.4.5 Strengthen existing call centers** – Provide assistance to prepare proposals for the extension of the existing call centers for farmers to access close to real-time information and knowledge on maize, manioc, rice, plantain, yam and poultry.
- f. **Activity 2.4.6 Strengthen existing community radios to disseminate relevant information to beneficiaries** – Provide assistance to prepare proposals for the establishment of community radio stations in the project districts to enable small farmers to exchange information and knowledge, discuss topics of mutual interest and obtain daily updates on climate, markets, new technologies, etc.
- g. **Activity 2.4.7 Census of all targeted beneficiaries, including geolocation** – This activity will finance a georeferenced census of all smallholders targeted by the project. This census will be the basis for the real-time monitoring of service delivery and impact of this project.

13. **Component 3 - Rehabilitation and maintenance of rural access roads (US\$19.50 million equivalent)** – This component will finance the technical feasibility studies, environmental and social assessments and works related to the rehabilitation of about 560 km rural roads and the maintenance of 2,240 km rural roads over a period of four years. The total maintained linear of rural road will be about 2,800 km (560 km/year). To enhance resilience of the project to impacts of climate change and natural disasters, the rehabilitation and maintenance of roads will include improvements in the drainage structures to ensure all-weather/season practicability based on the spots improvements approach and an adequate level of service for the project area road. The materials and design standards for road rehabilitation have an emphasis on reducing risk of flooding and associated destruction of housing and facilities. The drainage works will be designed in a technically sustainable manner to avoid any negative impact and provide high levels of protection. Furthermore, the project will adopt a resilience strategy based on reducing the risk of catastrophic failure, such as using submersible roads where needed. Experience with this strategy was gathered through the Agriculture Sector Support Project (PSAC- P119308) and other infrastructures projects funded by the World Bank. The project will also implement a climate and natural



hazards monitoring, early warning and incidence response system. This component will tackle the problems of access to markets for small-scale farmers in project targeted areas and reduce vulnerability of serviced population during flooding and landslides season. The high level of service provided by the roads is expected to attract more means of transport, thus improving person and goods displacement and a decrease of transport cost on these roads. The typology of the proposed road infrastructure works is very similar to works financed under the PSAC that attracts national small and medium enterprises (SMEs) and creates jobs for the vulnerable population. It will focus on critical rural roads allowing access to targeted production zones and markets in the areas of Divo, Daloa, Gagnoa, Korhogo, Boundiali and Bouna.

Table 1.1: Summary of rural roads planning activities

Linear Rehabilitated; maintained, or studies per year	Rehabilitation RLTPC (km)	Maintenance works - RLEP (km) on a regular basis (1 passage per year)		Technical, environmental and social studies (Km)
		Maintenance of roads rehabilitated by the project	Maintenance of roads rehabilitated by other projects (PSAC)	
Year 0 (2018): Project preparation - Identification of road itinerary for the program of Year 1 (1,000 km) - Carrying out the technical, environmental and social studies for the year1 program	-	-	-	500
Year 1 (2019) : Year of project effectiveness	560	-	-	-
Year 2 (2020)	0	560.00	-	-
Year 3 (2021)	0	560.00	-	-
Year 4 (2022)	0	560.00	-	-
Year 5 (2023)	0	560.00	-	-
Total	560		2,240.00	500

14. **Component 4 Project implementation (US\$6.50 million)**– This Component will support the setting up of a dedicated PIU and will also cover training, office equipment, operating costs, audits and communications as well as M&E, environmental and social studies, redress mechanisms (GRM, see section VI.E Paragraph 72), their implementation and/or the monitoring of their implementation.
15. **(Sub-component 4.1) Project Management, Communications, and Audit (US\$5 million)** – Sub-component 4.1 will consist of a series of technical assistance activities to strengthen the project management capacity of the MICENUP, manage all communications activities around the project (internal communication with stakeholders and beneficiaries, as well as promotion through the media). This subcomponent will also finance all activities related to quality control, GRM, internal and external audit.
16. **(Sub-component 4.2) Preparatory Activities (US\$1 million)** – Sub-component 4.2 is financed by the PPA consists of a series of technical studies (Operations Manual for the infrastructure, Execution Manual, Prioritization of targeted zones, Base values for indicators, etc) that are pre-requisites for the implementation of large investments such as the digital infrastructure. Preparatory activities also include workshops, involving all stakeholders (direct beneficiaries, local governments, all Ministries involved, and the local digital ecosystem) to ensure full ownership and jumpstart the project once the credit is effective.
17. **(Sub-component 4.3) Learning and capacity building (US\$0.5 million)** – Sub-component 4.3 will consist of a series of technical assistance activities to strengthen the project management capacity of the MICENUP and



the MINADER. This project fosters innovation and this subcomponent will also finance study tours to countries where e-agriculture services have been successfully developed, adopted, and become sustainable.



ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY : Côte d'Ivoire
CI: Côte d'Ivoire E-Agriculture Project

Project Institutional and Implementation Arrangements

1. The project will be implemented by the MICENUP, in close collaboration with the MINADER. Most of the activities in Component 1 will be under the direct supervision of the MICENUP. Most of the activities falling under Component 2, including the rural access road component, will be under the supervision of the MINADER. The coordination of the project will be anchored at the MICENUP under the National Coordinator for the e-Agriculture Program, a co-Coordinator from the MINADER will be appointed.
2. The PIU will comprise at least a Coordinator (MICENUP), a co-Coordinator (MINADER), an M&E Specialist, a Safeguard specialist, and the fiduciary team (a Procurement Specialist, a Financial Management Specialist, and an Accountant). Other staff will be appointed on ad-hoc basis, depending of the mix of skills needed. The fiduciary team will comprise staff from the MICENUP, who will be trained as required (see below). By relying on existing staff from the MICENUP, the project will build MICENUP capacity to manage large projects.
3. A Steering Committee will be established to oversee project implementation and provide strategic guidance to the PIU. The Steering Committee includes representatives of all ministries involved in the project. The Chair of the Committee is the MICENUP, and the Vice-Chair is the MINADER.
4. A Technical Committee will comprise representatives of the MICENUP and the MINADER, chaired by the MICENUP. The Technical Committee will provide guidance on technical and sector-related matters to the PIU.
5. Some Departmental Committees will be created on an ad hoc basis, in the departments targeted by the project. The role of this committees is to: convey messages and information from the ministries/PIU to the targeted beneficiaries, mobilize targeted communities for special events, relay information and communication campaign carried out by the project, gather population feedback and grievances and transmit them to the PIU. Departmental Committees are chaired by the *Préfet de Département*, and comprise local stakeholders such as cooperatives, Agriculture Chamber, rural agents, etc.

Financial Management

6. The FM arrangements for the project have been designed with consideration for the country's post-conflict situation while taking into account the World Bank's minimum requirements under World Bank Policy and Directive for IPF; which describes the overall FM World Bank policies and procedures. The FM system of the project must be capable of (i) correctly and completely recording all transactions related to the project; (ii) facilitating the preparation of regular, timely and reliable financial statements; (iii) safeguarding the project's assets; and (iv) can be subject to auditing diligences as required by the World Bank. The arrangements also aim to facilitate disbursements and ensure effective use of project resources while using the country's own systems to the extent possible.
7. **The Government has adopted in 2014 a strategic framework for PFM reforms aims at addressing the PFM challenges highlighted in more recent assessments of the PFM system.** This includes the 2013 Public Expenditure and Financial Assessments (PEFA⁵⁰) and the 2016 Public Investment Management Assessment

⁵⁰ A new PEFA is currently on-going under the responsibility of EU and the final report is expected by end of 2018.



(PIMA). Key achievements include: (i) improvements in Côte d'Ivoire's legal and regulatory framework and its increasing alignment with WAEMU (West African Economic Monetary Union) directives for PFM; (ii) enhanced budget preparation and investment planning processes and debt monitoring mechanisms; and (iii) more comprehensive and reliable public information on budget allocation, execution, and FM practices. Nevertheless, further improvements in PFM will be necessary if the Government is to achieve its development goals. The assessment reports identified several critical shortcomings in multiyear perspective of planning and execution of public investments, effectiveness in fiscal administration and mobilization of domestic revenues, efficiency of procurement processes and management of public contracts including modalities for the choice of Public Private Partnerships, transparency of bidding processes and economic sustainability of PPPs.

8. The World Bank cannot thus, at this period rely 100 percent on the public expenditure framework for this project. The Government of Côte d'Ivoire requested to use a ring-fenced financing mechanism for the fiduciary aspects of the project. A new PIU anchored at the MICENUP under the National Coordinator for the e-Agriculture Program, has been proposed by the Government to manage the project. The FM team of the PIU to be established under the responsibility of the National Coordinator for e-Agriculture Program, will manage the overall FM aspects of the project.

9. An assessment of the DAF of the MICENUP, was conducted during the project preparation to check whether this directorate could manage the proposed project. The main finding arising from this assessment conducted in February 2018 was that the DAF is not familiar with the World Bank-financed projects including FM procedures. However, the DAF follows the country public expenditure chain for budget execution and financial reporting through SIGFIP and ASTER, the government budget and accounting software. None of the staff of the DAF including the Financial controller (*Contrôleur financier*) and the Public accountant (*Agent comptable*) assigned to the MICENUP is familiar with World Bank-financed project procedures and requirements.

Risk assessment and mitigation

10. The World Bank's principal concern is to ensure that project funds are used economically and efficiently for the intended purpose. Assessment of the risks that the project funds will not be so used is an important part of the FM assessment work. The risk features are determined over two elements: (i) the risk associated to the project as a whole (inherent risk); and (ii) the risk linked to a weak control environment of the project implementation (control risk). The content of these risks is described below.

