

Data Centre in The Gambia



WHY THE GAMBIA?

Located in the same time zone as the UK and only around a 6 hour flight from Europe, The Gambia is an ideal location to operate a data centre from to service the European market. The ACE cable connection in Banjul provides excellent connectivity to the rest of the world and an abundance of bandwidth.

This document outlines:

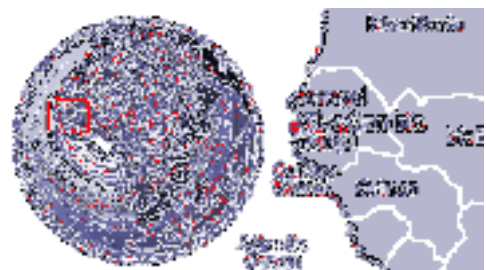
- 1. The market opportunity for a Data Centre**
- 2. The favourable conditions available to investors**
- 3. The support investors can expect to receive**
- 4. The project risk and sustainability factors that need to be considered**

**The best Institutions
quality in West Africa¹**

**Stable political and
regulatory
environment²**

**Only official English
speaking country in the
region**

**West Africa's most
efficient labour
market¹**




Source: British Foreign & Commonwealth
Office website

¹ World Economic Forum.

² Aon political risk map.

ECONOMIC INDICATORS

GDP⁴	US\$807mn in 2014	
GDP growth⁴	1.5% in 2014	
Country risk	2 nd lower risk score among West African countries after Ghana	
CPI Inflation (2014)⁴	5.4%	
Exports / Imports value (2013)⁴	Exports: \$106mn Imports: \$350mn	
Labour force (2013)⁴	774,000	
FDI stock and inflows (2013)⁴	\$754mn stock / \$25mn inflows	
Currency exchange Rates 2015	GMD/USD: 0.0239 (B) / 0.0257 (S)	
Buy (B) and Sell (S)⁴	GMD/GBP: 0.0162 (B) / 0.0107 (S) GMD/EUR: 0.0214 (B) / 0.0230 (S)	

COMPETITIVE OPERATIONAL COSTS

The Gambia has by far the most efficient labour market in West Africa³ and average daily wages are competitive when compared to major African competitors.

Labour cost unit US\$ per year), including social security								
	The Gambia	Egypt	Kenya	Tunisia	Morocco	South Africa	Senegal	Nigeria
Unskilled	1,165	3,001	3,165	4,500	6,530	7,399	1,617	5,200
Semi-skilled	1,747	6,748	7,097	8,114	12,705	15,685	4,248	10,400
Skilled	3,106	14,052	14,780	16,647	26,759	33,384	9,716	26,000
Highly skilled	15,530	53,905	56,696	43,843	81,822	79,997	46,637	93,668

³ World Bank – World development Indicators.
Gambia Bureau of Statistics (GBOS)

Social security rate	
South Africa	1%
Kenya	5%
Nigeria	7.50%
The Gambia	10%
Morocco	20.10%
Egypt	26%
Tunisia	26.57%

The Gambia's social security rate is situated in the average.

Utility costs in the Gambia are higher compared to costs applied in the more developed economies. However, Gambia's utility costs are inferior to other non-oil producer low income economies (Senegal and Kenya), with the exception of electricity.

Utility cost (US\$)								
	The Gambia	Egypt	Kenya	Tunisia	Morocco	South Africa	Senegal	Nigeria
Electricity per kWh	0.27	0.04	0.06	0.09	0.15	0.22	0.25	0.10
Telecoms per min	0.07	0.96	0.06	0.68	0.44	0.15	0.07	0.09
Water per m ³	0.63	0.07	1.26	0.30	0.75	1.08	1.27	0.24
Industrial gas per m ³	0.71	0.09	1.90	0.01	0.36	0.47	1.60	0.22

A comparative project profile

Cost factors (sector profile properties)		
Utility usage	Electricity (kWh)	3,723,000
	Telecoms (mins)	220,800
Labour head count	Unskilled	2
	Semi-skilled	2
	Skilled	23
	Highly skilled	3