11. The overall FM is rated Substantial. The overall FM risk for the project is rated Substantial. This is due to (i) the lack of experiences and familiarity of DAF with World Bank-FM procedures; and (ii) the design of the project which involves several sub-components and activities, the multiplicity of actors with beneficiaries based in remote and geographically dispersed locations within the country. Consequently, additional mitigation measures will be incorporated into the design of the project FM arrangements as described in the below table:

Table 2.1: Risk assessment and mitigation measures

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Y/N)	Residual Risk
Inherent risk	H			S
Country level The PEFA and PIMA	H	Beyond the control of the project. The Government is committed to a	N	H



Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Y/N)	Residual Risk
undertaken respectively in 2013 and 2016 have highlighted critical areas of weaknesses in PFM that the Government needs to address (see above)		reform program that includes the preparation of a Strategic Framework for PFM reforms in Côte d'Ivoire. However, there are still weaknesses. Use of IDA FM procedures supported by the Decree 475 is required for this project		
Entity level MICENUP and the DAF are not familiar with World Bank-financed FM procedures. A new PIU will be created; hence the FM team is not established and operationalized yet.	H	The recruitment of RAF and the adoption of a FM procedures manual by effectiveness will mitigate internal control and financial reporting weaknesses.	Y	S
Project level The resources of the project may not be used for the intended purposes; Complex design. Delays in the reporting system and auditing due to the lack of familiarity of DAF and the new PIU with the World Bank FM procedures. The numerous stakeholders would possibly impact negatively the implementation of the project; remote and dispersed location of beneficiary in countryside.	S	For efficiency purposes, the DAF (FM team of the PIU) will strengthen ex-ante and ex-post control of activities implemented by partners implementing organizations. The scope of audit will include review of expenditures incurred by implementing entities. Additional FM staff (FM officer and accountant) will be recruited on ToRs acceptable to IDA and training and hands on advice to all FM staff	N	S
Control Risk	S			S
Budgeting: (i) weak capacity at the PIU and implementing entities to prepare and submit accurate work program and budget; (ii) weak consolidation of budgets; and (iii) weak budgetary execution and control; (iv) cost overrun or under run and reasons not detected in a timely manner.	S	Annual work plan and budget required each year and proclaimed. AWP reviewed and approved by the steering committee. The project Financial Procedures Manual will define the arrangements for budgeting, budgetary control and the requirements for budgeting revisions. IFR will provide information on budgetary execution and analysis of variances between actual and budget.	N	M
Accounting: poor policies and procedures, lack of qualified accountant staff (capacity staff) and no familiarity with	S	FM aspects handled by the FM team of the PIU to be set up within DAF: (i) the project will adopt the SYSCOAHADA accounting system.	Y	M



Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Y/N)	Residual Risk
SYSCOHADA system and World Bank requirements		Accounting procedures will be documented in the procedures manual. (ii) The FM team headed by a RAF recruited on competitive basis. (iii) Training on IDA FM procedures will be provided to the staff as needed.		
Internal Control: Internal control system may be weak due to weak FM capacity of the team. The lack of procedures manual may lead to inappropriate use of the funds and delays in financial report. The Steering Committee may not be effective; the manual may not be available at project effectiveness	H	(i) Finalize the FM procedures manual and training on the use of the manual will be a condition of effectiveness. (ii) IGF will play the internal audit function and report to the Coordinator of the PIU, who will in turn, share the report with the Steering Committee and IDA.	Y	S
Funds Flow: (i) Risk of misused of funds and delays in payment of invoices/expenditures of activities implemented by various actors. (ii) Delays in approval of withdrawal applications by DGTCP leading to cash shortages for PIU to pay expenditures. (iii) Delays in transfers of funds from DA to PA by DGTCP. (iv) Ineffectiveness of public accountant and financial controller functions leading to payment of ineligible expenditures.	H	(i) Payment requests, per the PIU manual, will be approved by the Coordinator prior to payment of funds to contractors or consultants and implementing entities. (ii) Compliance with Decree 475 by all actors (financial controller and project public accountant). (ii) Scope of work of IGF as well as the external auditors include regular field visits (physical controls of works, goods and services acquired). (iii) Adequate budget allocated to IGF to conduct periodic controls and training of Financial Controller & public accountant on World Bank FM procedures	N	H
Financial Reporting Inaccurate and delay in submission of IFR due to delays from IAs and weak capacity of actors Lack of familiarity of PIU team leading to some delays in recording of expenditures as well as preparation of periodic financial reports	S	(i) A computerized accounting system will be used; (ii) IFR and financial statements formats have been agreed on at project negotiations. (iii) FM team of the PIU recruited on competitive basis and capacity building planed before project effectiveness (hands on support and training with PSAC team during the PPA period)	N	S
Auditing:	S	(i) The project's institutional	N	S



Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Y/N)	Residual Risk
Delays in submission of audit report. The scope of the mission may not cover expenditures incurred by implementing entities.		arrangements allow for the appointment of adequate external auditors and the ToRs (to be reviewed by IDA) will include field visits and specific report on findings of physical controls of goods, services and works acquired by IE and beneficiaries.		
Fraud and Corruption Possibility of circumventing the internal control system with colluding practices as bribes, abuse of administrative positions, misprocurement etc, is a critical issue; lack of demand-side for accountability	S	(i) The ToR of the external auditor will comprise a specific chapter on corruption auditing. (ii) The IGF will report to the Coordinator of PIU, who in turn will report directly to the Steering Committee. (iii) copy of IGF reports will be submitted to the Bank. (iv) FM procedures manual approved prior to project effectiveness and quarterly IFR including budget execution and monitoring and physical progress. (vi) Technical auditing if required. (vii) Measures to improve transparency such as providing information on the project status to the public, and to encourage participation of civil society and other stakeholder are built into the project design	N	S
OVERALL FM RISK				S

Strengths and Weaknesses

12. The design of the project follows existing FM arrangements to implement World Bank-financed projects in Côte d’Ivoire which include partial use of country systems for the following FM components (e.g. planning, budgeting, accounting, disbursement, procurement, financing reporting, internal control).
13. The country political situation has impacted governance and affected corruption environment. In the context of the project, the main weaknesses include the lack of familiarity and previous experiences of the MICENUP staff in World Bank FM procedures. However, an effective implementation of FM mitigation measures as well as a strengthened and effective oversight of the Steering Committee and the involvement of the country institutions of control (e.g. IGF, IGE and Court of accounts) would contribute to mitigate the weaknesses identified at country, project and control levels.



FM Action Plan

14. The FM Action Plan described below has been developed to mitigate the overall FM risks.

Table 2.2: Action plan

Issue/Topic	Remedial action recommended	Responsible body/person	Completion date	FM Effectiveness Conditions
Staffing	Recruit/appoint the RAF	PIU within MICENUP	By effectiveness	YES
	Recruit one accountant familiar with World Bank FM procedures	PIU within MICENUP	Two months after effectiveness	NO
	Appoint the financial controller, public accountant (<i>Agent comptable du Projet</i>) in accordance with Decree 475	PIU within MICENUP	One months after effectiveness	NO
Information system accounting software	Acquisition and installation of an accounting software for the project and training of the users	PIU within MICENUP	Two months after effectiveness	NO
Administrative Accounting & financial Manual	Draft and disseminate the FM and administrative manual	PIU within MICENUP	One month after effectiveness	NO
Internal auditing	Discuss with IGF, the government institution of control in charge of the internal audit function in Bank-financed operations to agree on the modalities of its interventions! including allocation of resources to fulfill its mandate.	MICENUP/MEF (IGF)	Five months after effectiveness	NO
External auditing	Appointment of the external auditor completed and contract signed	PIU within MICENUP	Five months after effectiveness	NO

15. **Internal control system and internal audit:** Internal control system is aimed to ensure (i) the effectiveness and efficiency of operations; (ii) the reliability of financial reporting; and (iii) the compliance with applicable laws and regulations. The PIU has no FM procedures manual. For this project, the accounting, financial and administrative procedures manual including procurement, to be developed, will document, explain and describe work processes, information flow, authorization and delegation of authority, timing, job segregations, auto and sequential controls, compliance with project objectives, micro and macro rules and regulations. In line with the new Decree No. 475 governing the modalities of donors-financed project implementation in Côte d'Ivoire, the IGF will oversee the internal audit function of the project managed by the PIU. Once the IGF appointed, the MICENUP and IGF will discuss to agree on the modalities of IGF interventions including the necessary resources to fulfil its mandate.

16. **Planning and budgeting:** The PIU within MICENUP will prepare a detailed consolidated annual work plan and budget (AWPB) for implementing the activities of the project. The AWPB will be submitted to the project



Steering Committee for approval and thereafter to IDA for no-objection, not later than November 30 of the year preceding the year the work plan should be implemented.

17. **Accounting policies:** The prevailing accounting policies and procedures in line with the West African Francophone countries accounting standards—SYSCOHADA—in use in Côte d’Ivoire for ongoing World Bank-financed operations will apply. The accounting systems and policies and financial procedures used by the new project will be documented in the project’s administrative, accounting, and financial manual. The PIU within MICENUP will acquire and install a project accounting software to meet the project requirements.

18. **Interim financial reporting:** The unaudited IFRs will be prepared every quarter and submitted to the World Bank regularly (for example, 45 days after the end of each quarter) and on time. The consolidated quarterly IFR for the project includes the following financial statements: (a) Statement of Sources of Funds and Project Revenues and Uses of funds; (b) Statement of Expenditures (SoE) classified by project components and/or disbursement category (with additional information on expenditure types and implementing agencies as appropriate), showing comparisons with budgets for the reporting quarter, the year, and cumulatively for the project life; (c) cash forecast; (d) explanatory notes; and (e) DA activity statements.

19. **Annual financial reporting:** In compliance with International Accounting Standards and IDA requirements, the PIU within MICENUP will produce annual financial statements. These include (a) a Balance Sheet that shows assets and liabilities; (b) a statement of Sources and Uses of Funds showing all the sources of project funds and expenditures analyzed by project component and/or category; (c) a DA Activity Statement; (d) a Summary of sithdrawals using SoEs, listing individual Withdrawal Applications by reference number, date, and amount; and (e) notes related to significant accounting policies and accounting standards adopted by management and underlying the preparation of financial statements.

20. **External auditing:** the PIU within MICENUP will submit audited project financial statements satisfactory to the World Bank every year within six months after closure of the fiscal year (see Table 2.3) . The audit will be conducted by an independent auditor with qualifications and experience acceptable to the World Bank. A single opinion on the audited project financial statements in compliance with the International Federation of Accountants will be required. In addition, a Management Letter will be required. The Management Letter will contain auditor observations and comments and recommendations for improvements in accounting records, systems, controls, and compliance with financial covenants in the Financial Agreement. The report will also include specific controls such as compliance with procurement procedures and financial reporting requirements and consistency between financial statements and management reports as well as findings of field visits (for example, physical controls). The audit report will thus refer to any incidence of noncompliance and ineligible expenditures and misprocurement identified during the audit mission. The project will comply with the World Bank disclosure policy of audit reports and place the information provided on the official website within two months of the report being accepted as final by the team and the World Bank.

Table 2.3: Due dates of the audit report

Audit Report	Due Date	Responsible Party
Audited financial statements including audit report and Management Letter	(a) Not later than June 30 (2,000 + N) if effectiveness has occurred before June 30 (2000 + N-1). (b) Not later than June 30 (2,000 + N+1) if effectiveness has occurred after June 30, (2,000 + N-1)	PIU



Disbursements

21. Upon credit effectiveness, transaction-based disbursements will be used. The project will finance 100 percent of eligible expenditures inclusive of taxes. A DA will be opened at the central bank (BCEAO) and PA in a commercial bank under terms and conditions acceptable to IDA. The PA will be managed by the public accountant (*Agent Comptable du Projet*) assigned to the PIU by the Minister of Finance. The ceiling of the DA will be stated in the disbursement and financial information letter (DFIL). An initial advance up to the ceiling of the DA will be made and subsequent disbursements will be made against submission of SoE reporting on the use of the initial/previous advance. The option to disburse against submission of quarterly unaudited IFRs (also known as report-based disbursements) could be considered, as soon as the project meets the criteria. Other methods of disbursing the funds (reimbursement, direct payment, and special commitment) will also be available to the project. The minimum value of applications for these methods is 20 percent of the DA ceiling. The project will sign and submit Withdrawal Applications electronically using the eSignatures module accessible from the Bank’s Client Connection website.

Category	Amount of the Credit Allocated (expressed in EUR)	Percentage of Expenditures to be Financed inclusive of Taxes)
(1) Goods, works, non-consulting services, and consulting services, Operating costs, and Training for the Project	55,000,000	100%
(2) Refund of Preparation Advance	1,800,000	Amount payable pursuant to Section 2.07 (a) of the General Conditions
TOTAL AMOUNT	56,800,000	

22. **Payments to Implementation Agencies and services providers:** the PIU within MICENUP under the responsibility of the Agent Comptable du Projet, will make payments to Implementing Agencies in regard to the specified activities in the components of the project. Payments will be made in accordance with the payment modalities, as specified in the respective contracts/conventions. In addition to these supporting documents, the PIU within MICENUP will consider the findings of the IGF while approving the payments. The PIU within MICENUP will reserve the right to verify the expenditures ex-post, and refunds might be requested for non-respect of contractual/convention (e.g. MOD) clauses. Misappropriated activities could result in the suspension of financing for a given entity. All payments will be made by the MICENUP, or the MiNADeR, as agreed with the MICENUP, for some activities directly related to Component 2; therefore, in line with the country PFM system, a Budget Controller and a Public Accountant have been appointed. In line with the Use of Country System as stipulated in the new Decree n° 475 governing the modalities of donors-financed project implementation in Côte d’Ivoire, the two civil servants should be involved in the management of the project funds.

23. **Local taxes:** Funds will be disbursed in accordance with project categories of expenditures and components, as shown in the Financing Agreement. Financing of each category of expenditure/component will be authorized as indicated in the Financing Agreement and will be inclusive of taxes according to the current country financing parameters approved for Côte d’Ivoire. However, the Government will allocate some budgets



to support the operating costs of civil servants involved in the implementation of the project. The use of such budget should comply with the FM procedures approved by the World Bank.

24. **Support to the implementation plan:** FM supervisions will be conducted over the project’s lifetime. The project will be supervised on a risk-based approach. Based on the outcome of the FM risk assessment, the following implementation support plan is proposed. The objective of the implementation support plan is to ensure the project maintains a satisfactory FM system throughout its life.

Table 2.4: FM Implementation Support Plan

FM Activity	Frequency
Desk reviews	
IFRs’ review	Quarterly
Audit report review of the program	Annually
Review of other relevant information such as interim internal control systems reports, IGF reports...	Continuous, as they become available
On-site visits	
Review of overall operation of the FM system (Implementation Support Mission)	Every six months for Substantial risk
Monitoring of actions taken on issues highlighted in audit reports, auditors’ Management Letters, internal audits, and other reports	As needed
Transaction reviews	As needed
Capacity-building support	
FM training sessions	Before project effectiveness and during implementation as needed

Procurement

25. Procurement under the proposed project will be carried out in accordance with the following World Bank procedures: (a) the World Bank Procurement Regulations for IPF Borrowers (July 2016, revised in November 2017), and (b) “Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants”, dated October 15, 2006 and revised in January 2011, and other provisions stipulated in the Financing Agreements.

26. Procurement shall be carried out by the PIU within the MICENUP. The procurement functions will be delivered through the arrangements described in Annex 5.

27. The PPSD has been developed. The World Bank has reviewed and been satisfied with the PPSD. A summary is attached in this Annex 5.

28. Consistent with the PPSD, an initial Procurement Plan has been developed and agreed prior to negotiations, covering the activities of the first 18 months of the project implementation. The initial Procurement Plan has been published on the World Bank’s external website. The Procurement Plan will be updated in agreement with the World Bank annually or as required to reflect the project’s actual implementation needs and improvements in institutional capacity.



Monitoring and Evaluation

29. **Results indicators.** Progress toward the achievement of the PDO will be measured based on the PDO-level and intermediate results indicators as part of the project's results framework (see Section VII). The M&E systems will be used to collect relevant data and information pertaining to measuring results, including project outcomes and quality of project execution. The PIU will be responsible for carrying out the main M&E functions. The PIU will be responsible for developing a detailed M&E plan, specifying standard protocols and guidelines for data collection and use for the duration of the project, and will organize trainings for relevant stakeholders in the M&E plan. Progress reports will be closely reviewed by the multi-sectoral steering committee set up including all public and private project stakeholders. The PIU will provide quarterly monitoring tables and progress reports on all PDO- and intermediate-level results indicators as well as any additional country-level indicators specified in the country projects' respective M&E plans to the World Bank during routing implementation-support missions.
30. **Indicators.** The project includes eight indicators to measure the success or failure of the operation. The first four are PDO-level indicators, measuring the progress toward PDO achievement. Each of these eight indicators assess a particular aspect of the PDO: People provided with access to the Internet, of which people who benefitted from an improved access to internet, of which people who benefitted from a new access to internet, disaggregated by gender ; Farmers reached with agricultural assets or services, of which women; Percentage of increase in revenues for the targeted beneficiaries. Intermediary indicators will include: (i) volume of sales of selected crops; (ii) the reduction in postharvest losses by selected producer organizations supported by the project; (iii) the number of kilometers of feeder roads rehabilitated and maintained; and (iv) Share of women within the newly established cooperatives/producers organizations (led by women), and will be used to measure progress in project implementation on a 6-month basis.
31. **Success assessment and corrective actions.** At the end of the project, the success of this operation will be measured against the target values of the PDO indicators. During implementation, the PIU will be able to measure whether implementation is on track or not by benchmarking against the yearly targets listed in the results framework. If project execution underperforms against these yearly indicators, the PIU must propose a list of corrective actions. To the extent possible, the M&E system will use geographical data and reports will include updated maps available online.
32. **Direct beneficiaries.** The views of direct beneficiaries will be brought into the M&E process. Periodically, the PIU will ensure that the views of direct project beneficiaries, including local communities and individuals (those receiving new services), have been accounted for in project M&E. The M&E plan should detail how and at what intervals the views of both groups will be assessed. Data sources may include consultations conducted as part of project citizen engagement, data from the GRM, as well as separate data-collection efforts as necessary.
33. **M&E arrangements.** Existing M&E arrangements of the PIU will be evaluated and capacity gaps addressed. It is expected that the PIU will likely need to reinforce their M&E capacity, for example by recruiting or training technical personnel or making improvements to their respective MISs in order to better manage project data. The M&E evaluation will identify all such capacity gaps and propose a costed plan for addressing them, including a detailed timeline. The M&E evaluation should be available prior to credit effectiveness in order to allow sufficient time to address the identified capacity gaps through project investments before the main project activities begin.



34. **M&E Plan.** The PIU will be responsible for developing a detailed M&E plan. This M&E plan will include all project indicators, including all indicator listed in this document as well as any additional indicators deemed necessary to effectively monitor implementation; identify data sources and data collection protocols for all indicators; detail logistical arrangements for data collection; and explain communication needs related to M&E, especially to stakeholders. For each phase of the MPA, the M&E plan should be available prior to credit effectiveness in the respective country in order to allow effective monitoring of Year 1 of each MPA phase.
35. The country PIUs will be primarily responsible for collecting the data needed to measure implementation progress, as specified in the project's results framework. The PIU will obtain all of the relevant data needed from the data sources identified in the M&E plan to calculate the different required indicators from relevant project stakeholders as necessary. For any data sources that are not under the PIUs' purview, the relevant PIU will be responsible for identifying a focal point and to detail a data-sharing plan between institutions in compliance with international good practice on data privacy as well as any applicable local laws. These inter-institutional arrangements should be detailed in the M&E plan. The country PIUs will be responsible for data collection, consolidation, analysis, and evaluation. The PIU will submit an M&E quarterly report to the World Bank as well as to the Steering Committee that will include an updated country-level Results Framework and corresponding Action Table listing corrective actions to be implemented with deadlines and persons responsible clearly identified.
36. **Implementation support missions will be conducted at least twice per year.** Missions will be based on the latest quarterly implementation and financial monitoring reports prepared and submitted by the PIU. Missions will allow the World Bank team to perform evaluations of implementation progress and provide technical support to the PIUs and any other implementing institutions. Additional implementation support will be provided by field-based World Bank staff in between formal missions.
37. **A mid-term review will be conducted within 30 months of credit effectiveness.** The purpose of this review will be to assess progress and make recommendations, if necessary, for any changes in the PDO, the content of the components, resource allocation, and performance indicators.
38. **At project closing,** each country's PIU will prepare a completion report documenting the project's achievements and results and drawing lessons for future interventions. The completion report will be based in part on the project's technical, economic, social, and environmental impact survey studies, as well as an assessment of beneficiaries' (both functional users and individuals) satisfaction. An Implementation Complete Report (ICT) will be prepared for the project at closing.



ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Côte d'Ivoire
CI: Côte d'Ivoire E-Agriculture Project

Strategy and Approach for Implementation Support

1. This complex operation requires close coordination between different Global Practices involved in the project (Transport & Digital Development, Agriculture, Gender). The approach is to create smaller teams of specialists focusing on one or two components, in order to ensure efficient implementation of project components in parallel. To jumpstart execution, the multi-sectoral teams focus on the preparation of most terms of reference (ToR) and Technical Specifications for large items and activities. Finally, constant internal and external communication about the project will maintain strong ownership by all client stakeholders.