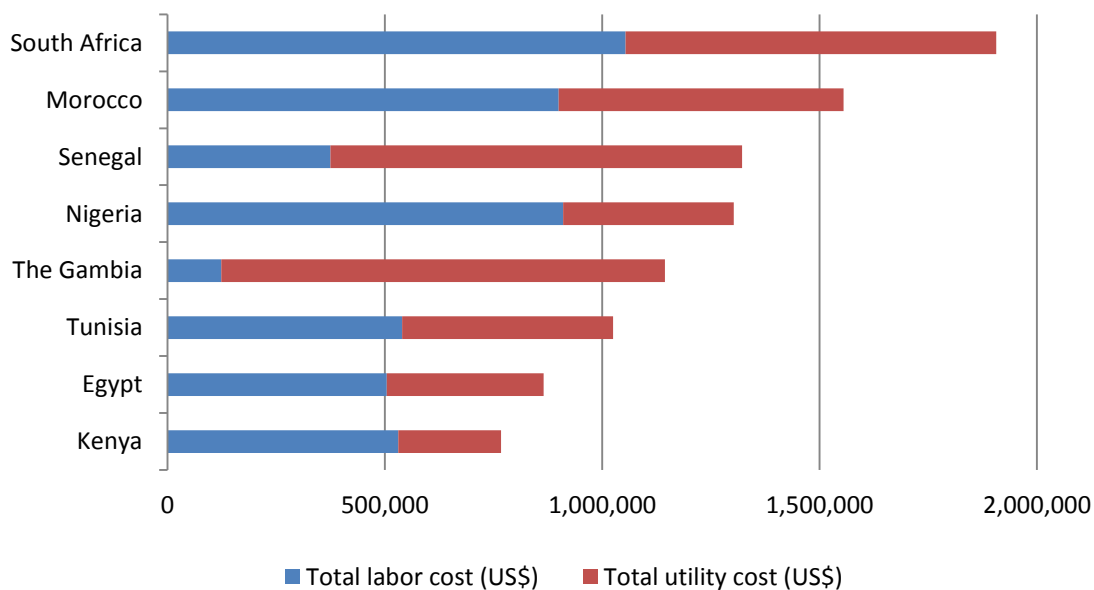
Based on the sector profile properties (utility usage and Labour head count) and applying labour and utility costs established in the tables above, the Gambia appears as a high middle-rank location among the identified main Gambian competitors and best ICT performers.

Labour cost overview (US\$ per year), including social security								
	The Gambia	Egypt	Kenya	Tunisia	Morocco	South Africa	Senegal	Nigeria
Unskilled	2,330	6,002	6,331	9,000	13,059	14,799	3,234	2,330
Semi-skilled	3,494	13,496	14,195	16,228	25,409	31,370	8,496	3,494
Skilled	71,438	323,192	339,933	382,887	615,456	767,830	223,468	71,438
Highly skilled	46,590	161,714	170,089	131,529	245,465	239,990	139,911	46,590
TOTAL	123,852	504,404	530,547	539,645	899,390	1,053,989	375,109	123,852

Utility cost overview (US\$ per year)								
	The Gambia	Egypt	Kenya	Tunisia	Morocco	South Africa	Senegal	Nigeria
Electricity	1,005,210	148,920	223,380	335,070	558,450	819,060	930,750	372,300
Telecoms	15,456	211,968	13,248	150,144	97,152	33,120	15,456	19,872
Total	1,020,666	360,888	236,628	485,214	655,602	852,180	946,206	392,172

Very low labour cost in the Gambia is more than offsetting the gap generated by high utility cost in the country. Overall, the Gambia is 4th most attractive market for the establishment of a data centre. In our example, operating a data centre in the Gambia would cost 87% of what it would be if operated in Senegal.