Implementation Support Plan and Resource Requirements

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Component 1 & 3	Transport & ICT Specialists	US\$150,000	
12-48 months	Component 2	Agriculture & Gender Specialists	US\$600,000	

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
ICT Specialist	10 SW per year	>2 trips	
Agriculture Specialist	10 SW per year	>2 trips	
Transport Specialist	6 SW per year	>2 trips	
Gender Specialist	5 SW per year	1 trip	
Digital Platform Specialist	5 SW per year	1 trip	>2 trips the first two years of implementation



ANNEX 4: ECONOMIC AND FINANCIAL ANALYSIS

COUNTRY: Côte d'Ivoire
CI: Côte d'Ivoire E-Agriculture Project

Component 1 Financial and Economic analysis

1. The scope of the connectivity activity in Component 1 (i.e. extending connectivity to targeted rural areas) involves the construction of a radio access network (RAN) infrastructure in the northern part of the country ("target area" for Component 1). According to the regulator (ARTCI), there are around 2.2 million inhabitants in the target area, with more than 1 million inhabitants that are not covered by any mobile signal. The construction of the RAN infrastructure will allow for an important expansion in the provision of mobile telephony services and mobile broadband services to citizens and smallholders.
2. The financial and economic analysis of the project is based on the incremental approach⁵¹. All cash flows are stated in constant US\$. The reference period is set equal to the standard lifecycle period for a RAN infrastructure (i.e. 20 years) and thus no residual value is considered at the end of the reference period.
3. **A. Financial analysis.** The financial profitability indicators used are: (i) the F (FRR, also called Internal Rate of Return IRR) on the investment; (ii) the break-even point (payback period calculated in years, corresponding to the first year after the start of the project when the cumulated free cash flow is positive); and (iii) the NPV calculated with a discount factor of 8 percent⁵². Two scenarios are considered: one without the support of public capital ("FRR(C)") and the other with the support of public capital ("FRR(K)"), that is to say around US\$27.00 million provided by the project.
4. Critical assumptions are based on previous RAN infrastructure investment projects supported by the World Bank or other donors (European Investment Bank) as well as industry standards⁵³. Critical assumptions are set as follow:
 - a. **On the supply-side (cost).** To ensure the coverage of the offline population in the northern region (more than 1m inhabitants), the projects foresee the deployment of 200 fully operational sites, each site covering around 5,000 inhabitants in average and costing US\$400,000 for installation and commissioning (CAPEX). The RAN infrastructure will consist of both passive and active components. The passive components include land acquisition and preparation, structure deployment (50-metre lattice tower), shelters, and power solution with solar panels or generators; active components include 2G/3G-ready active equipment, and backhaul to connect to the core network infrastructure, including installation and commissioning. The operation expenditures (OPEX) are evaluated as a percentage of the CAPEX and represent 15 percent of the cumulated CAPEX. OPEX include land and structure maintenance and site security with decentralized and local staff, backhaul fees, power generator or solar panel maintenance and use of deep-cycle batteries.

⁵¹ Also called the relevant cost approach, marginal analysis or differential analysis, the incremental approach focused only on the extra costs and revenues generated by the project and disregards any other non-relevant sunk cost that will be incurred whether the project takes place or not.

⁵² A sensitivity analysis is provided for all three financial indicators.

⁵³ Cf. World Bank, Madagascar Communications Infrastructure Project (CIP-3, P094103); European Investment Bank *Rural telecom network expansion investment project*, 2 March 2016; Barclays, "African Telecoms Equity Research", 19 March 2014; Internet.org, State of connectivity, 2015; GSMA, Intelligence market data and forecast for Côte d'Ivoire, 2018.



- b. **On the demand-side (revenues).** The penetration rate of mobile services (unique subscriber penetration rate) is assumed to reach 40 percent of current offline population within 10 years (due to the low purchasing power of the rural population the unique subscriber penetration rate will remain lower than the national average which currently stands at 50 percent). Mobile consumers will generate a blended monthly net ARPU of US\$4. The net ARPU includes all revenues collected from the end-user (mobile phone device, voice, SMS, data and value-added services) as well as net incoming wholesale revenues (i.e. interconnection revenues minus interconnection costs).
5. The results for the project without public capital support are: (i) the FRR (C) is 7 percent; (ii) the break-even point occurs in 14 years; and (iii) the NPV is US\$ -3.1 million (with a discount rate of 8 percent). These results show that although FRR (C) is positive, telecommunication operators would not invest in this project alone because it would not provide the minimum rate of return that private mobile operator companies usually expect (around 12 to 16 percent depending on the socio-economic context). Therefore, public Government financing is needed to make the project possible.
6. The results for the project with public capital support are: (i) the FRR (K) is 13 percent; (ii) the break-even point occurs in 12 years; and (iii) the NPV is US\$17.7 million (with a discount rate of 8 percent). These results show that the project becomes acceptable for private operators; moreover, the fact that the FRR on national capital FRR(K) is in the lower range of the expected rate of return for standard mobile telecommunications projects and that the break-even point occurs in the long-term (12 years) show that the public capital support is not over-proportionate.
7. It needs to be noted here that although last-mile operators were consulted in advance, there is a certain level of uncertainty with regards to the final level of revenues that will be generated by the infrastructure. This is acknowledged in the design of the project, which requires the inclusion of a claw-back mechanism into the PPP contract that would apply in case revenues are higher than originally foreseen.
8. A sensitivity analysis is performed on the assumptions for the supply-side (unit cost of a site and OPEX as a percentage rate of CAPEX), the demand-side (penetration rate and ARPU), and the discount factor. It shows that the business model is sensitive to the assumptions and could be overly profitable, thus reinforcing the need of a claw-back mechanism.
9. **B. Economic analysis.** The economic literature suggests that a large number of socioeconomic benefits are associated with increasing broadband coverage. Examples of benefits that are usually identified are: saving on time and travel cost by performing administrative and business activities online, increasing mobile banking and micropayment usage, reducing the opportunity cost of providing goods and services via Internet, equity, ubiquity, improved competition, cost savings for the public sector, etc. In particular, an increased use of e-commerce and e-banking services, especially in rural disadvantaged areas, is seen as a main driver towards economic growth and reduction of territorial disparities and social exclusion. The availability of a ICT connectivity infrastructure is also a key element to improve the attractiveness and competitiveness of an area and its overall competitive edge and can help in reversing the trend of relocation of economic activity and depopulation.
10. The economic analysis can be performed on a macroeconomic level (estimate the local GDP growth generated by additional broadband users) or a microeconomic level (such as household consumer surplus or time and cost savings derived from the use of online services). However, the economic analysis cannot be performed by using these methods due to: (i) the coverage expansion areas (white zones) being scattered rather than consisting in one single administrative area; and (ii) a lack of local data for the target areas (such as local GDP and local travel time and cost).



11. Because of the lack of socio-economic data at the local level, the economic analysis is limited to two direct measurable effects, namely the extra fiscal revenue earned by the Government thanks to the project and the local salaries paid to local staff to ensure the maintenance and security of staff. The extra fiscal revenue is limited to the VAT at an 18 percent rate, and the local salaries are evaluated by considering a full-time equivalent staff for each site, paid at the minimum legal wage of US\$100 per month. These two direct revenues amount to a total cumulated value of US\$56.7 million, which is in line with the public capital support of US\$27.0 million provided by the project for financing digital infrastructures in targeted rural areas.



Table 4.1 – Financial cash flows and financial performance indicators of the project

Income statement and FRR	Unit	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20
Market assumptions																					
Cumulated number of sites deployed	#	20	50	90	140	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
CAPEX - Cost of deploying a site	k\$	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
OPEX - Cost of O&M as % of Capex	%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Population covered by site	#	4 000	4 080	4 162	4 245	4 330	4 416	4 505	4 595	4 687	4 780	4 876	4 973	5 073	5 174	5 278	5 383	5 491	5 601	5 713	5 827
Mobile penetration (target areas, mid-yr)	% pop.	4%	8%	12%	16%	20%	24%	28%	32%	36%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Blended monthly net ARPU	\$	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4	\$ 4
Cost																					
Annual number of sites deployed	#	20	30	40	50	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual CAPEX (initial investment)	m\$	\$ 6.0	\$ 9.0	\$ 12.0	\$ 15.0	\$ 18.0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Cumulated CAPEX	m\$	\$ 6.0	\$ 15.0	\$ 27.0	\$ 42.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0	\$ 60.0
Annual OPEX	m\$	\$ 0.9	\$ 2.3	\$ 4.1	\$ 6.3	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0
Total annual cost	m\$	\$ 6.9	\$ 11.3	\$ 16.1	\$ 21.3	\$ 27.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0
Income																					
Population covered	k pop.	80	204	375	594	866	883	901	919	937	956	975	995	1 015	1 035	1 056	1 077	1 098	1 120	1 143	1 165
Subscriber base	k pop.	3	16	45	95	173	212	252	294	337	382	390	398	406	414	422	431	439	448	457	466
Subscriber income	m\$	\$ 0.2	\$ 0.8	\$ 2.2	\$ 4.6	\$ 8.3	\$ 10.2	\$ 12.1	\$ 14.1	\$ 16.2	\$ 18.4	\$ 18.7	\$ 19.1	\$ 19.5	\$ 19.9	\$ 20.3	\$ 20.7	\$ 21.1	\$ 21.5	\$ 21.9	\$ 22.4
Financial Rate of Return without public capital (C)																					
CAPEX without public capital	m\$	\$ (6.0)	\$ (9.0)	\$ (12.0)	\$ (15.0)	\$ (18.0)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OPEX	m\$	\$ (0.9)	\$ (2.3)	\$ (4.1)	\$ (6.3)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)
Revenues	m\$	\$ 0.2	\$ 0.8	\$ 2.2	\$ 4.6	\$ 8.3	\$ 10.2	\$ 12.1	\$ 14.1	\$ 16.2	\$ 18.4	\$ 18.7	\$ 19.1	\$ 19.5	\$ 19.9	\$ 20.3	\$ 20.7	\$ 21.1	\$ 21.5	\$ 21.9	\$ 22.4
Free cash flow (FCF)	m\$	\$ (6.7)	\$ (10.5)	\$ (13.9)	\$ (16.7)	\$ (18.7)	\$ 1.2	\$ 3.1	\$ 5.1	\$ 7.2	\$ 9.4	\$ 9.7	\$ 10.1	\$ 10.5	\$ 10.9	\$ 11.3	\$ 11.7	\$ 12.1	\$ 12.5	\$ 12.9	\$ 13.4
Cumulated FCF	m\$	\$ (6.7)	\$ (17.2)	\$ (31.1)	\$ (47.8)	\$ (66.5)	\$ (65.4)	\$ (62.2)	\$ (57.1)	\$ (49.9)	\$ (40.6)	\$ (30.9)	\$ (20.8)	\$ (10.3)	\$ 0.6	\$ 11.9	\$ 23.5	\$ 35.6	\$ 48.1	\$ 61.1	\$ 74.4
FRR (C)	7%	(20 yrs)		Break Even Point (Payback period in years)						14	NPV 8%						\$ (3.1)				
Financial Rate of Return with Public Capital (K)																					
Public capital	m\$	\$ 2.7	\$ 4.1	\$ 5.4	\$ 6.8	\$ 8.1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Private CAPEX after public capital	m\$	\$ (3.3)	\$ (5.0)	\$ (6.6)	\$ (8.3)	\$ (9.9)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OPEX	m\$	\$ (0.9)	\$ (2.3)	\$ (4.1)	\$ (6.3)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)	\$ (9.0)
Revenues	m\$	\$ 0.2	\$ 0.8	\$ 2.2	\$ 4.6	\$ 8.3	\$ 10.2	\$ 12.1	\$ 14.1	\$ 16.2	\$ 18.4	\$ 18.7	\$ 19.1	\$ 19.5	\$ 19.9	\$ 20.3	\$ 20.7	\$ 21.1	\$ 21.5	\$ 21.9	\$ 22.4
Free cash flow	m\$	\$ (4.0)	\$ (6.4)	\$ (8.5)	\$ (10.0)	\$ (10.6)	\$ 1.2	\$ 3.1	\$ 5.1	\$ 7.2	\$ 9.4	\$ 9.7	\$ 10.1	\$ 10.5	\$ 10.9	\$ 11.3	\$ 11.7	\$ 12.1	\$ 12.5	\$ 12.9	\$ 13.4
Cumulated FCF	m\$	\$ (4.0)	\$ (10.5)	\$ (19.0)	\$ (28.9)	\$ (39.5)	\$ (38.4)	\$ (35.2)	\$ (30.1)	\$ (22.9)	\$ (13.6)	\$ (3.9)	\$ 6.2	\$ 16.7	\$ 27.6	\$ 38.9	\$ 50.5	\$ 62.6	\$ 75.1	\$ 88.1	\$ 101.4
FRR (K)	13%	(20 yrs)		Break Even Point (Payback period in years)						12	NPV 8%						\$ 17.7				