Overall operational costs



DATA CENTRES IN THE GAMBIA

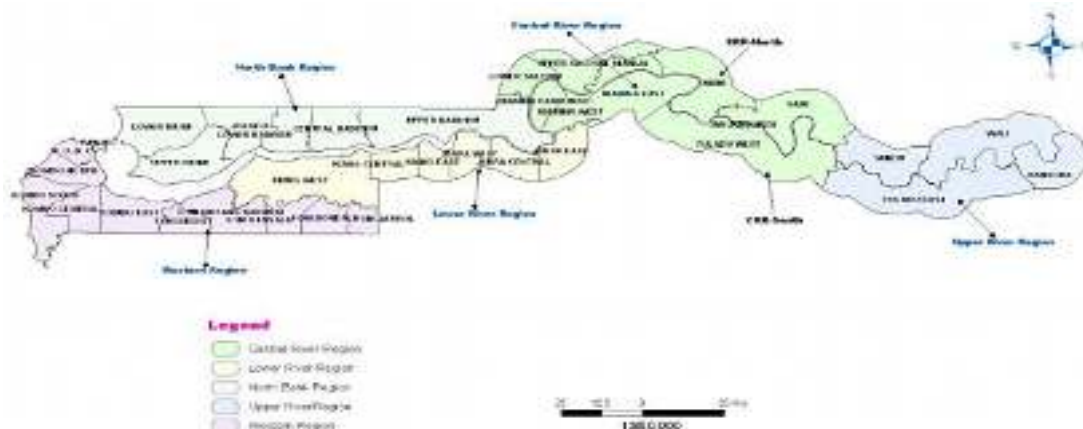
The Gambia's Data Centre industry is in its infancy but recent and ongoing improvements to ICT connectivity and energy reliability are opening the country up as an excellent location for foreign investment. Its cost-competitive, IT savvy workforce of native English speakers as well as its location in the GMT time zone mean it is an ideal country from which to service the UK, Irish and North American markets.

KEY FACTS:

- 5.12Tbit/s ACE cable connects into Banjul, providing excellent connectivity to the rest of the world.
- The Gambia has an abundance of well-educated native English speakers.
- Number of secure internet servers/million population is 3.9. This has increased from 2.8 in 2013 as the country places a major emphasis on developing its ICT offer.⁴
- The Gambia is ranked as the 10th best African country for its ICT environment, ahead of much larger including Nigeria, Senegal, Mali and Algeria.⁵

LOCATIONS

The population of The Gambia is becoming increasingly urbanised and concentrated in and around the major cities of the Western region. The urban centres of Banjul, Serrekunda, Bakau etc. have excellent ICT connectivity and an abundant talent pool.



⁴ International Telecommunication Union

⁵ World Economic Forum Global Information Technology Report 2014

INFRASTRUCTURE

- The ACE (Africa Coast to Europe) submarine communications cable runs from France to South Africa along the West coast of Africa. It is managed by a consortium of 17 operators, headed by Orange. The 1st phase of the 17,000km fibre optic cable was put into service in December 2012 with the official inauguration ceremony taking place in Banjul.
- Banjul Airport has undergone a US\$21 million modernisation and the Government is continuing to upgrade the infrastructure



Other new infrastructure / upgrades in development:

- The Trans-Gambia bridge (completion due 2017)
- Improved cross-border trunk roads with Senegal
- Ports Expansion Programme underway – Gambia Ports Authority planning to build a second port on the Atlantic coast
- Ongoing infrastructure upgrades at Banjul International Airport

AVAILABILITY OF INCENTIVES

ICT is one of the priority sectors for investment and a host of incentives are available to investors in data centres. These incentives include:

- **Tax Holiday:** tax breaks on corporate and turnover tax, withholding tax on dividends and for a period of 5-8 years, depending on the project's location.
- **Import Tax Incentives:** Exemption from payment of import tax on direct inputs for the project (e.g. IT hardware).
- **Export Incentives:** Exemptions / reductions on corporate and turnover tax, exemption from Excise Duty and Sales Tax on goods produced or imported



within the Export Processing Zone (EPZ) for processing and export – depending on proportion of goods exported.

GAMBIAN OPERATING COSTS

The Gambia has by far the most efficient labour market in West Africa⁶ and offers competitive costs in key areas both regionally and globally.

Competitive rates for key utilities such as energy and water are offered to operators in the ICT sector.

INDICATIVE KEY COSTS:

- Average daily wages for unskilled labour hover between US\$2.5-4 a day⁷
- Average wages for ICT specialists range from around US\$70-170 per month.⁸
- Electricity: 9.70 GMD / kWh (commercial tariff)⁹
- Water: 22.48 GMD / cubic metre (commercial tariff)⁹
- Telecoms: From 0.73 GMD / min⁹
- Key taxes:
 - Corporate: 31% (exemption possible)
 - Income: up to 35%
 - VAT: 15%

GOVERNMENT POLICY POSITION

The Gambian Government recognizes the importance of private sector participation in the economy, both as an engine of growth and as a source of knowledge transfer. The ICT sector has been targeted as an industry with the potential for growth and the government are taking proactive steps toward stimulating investor interest and growth in the sector. This includes increased liberalisation of ICT services and the development of modern ICT legislation.

In that framework, the ICT sector has been earmarked and designated by the Gambia Government as an Investment Priority Sector for which qualifying investors

⁶ World Economic Forum Global Competitiveness Report 2014-15

⁷ Program for Accelerated Growth and Employment 2012-15

⁸ Interview with Lasting Solutions

⁹ www.pura.gm



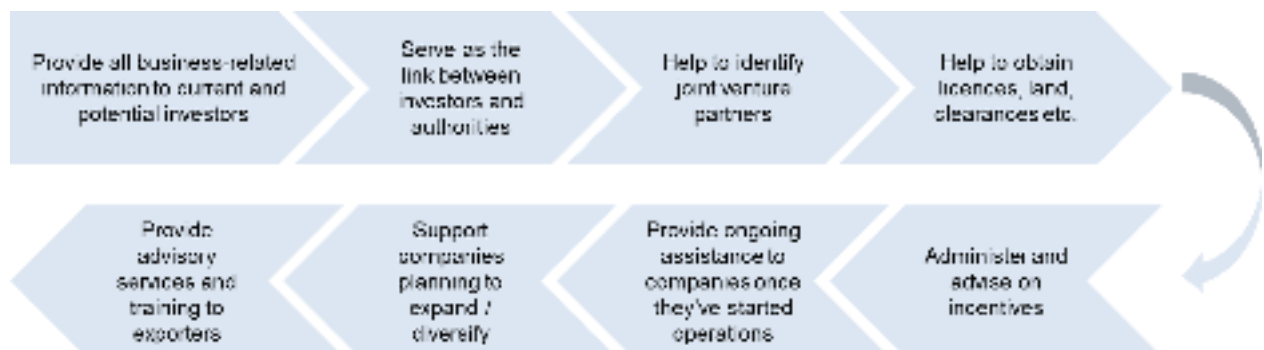
can be awarded Special Investment Certificates with the following attendant benefits ranging 5-8 years:

- Corporate tax holidays/tax breaks
- Withholding Taxes on Dividends
- Depreciation or Capital Allowances
- Import VAT waivers on qualifying items

The Gambia Investment and Export Promotion Agency (GIEPA) has identified ICT as one of the core activities to be pursued at the July 22nd Business Park.

A HELPING HAND – EVERY STEP OF THE WAY

- The Gambia Investment and Export Promotion Agency (GIEPA) is the Government Agency mandated to support companies with their investment, business and export development as well as support to MSMEs
- From the initial provision of information right through to supporting the establishment, growth and development of an investment project, GIEPA is your supporting partner for doing business in The Gambia – every step of the way
- Here are just a few of the ways in which GIEPA can support your business:



FOUR GOOD REASONS TO CHOOSE THE GAMBIA

1

STRONG GOVERNMENT AMBITION AND SUPPORT FOR THE SECTOR:

- The Government has ambitions to turn The Gambia into an ICT hub for the region.
- The sector has been targeted for growth and a range of excellent incentives are now available for investors.