Table 4.2 – Sensitivity analysis on supply-side (top) and demand-side (bottom) assumptions for financial performance indicators for the project without public capital support

FRR (C)						Break even period (years)							
	\$ 200	\$ 250	\$ 300	\$ 350	\$ 400	Cost of site (k\$)		\$ 200	\$ 250	\$ 300	\$ 350	\$ 400	Cost of site (k\$)
5%	27%	21%	17%	14%	12%		5%	8	9	10	11	12	
10%	22%	16%	12%	9%	6%		10%	9	11	12	13	15	
15%	18%	12%	7%	4%	0%		15%	10	12	14	17	20	
20%	13%	7%	2%	-2%	-7%		20%	12	15	18	21+	21+	
25%	9%	3%	-3%	-10%	N/A		25%	14	18	21+	21+	21+	
OPEX (as % of CAPEX)						OPEX (as % of CAPEX)							

FRR (C)						Break even period (years)							
	30%	35%	40%	45%	50%	Penetration (% pop.)		30%	35%	40%	45%	50%	Penetration (% pop.)
\$ 3.0	-8%	-3%	0%	3%	6%		\$ 3.0	21+	21+	20	17	15	
\$ 3.5	-3%	1%	4%	7%	10%		\$ 3.5	21+	20	17	15	13	
\$ 4.0	0%	4%	7%	10%	13%		\$ 4.0	20	17	14	13	12	
\$ 4.5	3%	7%	10%	13%	16%		\$ 4.5	17	15	13	12	11	
\$ 5.0	6%	10%	13%	16%	19%		\$ 5.0	15	13	12	11	10	
ARPU (\$)						ARPU (\$)							

Table 4.3 – Sensitivity analysis on discount-rate factor for NPV of the project without (NPV(C)) and with (NPV(K)) public capital support

NPV (C) at discount rate (US\$ m)					
	6%	7%	8%	9%	10%
\$ (3.1)	\$ 7.5	\$ 1.8	\$ (3.1)	\$ (7.1)	\$ (10.4)

NPV (K) at discount rate (US\$ m)					
	6%	7%	8%	9%	10%
\$ 17.7	\$ 29.6	\$ 23.1	\$ 17.7	\$ 13.0	\$ 9.1

Table 4.4 – Calculation of direct economic benefits (VAT and local staff salaries) over the duration of the project

VAT and staff salary calculation	Unit	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20
Revenues	m\$	\$ 0.2	\$ 0.8	\$ 2.2	\$ 4.6	\$ 8.3	\$ 10.2	\$ 12.1	\$ 14.1	\$ 16.2	\$ 18.4	\$ 18.7	\$ 19.1	\$ 19.5	\$ 19.9	\$ 20.3	\$ 20.7	\$ 21.1	\$ 21.5	\$ 21.9	\$ 22.4
Cumulated revenues	m\$	\$ 0.2	\$ 0.9	\$ 3.1	\$ 7.7	\$ 16.0	\$ 26.1	\$ 38.3	\$ 52.4	\$ 68.6	\$ 86.9	\$ 105.6	\$ 124.7	\$ 144.2	\$ 164.1	\$ 184.4	\$ 205.0	\$ 226.1	\$ 247.6	\$ 269.6	\$ 291.9
VAT	m\$	\$ 0.0	\$ 0.1	\$ 0.4	\$ 0.8	\$ 1.5	\$ 1.8	\$ 2.2	\$ 2.5	\$ 2.9	\$ 3.3	\$ 3.4	\$ 3.4	\$ 3.5	\$ 3.6	\$ 3.6	\$ 3.7	\$ 3.8	\$ 3.9	\$ 3.9	\$ 4.0
Cumulated VAT	m\$	\$ 0.0	\$ 0.2	\$ 0.6	\$ 1.4	\$ 2.9	\$ 4.7	\$ 6.9	\$ 9.4	\$ 12.3	\$ 15.6	\$ 19.0	\$ 22.5	\$ 26.0	\$ 29.5	\$ 33.2	\$ 36.9	\$ 40.7	\$ 44.6	\$ 48.5	\$ 52.5
Staff full-time equivalent	#	20	50	90	140	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Local staff salary	m\$	\$ 0.02	\$ 0.06	\$ 0.11	\$ 0.17	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24	\$ 0.24
Cumulated local staff salary	m\$	\$ 0.02	\$ 0.08	\$ 0.19	\$ 0.36	\$ 0.60	\$ 0.84	\$ 1.08	\$ 1.32	\$ 1.56	\$ 1.80	\$ 2.04	\$ 2.28	\$ 2.52	\$ 2.76	\$ 3.00	\$ 3.24	\$ 3.48	\$ 3.72	\$ 3.96	\$ 4.20
Total cumulated VAT (m\$)	\$	52.5	(20 yrs)		NPV of total cum. VAT (m\$, discount rate of 8%)		20.2														
Total cumulated Salary (m\$)	\$	4.2	(20 yrs)		NPV of total cum. salaries (m\$, discount rate of 8%)		1.8														



Component 2 Financial and Economic analysis

12. **Component 2 – The project is viable financially and economically.** Based on the experience of similar projects using the latest advances in ICT tools and applications for improving efficiency at all stages of the agricultural value chain, the proposed activities of the digital services for sustainable agricultural development component would yield high financial and economic returns. It would also bring several benefits, with the reduction in gender inequality, empowerment of women, development of skilled agricultural extension and advisors, localized content, promoting digital literacy, promoting startups in various aspects of IT applications in agriculture, peer to peer knowledge exchange, collaboration between institutions involved in the agricultural sector, etc. However, due to the lack of available agricultural data the financial and economic returns – as well as the overall benefits –cannot be easily quantified.
13. The project would enhance the capacity of the MINADER and other relevant government institutions at the national and local levels in all aspects of the data to decision making value chain for the focus agricultural products. Skills of the staff would be enhanced in the use of a wide range of IT tools and applications – such as data collection using mobile phones, interpretation and use of NDVI images, satellite weather data, and ability to leverage these with appropriate decision support systems. Together, this would help in providing practical recommendations by the agricultural extension and advisory staff to project farmers to address day to day problems during the entire crop cycles resulting in increased efficiency of the use of inputs, productivity and incomes.
14. The project's bottom-up approach is expected to result in the development of high quality content (defined as data, information and knowledge) which is most useful and locally relevant to address the needs of the farmers. Crowd sourcing techniques where users can call a phone service to get answers for their specific questions would become a part of a knowledge base, which can then be queried by other users. The project would further disaggregate mobile subscriptions by income, gender, etc., to get a better understanding of the main problems being faced by small holders at every stage of the value chain of the focus agricultural products, who is using the content, how to make it more relevant for users and help in providing practical solutions which the farmer can adopt.
15. Some examples from evaluations of e-agricultural services which have been carried out in developed and developing countries demonstrate that investments made in these activities yield high economic and financial returns. These are provided below:
16. **Evaluation from developed countries – provision of data based agricultural advisory services.** Digital agricultural services: Accenture USA has developed the Connected Crop Solution as one of the products of its digital agricultural services to address the inefficiencies across the agricultural value chain of various crops. One example⁵⁴ which may be relevant to this project in the kind of benefits which can be expected is the application of this IT solution to improve the performance of a large agro-input company and farm performance. The main issue faced by its client – a US\$600 million agro-input company was that the field agents it relied on to deliver product information to farmers were not equipped with the right knowledge and expertise to make product recommendations and advice to address the problems faced by farmers growing various crops. The solution was to equip the field agents with the Accenture Connected Crop Solution mobile app linked to its analytics

⁵⁴Source: Webber, Brandon, Salama, Ben, Barros, Eduardo, Helle, Jennifer. Accenture. 2017. Digital Agriculture: Improving Profitability. Digital Agricultural Services, Accenture, USA. https://www.accenture.com/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Digital_3/Accenture-Digital-Agriculture-Point-of-View.pdf



engine. This enabled the company to capture important internal and external farm and weather information in real time and translate it into actionable advice which the field agents could give to farmers. Over the course of the six-month project, the company selected 2,000 farmers to participate and delivered product information and recommendations for raising yields for nearly 30 crops most common among these farmers. This yielded impressive results. At the end of the pilot, the company had generated a 56 percent year-over-year increase in sales and an average 15 percent increase in crop productivity for farmers - of as much as 30 percent for some cash crops. This shows that possibilities exist in this project to obtain similar or better results by equipping the agricultural extension agents and advisors with appropriate IT tools and applications to provide location specific advice based on reliable data from a variety of sources combined with analytical tools to help with decision making at each stage of the value chain of the focus crops, viz. maize, rice, etc. This is expected to result in substantial improvement in the performance of the agricultural extension agents and advisors being supported by this project as well as increasing the efficiency at all stages of the agricultural value chain - for the project's beneficiaries - the small holder farmers – and increase their incomes. This is expected to result in the delivery of appropriate services and content based on what users' needs which is cost effective. Appropriate evaluation methodologies supported by relevant data on costs and benefits to better estimate the financial and economic returns of the project investments will be developed during implementation of the project. The results from this analysis will be used to make changes as needed of the project activities.