2

COMPETITIVE INVESTMENT ENVIRONMENT:

- The best Institutions quality in West Africa (WEF 2014)
- West Africa's most efficient labour market (WEF 2014)
- 5th lowest political risk level in the sub-Saharan Africa (AON)

3

ENGLISH SPEAKING COUNTRY:

- Foreign investors find it easier to conduct business in Gambia than in other West African countries. English is the country's official language and the most commonly spoken language in the business arena.

4

ATTRACTIVE INCENTIVES, COMPETITIVE COSTS:

- Competitive costs
- Strong political support for telecommunications industry
- Comprehensive guidance and support from GIEPA

PROJECT PRE-FEASIBILITY STUDY

The business plan/pre-feasibility study below is for the set up and operation of a data centre. The targeted workforce⁸ and break down of job titles can be seen on the table below. Over the 5 year timeframe of the study it is expected that the workforce will grow in accordance with the development of the turnover.

Job Title	Head Count
Database Analyst	10
Engineering Technician	4
Technology Engineering Specialist	2
Computer Operator	2
Data Entry Clerk	2
Network Engineer	2
Software Programmer	2
Systems Analyst	2
MIS Manager	1
Senior Manager	1
Systems Designer	1
Systems Manager	1

The projected costs and sales for a Gambian data centre company are based on similar companies in Senegal. The information was collected through interviews and internet research.

Underlying assumptions to the project

Base case scenario		
Related to constant price evaluation		
Inflation	The model assumes no inflation. Any variation in operating costs due to inflation rate is expected to be reproduced on the company's sales price. However, it is important to note that variations in inflation rate and its level remain an important indicator of The Gambia economic stability.	
Related to costs		
Facilities Acquisition & Installation	Based on market price.	It is expected that the company will acquire land and facilities (office building and data building) needed because of relatively low cost of real estate and for security issues related to data centre activity. Installation of security, firewalls are included in the purchased price of the facilities.
Marketing	Based on revenues:	The share of revenue dedicated to marketing activities can

	Public Relation 5% Advertising 3%.	vary depending on the company's strategy to enter the market.
IT equipment	Market price IT equipment renewed every three years	It is planned than every staff will have a computer One third of the existing IT equipment has to be renewed every three years (incl. computers, printers, software) because of technology progress
Predictive maintenance	15% of servers and facilities	This rate can obviously vary according to company's business plan strategy/policy. Software upgrade and IT equipment renewal/repair costs are captured in the applied rate.
Supplies	5% of IT equipment value	Incorporate office supplies (excl. IT equipment)
Training	In house.	An annual training will be organised to develop employees' skills (1 week). The annual training will be delivered by an internal highly skilled staff.
Taxes	Corporate tax rate: 31%	For the sake of visibility, overall cost of taxes has been evaluated at 31%, which is the corporate tax rate. Social security rate have been included in the labour costs.
Utilities	Based on fDi Benchmark (Financial Times) Data Centre project profile.	Utilities consumption per staff is based on Data Centre fDi Benchmark profile. Details of headcount and utilities consumption are shown in the section "A comparative project profile"
Related to sales		
Sales projections	Sales projections are based on data centre market growth and demand in Europe, the US and Africa. The expected sales by segment are more specifically based on opportunities identified by BPO companies operating in the English speaking Africa, notably Nigeria, Ghana, Ghana, South Africa.	

Market Opportunities

Based on the regional market growth rate in data centre services, it is estimated that the company's turnover compound annual growth rate (CAGR) will be of 52%¹⁰.

As points of comparison, the data centre market in Nigeria, Ghana, and Senegal is expected to reach \$67.5 million in 2017, up from \$25 million in 2011 (CAGR: 15%)¹¹:

- Out of this \$25 million of revenues, 84% came from Nigeria.
- The healthy growth rates will be fuelled by co-location and cloud-based services (supported by the landing of several undersea cables in Nigeria and Ghana) such as remote backup and virtual desktop.

¹⁰ Frost and Sullivan are forecasting a CARG of 16.3% between 2011-2017 in Senegal and 15% in the region (incl. Senegal, Ghana, Nigeria) over the same period.