Examples from developing countries:

17. **Ghana and Bangladesh:** An audit was carried out in 2014-2015 by faculty members of the University of California, Davis⁵⁵ over a six-month period of Esoko - a call center based in Ghana, and farmer surveys in Bangladesh of the use of call centers for agricultural services. The major relevant findings for estimating financial and economic benefits were the following : (i) financial sustainability continues to be a major challenge – an area seeking a viable solution; (ii) need to partner with business entities, research institutions and telecommunication companies to reduce and share costs; (iii) engage women in the design and implementation of the project activities; (iv) preference by farmers through voice mechanisms rather than SMS which may be a result of illiteracy among the beneficiaries; and (v) building trust with farmers and advisors is essential for the acceptance and adoption of advice rendered.

18. **Bangladesh:** A study was carried out by faculty members⁵⁶ of the Agricultural University, University of Dhaka and Sher E-Bangla agricultural university in Dhaka, Bangladesh to analyze the impact of e-Agriculture on farmers' empowerment using a combination of quantitative and qualitative methods in Bhatbour Block of Dhighi union under Sadar Upazila of Minikganj District. This is one of the large districts in Bangladesh where the Government has been implementing several e-Agriculture related development projects with the assistance of international donors through Department of Agricultural Extension (DAE). Data was collected from 133 e-Agriculture users – the study group and 45 farmers who did not use e-agricultural services who formed the control group. Descriptive statistics, t-test, multiple regressions were used for analysis. The main conclusion of the study was that e-Agriculture had significant impact on the farmers' empowerment. The main recommendations were: (i) E-Agriculture projects need to be scaled up in other parts of the country and (ii) an

⁵⁵ McGuire, Erin, Bell, Mark, Crump, Amanda. 2015. Agricultural Call Centers – an infrastructure and demand audit. USAID. www.meas.extension.org

⁵⁶ Sheikh M. M. Rashid, Muhammad Z. Haque, Md. Rafiqueel Islam Department of Agricultural Extension & Information System, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh. 2016. Does E-Agriculture Impact Farmers' empowerment in Bangladesh. International Journal of Agricultural Extension. <file:///C:/Users/Jaya's%20computer/Downloads/1683-10909-2-PB.pdf>
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integrated approach should be used which includes use of mass media such as print and electronic media to increase public awareness of the e-agricultural services.

19. The above have been provided as illustrative examples of potential returns of investments in e-agriculture services. Regarding the digital services for sustainable agricultural development component of this project, data for carrying out a detailed economic and financial analysis, (such as crop, farm budgets, with and without project conditions, estimates of incremental production, incomes, savings in time and increase in efficiency in all stages of the agricultural value chain, current and projected financial and economic prices of inputs and outputs, detailed investment and operating costs, etc) are in the process of being collected.

Communication system

20. The project's investments in the establishment of a communication system would contribute to raising awareness of various government policies, reforms, rules and regulations related to the agricultural sector, project activities, etc.; improve transparency through dissemination of the government budgetary allocations to various agricultural programs, obtaining feedback from the project beneficiaries, etc. An example of the potential benefits from the project's investment in community radio is provided below.

21. Community radio⁵⁷ in India was first established in Anna University in Tamil Nadu on February 1, 2004 at a cost of about US\$24,000⁵⁸. Experience of this the oldest community radio station in India demonstrated the power of the use of the most common mass media to empower the less privileged – especially the women. This is detailed in a study conducted by Esther S. Kar which concluded that the radio station played an important role in social, economic, and political empowerment of women. Social empowerment happened through providing knowledge and skill development. Regarding, economic empowerment, community radio was used to learn job skills, how to manage finances, etc. In terms of political empowerment, it raised awareness of the local representatives in the Panchayat, regarding their positions on various issues. The most important aspect of the community radio was it gave voice to the community especially women and the marginalized. The study found that in the case of Anna Radio women's empowerment among the community radio listeners was significant.⁵⁹ The project's support for the establishment of the community radio stations in the selected project regions in Côte de Ivoire is expected to yield similar qualitative benefits at low cost.

⁵⁷ UNESCO defines Community radio as a broadcast station that "is operated in the community, for the community, about the community and by the community.www.unesco.org

⁵⁸ The community radio consisted of an air-conditioned room (10 ft by 8 ft), equipped with digital, tapeless, transmission ready, audio server, two work stations, 12 channel console multipurpose unit, and an indigenous di-pole antenna and 50 W transmitter.

⁵⁹ Source: Esther S. Kar, 2010. Social Impact of Community Radio Stations in India: Enhancing Participatory Development and Women's Empowerment. (PGPPM Dissertation). Indian Institute of Management, Bangalore.



Component 3 Cost efficiency analysis

22. Rehabilitation of feeder roads in the targeted production zones has a positive economic rationale. The rehabilitation and maintenance increase the level of service of rural roads and with services promote connectivity and social cohesion. On average for every 25 kilometers treated in this program, it is expected that around 50 jobs (total of 1,200 jobs) will be created and 50 SMEs occupation will be guaranteed. Indeed, this will boost the social and economic facilities necessary to alleviate poverty and social exclusion of local communities by increasing accessibility and mobility to knowledge jobs, health, education for the local population.

23. Rehabilitation of rural access roads has an economic impact. In addition, the rehabilitated roads will reduce transport costs, freight rates, vehicle operating costs, and travel times, making more expansion in agriculture, trade, access to markets. Indeed, the lack of accessible rural roads noticed in the project areas makes that farmers losing huge quantities of their of perishable products production in terms with consequences on high prices affecting both the producer and the consume. Then improving access roads, the program will lead to increased production and income as well as food security in project targeted areas. In fact decreasing the transport costs by rehabilitating rural roads, will reduce the price consumers pay, render food products accessible and the producer is more competitive.

Table 4.5 – Financial and costs assumptions for the rehabilitation and maintenance of the feeder roads

	Total costs including all taxes (US\$)
Technical studies	280,000
Environmental and social studies	97,500
Rehabilitation RLTPC (Zone 1: Divo, Daloa, Gagnoa)	10,440,000
Rehabilitation RLTPC (Zone 2: Korhogo, Bouna, Boundiali)	3,940,000
Maintenance (RLEP)	1,880,000
Control of rehabilitation and maintenance works	1,221,750
MOD AGEROUTE (control and works costs)	400,000
Other activities and unforeseen costs non- affected	925,750
Total expenses	19,500,000

24. Methodology. At this stage, the rural access (feeder) roads to be rehabilitated have not been identified yet. While economic and social benefits cannot be quantified at this stage, the traditionally used indicators (NPV and IRR) will be used in the prioritization strategy and selection of the 500 km of roads to be rehabilitated. Usual range of IRR is between 15 et 20% and it will be calculated with the RED methodology developed by the SSATP for low volume roads.



ANNEX 5: APPLICABLE PROCUREMENT PROCEDURES

COUNTRY: Côte d'Ivoire CI: Côte d'Ivoire E-Agriculture Project

- 1. Generality:** Following the 2004 CPAR, and the critics of a Procurement Code (Decree N°2005-110 dated February 24, 2005), a new Procurement Code (Decree N°2009-259 dated August 6, 2009), in line with the WAEMU's procurement Directives and international good practices, and key implementing regulations and documentation have been adopted. This Procurement Code was amended and modified in July 2015 through the Decree N°2015-525 dated July 15, 2015 also with implementing regulations thereunder. A national procurement capacity building program exists and is being implemented at the central and deconcentrated entities level. An electronic system for collecting and disseminating procurement information and for monitoring procurement statistics has been set up and needs to be spread over all of the contracting authorities. An audit of single source awarded contracts from 2011 to 2013 has been done in May 2014 and findings were published. However, persisting issues remain that affect transparency and efficiency of the national procurement system: (i) establishment and operation of procurement of cells in the ministries are still very shy, (ii) training of enforcement officers of these new texts is not yet effective. In addition, the volatile socio-political situation due to the civil war does not guarantee an effective functioning of the system and also has considerably increased fraud and corrupt practices. The new Government is trying to fight against this scourge by implementing certain mechanisms such as the code of ethics at the level of ministers and officials, but the results are not yet visible at this time by lack of evaluation.
- 2. Guidelines:** Procurement for the proposed project will be carried out in accordance with the World Bank's "Procurement Regulations for Borrowers" in force since July 2016 revised in November 2017.
- 3. Procurement Documents:** Procurement would be carried out using the World Bank's Standard Bidding Documents (SBD) for all International Competitive Bidding (ICB) for goods and works and for Standard Request for Proposal (RFP) for the selection of consultants through competitive procedures. The Recipient will develop standard documents based on the World Bank's SBDs for National Competitive Bidding (NCB) for goods and works and the Bank's RFP for the selection of consultants through methods other than Quality and Cost Based Selection (QCBS), with modifications that will be submitted to the IDA for prior approval in compliance with the New Procurement Framework.
- 4.** 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 World Bank in the Procurement Plan through the PPSD when need be. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.
- 5. Advertising Procedures:** General Procurement Notice, Specific Procurement Notices, Requests for Expression of Interest and results of the evaluation and contracts award should be published in accordance with advertising provisions in the guidelines mentioned above.
- 6.** For ICB and request for proposals that involve international consultants, the contract awards shall be published in the United Nations Development Business (UNDB) online within two weeks of receiving IDA's "no objection" to the recommendation of contract award. For Goods, the information to publish shall specify: (a) name of each bidder who submitted a bid; (b) bid prices as read out at bid opening; (c) name and evaluated



prices of each bid that was evaluated; (d) name of bidders whose bids were rejected and the reasons for their rejection; and (e) name of the winning bidder, and the price it offered, as well as the duration and summary scope of the contract awarded. For Consultants, the following information must be published: (a) names of all consultants who submitted proposals; (b) technical points assigned to each consultant; (c) evaluated prices of each consultant; (d) final point ranking of the consultants; and (e) name of the winning consultant and the price, duration, and summary scope of the contract. The same information will be sent to all consultants who submitted proposals. The other contracts should be published in national gazette periodically (at least, quarterly) and in the format of a summarized table covering the previous period with the following information: (a) name of the consultant to whom the contract was awarded; (b) the price; (c) duration; and (d) scope of the contract.

7. **Procurement methods and PPSD Summary:** The procurement methods have been developed and defined in the PPSD and the Procurement plan. However, indications are given below to assist the Borrower in the PPA implementation phase. Total value of funding for Côte d'Ivoire is US\$70 million, most of which will be used for works contracts to expand digital connectivity in rural areas and improve services for sustainable agricultural development and improving rural roads. In addition, several consultancy contracts aiming at assessing the status, evaluating, proposing strategies, action plans, supervising specific groups, popularizing IT tools in rural areas and the development of tools will be past

- a. **Works:** These mainly concern the rehabilitation and maintenance of rural roads. Although knowledge exists at the local level, the use of external expertise may be important in some cases, given the unfortunate experiences of the past in some markets. This will mainly involve ensuring that local contractors are sure to: the availability of experts; mobilization of public works equipment; the involvement of SMEs in the organization and management of construction sites; the respect of the deadlines of execution of the works; the quality of the implementation of the works.
- b. **Consulting services:** Although they represent only 10% of the total amount of the project contracts, they will play an important role in the success of the project. As a result: (i) good pre-selection of consultants for the establishment of short lists; (ii) good wording of the terms of reference; (iii) the proper evaluation of the technical proposals; and (iv) a good appreciation of the reports that will be delivered by the consultants is extremely important. The support of the identified technical teams will be important here and measures will have to be taken to ensure their effective participation when called upon.
- c. **Acquisitions of goods:** they will be mostly local; indeed, it is essentially digital equipment and materials; cars ; equipment, furniture and office supplies, etc. which are in fact current supplies distributed by many local suppliers who may respond on the basis of procedures open at national level in relation to the estimated amounts and the size of the contracts involved.

8. **Procurement of Works.** Works procured under this project will include but are not limited to the rehabilitation of about 560 km and the maintenance 2,240 km in a period of four years, and the installation of digital infrastructure such as towers or buried fiber optics. The total maintained linear of rural road will be about 2,800 km (560 km/year). It will focus on critical rural roads allowing access to targeted production zones and markets in the areas of Divo, Daloa, Gagnoa, Korhogo, Boundiali and Bouna. Digital infrastructure will be procured through a competitive award of public funds using “least cost subsidy auction”, by selecting the most economically advantageous offer (i.e. a combination of a reverse tender process favoring the bidder asking for the lowest amount of public funds and a standard tender process favoring the bidder achieving the best output)



to private actors that will be responsible for installing, operating, and maintaining the wireless network access infrastructure on an Open Access basis⁶⁰. Contracts of works estimated to cost US\$10,000,000 equivalent or more per contract shall be procured through ICB. Contracts estimated to cost less than US\$10,000,000 equivalent may be procured through NCB. Contract estimated to cost less than US\$200,000 equivalent per contract may be procured through Shopping procedures. For Shopping, contracts will be awarded following evaluation of bids received in writing on the basis of written solicitation issued to several qualified suppliers (at least three). The award will be made to the supplier with the lowest price, only after comparing a minimum of three quotations open at the same time, provided he has the experience and resources to execute the contract successfully. For Shopping, the project procurement officer will maintain a register of suppliers that is updated at least every six months.

9. **Procurement of Goods.** The Goods to be financed by IDA would include: office and furniture, and equipment, office supplies, etc. Similar Goods that could be provided by the same vendor would be grouped in bid packages estimated to cost at least US\$1,000,000 per contract and would be procured through ICB. Contracts estimated to cost less than US\$1,000,000 equivalent may be procured through NCB. Goods estimated to cost less than US\$100,000 equivalent per contract may be procured through shopping procedures. For shopping, the project procurement officer will keep a register of suppliers updated at least every six months.

10. **Selection of Consultants.** The project will finance Consultant Services such as surveys, technical and financial audits, technical assistance, and activities under the institutional strengthening component. Specific consultant services, trainers and workshops facilitators should be included. Consultant firms will be selected through the following methods: (a) QCBS; (b) selection based on the Consultant's Qualification (CQS) for contracts which amounts are less than US\$300,000 equivalent and are relative to exceptional studies and researches which require a rare and strong expertise; (c) Least Cost Selection (LCS) for standard tasks such as insurances and, financial and technical audits costing less than US\$300,000; (d) Single Source Selection, with prior agreement of IDA, for services in accordance with the Paragraphs 3.8 to 3.11 of Consultant Guidelines. Individual Consultant (IC) will be hired in accordance with Paragraph 5.1 to 5.6 of World Bank Guidelines; Sole source may be used only with prior approval of the World Bank. Whatever the cost, any ToR needed for consultant selection must obtain prior approval of the World Bank.

11. Short lists of consultants for services estimated to cost less than US\$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, if a sufficient number of qualified individuals or firms are available. However, if foreign firms express interest, they would not be excluded from consideration.

12. **Procurement from United Nations Agencies:** There may be situations in which procurement directly from UN agencies may be the most appropriate method of procurement. In such circumstances, the project would make specific arrangement with the UN Agencies concerned through a single source selection and then they follow their own procurement procedures to purchase and deliver the goods and services needed.

13. **Procurement of consulting services other than consulting services covered by Procurement Regulations for Borrowers:** Eventually, those might include designing, editing and printing project promotion supports; providing logistic support such as car rental for field visits, travel services and logistic support for workshop and the like, LCS or shopping will be used.

⁶⁰ As a reminder, the open access principle characterizes a private infrastructure subsidized by public funds whereby the private operator provides a wholesale, transparent, non-discriminatory, fair, and effective access to the subsidized infrastructure for all market players.



14. **Training, Workshops and Conferences.** The training (including training material and support), workshops and conference attendance, will be carried out on the basis of approved annual training and workshop/conference plan. A detailed plan giving the nature of training/workshop, number of trainees/participants, duration, staff months, timing and estimated cost will be submitted to IDA for review and approval prior to initiating the process. The appropriate methods of selection will be derived from the detailed schedule. After the training, the beneficiaries will be requested to submit a brief report indicating which skills have been acquired and how these skills will contribute to enhance his/her performance and contribute to the attainment of the project objective.
15. **Operational Costs.** Operating costs financed by the project are incremental expenses, including office supplies, vehicles operation and maintenance, maintenance of equipment, communication costs, supervision costs (i.e. transport, accommodation and per diem), and salaries of locally contracted staff. They will be procured using the procurement procedures specified in the Project Financial and Accounting Manual.
16. **Assessment of the capacity of the agency to implement procurement.** The project will be implemented by the MICENUP, in coordination with the MINADER. The MICENUP will benefit from the help of the MINADER, which has extensive experience in managing World Bank-funded operations. A decision has been taken to entrust the PIU (MICENUP) with the responsibility of the project fiduciary management (procurement and FM).
17. **Procurement Capacity Assessment of the PIU.** The project will be implemented by the MICENUP, in coordination with the MINADER. The PIU will be anchored at the MICENUP and headed by the Coordinator for the National e-Agriculture Program. A focal technical team will be established at the MINADER to oversee the implementation of Component 2 under the coordination of the PIU. The PIU has been entrusted the fiduciary management of the project (procurement and FM). The assessment conclusions are the following: (i) the PIU has no experience in World Bank procurement procedures; (ii) has no manual of procedures in accordance with World Bank requirements; and (iii) no procurement specialist with knowledge of World Bank procedures.
18. **Turnaround times.** The information available to us indicate that some of the contracts have not been executed within the deadline. These delays are due in particular to: (a) the low capacity of contractors, and (b) the poor quality of ToR and technical specifications.
19. **Mitigation measures.** To mitigate above listed turnaround times, the following provisions shall be taken: (i) Set realistic timeframes; (ii) Ensure the existence of effective capacity within the selected contractors (or public agencies in certain circumstances); (iii) Recruit consultants for the elaboration of ToR and technical specifications where need be; (iv) Recruit two procurement specialist and a procurement assistant; and (v) Elaborate a Procurement manual acceptable to the World Bank.
20. **Procurement team.** The PIU has no procurement specialist with World Bank experience. The PIU has not received training on the New Procurement Framework. The mitigation measures are: (i) Recruitment of another procurement specialist fully dedicated to the PIU; (ii) Updated the procedure manual to take into-account the PIU's procurement arrangement; and (iii) Even if they have received prior training on the NPF, the PIU members are invited to act urgently to revisit and reinforce their knowledge on the Procurement Regulation for Borrowers.
21. The PIU will be responsible for the coordination of all procurement activities, including the following: (a) preparation and update of the procurement plans; (b) preparation, finalization and launch of the requests for proposals and bidding documents; (c) drafting of minutes of bids opening /proposal and preparation of the evaluation reports; (d) submission of procurement documents (terms of references, RFP, bidding documents, evaluation reports, contracts, etc.) to the World Bank when prior review is required; (e) preparation of the



contracts, and overseeing the payments to contractors; and (f) drafting of procurement progress report and coordination of the activities. Each beneficiary entity will be involved in the implementation as per the procurement manual will describe.

22. Regard to the new provisions of the Decree n°2015-475, and the new World Bank procurement guidelines, the project manual of procedures should be developed and submitted for the World Bank’s no objection. To minimize the delay associated with the drafting of the appraisal reports, competent Firms/Individual Consultants should be hired to evaluate the proposals where necessary.

23. **Frequency of procurement reviews and supervision.** The World Bank’s prior and post reviews will be carried out on the basis of thresholds indicated in the following tables. The IDA will conduct six-monthly supervision missions and annual Post Procurement Reviews (PPR); with the ratio of post review at least one to five contracts. The IDA may also conduct an Independent Procurement Review at any time until two years after the closing date of the project.

24. **Country Overall Procurement Risk Assessment:**

High	
Average	X
Low	

Goods, Works and non-consultant services:

25. **Prior Review Thresholds:** Contracts will be subject to prior review by the World Bank in accordance with the provisions of Annex 1 of the Procurement Directives of January 2011, revised in July 2014: new World Bank review thresholds developed in December 2012 and proposed to the Government on December 05, 2012, revised in July 2016 and related to the level of risk of the project.

Expenditure Category	Procurement Methods	Contract Amount in US\$	Contracts submitted for Prior Review by IDA
1. Works (including turnkey, Supply and installation of facilities and PPP)	ICB	≥ 10,000,000	All contracts of US\$15.000.000 or more
	NCB	< 10,000,000	
	Shopping	< 200,000	
	Direct Contracting (*)	Pas de seuil	Contrats ≥ 100,000
2. Goods, Information Systems and Services other than Consulting Services	ICB	≥ 1,000,000	All contracts of US\$4.000.000 EU or more
	NCB	< 1,000,000	
	Local shopping – at least 3 vendors	< 100,000	
	Local shopping – at least 3 vendors for vehicles and gasoline	< 500 000	
	Direct Contracting (*)	No threshold	Contrats ≥ 100,000
(*) Justification for Direct Contracting for contracts above the prior review threshold must be submitted with the Procurement Plan.			



26. Markets, planning and procurement method

Selection of Consultants

- a. **Screening threshold:** Contracts that will be subject to prior review by the World Bank in accordance with the provisions of Appendix 1 of the January 2011 Guidelines for the Selection and Use of Consultants revised in July 2014:

Expenditure Category	Procurement Methods	Contract threshold value	Contracts subject to prior review
		\$EU	
Consultants Firms	QCBS61, QBS62, LCS63, FBS64,	≥ 300.000	Any contract of US\$ 2,000,000 or more
	QCBS, QBS, LCS.FBS, QS ₅	< 300.000	
	Direct Contracting (*)	No threshold	Contract ≥ 100,000 And financial audit
Individual Consultant	Individual consultant (REI)	≥ 100.000	Any contract of US\$400,000 or more
	Individual consultant (3 CV)	< 100.000	
	Direct Contracting (*)	No threshold	Contract ≥ 100,000 And permanent project staff
<p>All ToRs, regardless of the value of the contract, shall be subject to prior review. (*) Evidence of any direct selection that is estimated to cost less than the Bank's prior review threshold must be submitted with the PPM.</p>			

- b. **Short list composed entirely of National Consultants:** Shortlist of consultants for the provision of services, estimated at less than US\$300,000 or equivalent per contract, may be composed entirely of National Consultants in accordance with the provisions of Section 2.7 of the Selection and Employment Guidelines for Consultants

61 QCBS: Quality and Cost Based Selection
 62 QBS: Quality-based selection
 63 LCS: Least-Cost Selection
 64 FBS: Fixed-Budget Selection
 5 QS: Consultants Qualification-based Selection
 IC: Individual Consultant: REI (Request for Expression of Interest)



ANNEX 6: GENDER TAG - RESULTS CHAIN

COUNTRY: Cote d'Ivoire
CI: Cote d'Ivoire E-Agriculture Project

Gender Gaps	Actions to Reduce Gender Gaps	Monitoring and Evaluation – Indicators
<p>Analysis on The Agricultural Productivity Gap:</p> <p>There are gender gaps in agricultural productivity due to women’s unequal access to equipment, financing, and commercial markets and networks.⁶⁵ Women also tend to lack access to productive assets such as land, fertilizer, labor, knowledge and information.⁶⁶ For example, women controlled only 7 percent of the total cultivated area in 2016 and they face constraints with respect to property rights on the land they farm (10 percent of women hold a land title versus 25 percent of men). And, in Côte D’Ivoire, WBG research shows that fertilizer was used on 8 percent of land cultivated by women versus 17 percent for men.</p> <p>The project will also adapt some dimensions of the Women’s Empowerment in Agriculture Index (WEAI) which is composed of two sub-indexes: one measures the five domains of empowerment for women, and the other measures</p>	<p>Closing the Agricultural Productivity Gap:</p> <p><i>Information and Skills:</i> Boost access to information and skills through order to improve the productivity of women farmers. Specifically, improve the delivery of agricultural services in rural areas, including through increase the numbers of female extension workers as a way to target women smallholders.</p> <p>Also, build capacity on climate-smart agricultural production and management through the delivery of training, inputs and marketing support to smallholders, with a focus on women farmers to help them become more resilient to climate impacts.</p> <p>Use digital tools and a trainer-of-trainer-model to train women farmers (so that they can also train others) to provide face-to-face or virtual advisory services/.</p> <p><i>Networks and Leadership:</i> Support the establishment of cooperatives and/or strengthening of</p>	<p>Measuring the Reduced Agricultural Productivity Gap:</p> <ul style="list-style-type: none"> -No. of farmers trained (M/F) -No. of farmers applying training knowledge on climate-smart agricultural production and other relevant skills as a result of training (M/F) -No. of cooperatives/producer organizations established (share of which are focused on women farmers or value chains in which women predominate) -No. of farmers who are members of a newly established cooperative (share of women farmers) -Share of women farmers in leadership roles -The share of entrepreneurs participating in and using virtual networks to build community and exchange relevant information (M/F).

⁶⁵ <http://www.worldbank.org/en/country/cotedivoire/publication/are-women-the-key-to-unlocking-economic-emergence-in-cote-divoire>

⁶⁶ World Bank. 2015. *The cost of the gender gap in agricultural productivity in Malawi, Tanzania, and Uganda (English)*. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/847131467987832287/The-cost-of-the-gender-gap-in-agricultural-productivity-in-Malawi-Tanzania-and-Uganda>



<p>gender parity in empowerment within the household to monitor women’s empowerment in this project.</p>	<p>existing groups for women farmers as a way to boost market and network access—which is a key driver of the gender gap in agricultural productivity.⁶⁷ These activities involve targeting and enrolling of farmers into producer organizations and will facilitate the consolidation of formal structures, if desired by smallholders.</p> <p>Establishment of virtual networks of women entrepreneurs in various aspects of the agricultural value chain, agro-processing and strengthening market linkages. Activities designed to promote women’s leadership will also be integrated in line with the WEAI.</p>	<p>Also, feedback from women entrepreneurs on the impact and value of these networks.</p>
<p>Access to the Internet and Other Digital Technologies:</p> <p>In line with IDA18 targets on gender equality, which aims to support better access to the internet and better access to ICT services for women, the project will extend digital connectivity in target and remote rural areas. The communities of target have little or no Internet connectivity at affordable prices. While there is no data, the project assumes that, like other contexts, female-headed households in low-income rural communities are particularly disadvantaged. Therefore, the project will also make an effort to target female-headed households to ensure their equitable access and usage.</p> <p>The activities will use the internet to provide real-time agricultural advisory services as a way to</p>	<p>Access to the Internet and other Digital Technologies:</p> <p>In addition to new ICT infrastructure, provide subsidies or other measures to ensure affordability and equitable access to the Internet for female-headed households.</p> <p>Provided targeted mobile services (voice and SMS) for women smallholders.</p> <p>Provide training in digital literacy.</p>	<p>Measuring Increased to the Internet and other Digital Technologies:</p> <ul style="list-style-type: none"> -No. of HHs connected to the internet for the first time (share that are female-headed) -No. of HH with improved internet access (share that are female-headed) -No. of beneficiaries owning mobile phones (M/F) -No. of beneficiaries accessing internet through mobile phones (M/F) -No. of beneficiaries trained in digital literacy (M/F) -Increase in digital literacy (M/F)

⁶⁷https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Economic_Empowerment_of_African_Women_through_Equitable_Participation_in__Agricultural_Value_Chains.pdf



<p>improve productivity. Digital tools and applications, include data-driven agronomy, location-based services, the Internet of Things and Artificial Intelligence.</p> <p>Although no data exists, the project assumes gender differences in digital literacy may track gender gaps in literacy, which are in favor of men (female adult literacy rate: 37 percent versus male adult literacy rate: 51 percent).</p>		
<p>Analysis of Gaps in Economic Opportunity: There is a gender gap in access to economic opportunities. For example, there is an 18-percentage point difference in labor force participation in favor of men (male labor force participation- 67 percent; female labor force participation-49 percent). In the labor market, women are on average paid half what men are paid.⁶⁸ Wage inequality between men and women is explained by the differences in education levels, but also by other discrimination. For example, an Ivoirien woman with the same education as a man is less likely to find formal employment and, if she does, is paid 30 percent less on average.⁶⁹</p> <p>With respect to entrepreneurship, only 24 percent of firms have female participation in ownership according to the Enterprise Survey and only 13 percent of firms have majority female ownership. The</p>	<p>Enabling Women’s Economic Opportunities: Support the establishment of women-owned agribusinesses to help move women up the agricultural value chain through business development training using digital platforms to help improve financial literacy, business planning, negotiation and marketing, among other skills. While the project will make efforts to switch women into cash crops, where feasible, it is also critical to support women in the value chains in which they predominate and help to improve their productivity and economic opportunities.</p> <p>Provide on-site childcare and flexibility working hours for agribusiness training programs that target women smallholders.</p>	<p>Measuring Improved Economic Opportunities:</p> <ul style="list-style-type: none"> -No. of agribusinesses established (share that are women-owned) -Proportion of small-business owners using the Internet and by type of activity (sex disaggregated)

⁶⁸ <http://www.worldbank.org/en/country/cotedivoire/publication/are-women-the-key-to-unlocking-economic-emergence-in-cote-divoire>

⁶⁹ <http://www.worldbank.org/en/country/cotedivoire/publication/are-women-the-key-to-unlocking-economic-emergence-in-cote-divoire>



<p>project also assumes that the share of women entrepreneurs in target communities using mobile phones and internet for business is very low.</p> <p>Women’s burden of care is also a key constraint in their access to economic opportunities. While specific data is lacking for these communities in Cote D’Ivoire, this is a well-known challenge in the AFR and globally. According to the African Development Bank, women farmers are burdened with a disproportionate share of unremunerated care and domestic work. And, according to UN Women, women spend one to four hours a day less than men on market-related or wage-earning activities because of their domestic responsibilities. This is particularly true on rural smallholder farms where the opportunity for external waged labour is lower. As a result, women usually have less time to spend on farming activities and are therefore less productive.⁷⁰</p> <p>The project also supports the IDA 18 commitment on skills development, which promotes women’s participation in and improvement in the productivity of their economic activity, and/or consider how to reduce occupational segregation.</p>		
<p>Online Safety: Women are often more at risk than men for online violence and harassment– using the internet and</p>	<p>Online Safety: Strengthening legislation that defines and penalizes ICT-based and online harassment of women and girls.</p>	<p>Online Safety: -Number of awareness raising events aimed at women focusing on the</p>

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<p>mobile devices – e.g. chat, text, messages for exploitation, threats of violence etc.</p>	<p>Provide digital skills training that highlights the risks, rights and responsibilities with respect to online safety.</p> <p>Provide easy to access user-friendly information in local languages on women’s rights, reproductive and sexual health rights, types of services available to victims of gender-based violence on Web-powered ICT platforms, which is regularly updated, use various communication media appropriate to local contexts including: SMS, IVR, telephone hotlines, bill boards, posters, websites, social media, TV, community radio broadcasts, etc.</p>	<p>positive and negative aspects of internet, number of women participants in these events;</p> <p>-Increase in number of women who are aware of the risks related to internet use.</p>
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