¹¹ "West African Data Centre Market", Frost and Sullivan, February 2013



- Sonatel Business Services is the only data centre provider in Senegal. This situation is likely to change in the medium to long term as OVH is likely to deploy a data centre facility in the country.
- In 2011, there were more than 27 data centre providers in the three countries, mostly Internet Service Providers (ISPs).

Main Data centres' clients in Africa have been identified as financial institutions, telecom companies, public organisations (ministries, hospitals, universities...), international organisations (bilateral and multilateral), NGOs...

Income Statement	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue From Domestic Market					
Co-location	61,946	74,063	88,552	105,874	126,585
Hosting	104,330	124,738	149,140	178,314	213,195
Cloud Solution	104,330	124,738	149,140	178,314	213,195
Disaster recovery	55,751	66,657	79,696	95,287	113,926
Revenue From Foreign Sub-Region Markets					
Co-location	151,213	271,556	487,676	875,796	1,572,804
Hosting	318,343	571,697	1,026,686	1,843,781	3,311,166
Cloud Solution	286,508	514,528	924,018	1,659,403	2,980,050
Disaster recovery	157,580	282,990	508,210	912,672	1,639,027
Total Revenues	1,239,999	2,030,969	3,413,117	5,849,441	10,169,950
Cost of Goods Sold					
Total Business Development Salaries & Benefits	-	-	-	-	-
Workstation (Computer, Mouse, Desk...)	(8,190)	(1,755)	(1,755)	(4,680)	(1,170)
Printer	(235)	(235)	(235)	(235)	(235)
Software	(5,000)	(5,000)	(5,000)	(5,000)	(5,000)
Servers	(4,236,366)	(1,630,085)	(2,257,315)	(3,125,893)	(4,328,687)
Utilities - Electricity	(121,618)	(147,679)	(173,740)	(243,236)	(260,610)
Utilities - Telecom	(7,213)	(8,758)	(10,304)	(14,426)	(15,456)
Other Costs of Goods Sold	-	-	-	-	-
Total Cost of Goods Sold	(4,378,622)	(1,793,512)	(2,448,349)	(3,393,470)	(4,611,158)
Gross Income	(3,138,623)	237,457	964,768	2,455,971	5,558,792

Sales & Marketing Expenses

Total Salesperson Salaries & Benefits	-	-	-	-	-
Total Marketing Salaries & Benefits	-	-	-	-	-
Public Relations	(5,167)	(8,462)	(14,221)	(24,373)	(42,375)
Advertising	(2,067)	(3,385)	(5,689)	(9,749)	(16,950)
Other Sales & Marketing Expenses	-	-	-	-	-
Total Sales & Marketing Expenses	(7,233)	(11,847)	(19,910)	(34,122)	(59,325)

General & Administrative Expenses

Total Highly Skilled Labour Salaries & Benefits	(53,579)	(53,579)	(53,579)	(53,579)	(53,579)
Total Skilled Labour Salaries & Benefits	(139,770)	(186,360)	(232,950)	(326,130)	(357,190)
Total Semi-Skilled Labour Salaries & Benefits	(3,494)	(3,494)	(3,494)	(6,988)	(6,988)
Total Other Salaries & Benefits	-	-	-	-	-
Facilities Acquisition	(950,000)	-	-	-	-
Training	(597)	(597)	(597)	(1,195)	-
Predictive Maintenance	(730,227)	(956,375)	(1,269,542)	(1,703,209)	(2,303,744)
Other	-	-	-	-	-
Total General & Administrative Expenses	(1,877,667)	(1,200,405)	(1,560,161)	(2,091,100)	(2,721,501)

Depreciation Expense	(19,750)	(29,400)	(38,500)	(49,100)	(57,900)
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Total Operating Expenses	(1,904,651)	(1,241,653)	(1,618,571)	(2,174,322)	(2,838,725)
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Operating Income	(5,043,273)	(1,004,196)	(653,803)	281,649	2,720,067
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EBITDA	(5,023,523)	(974,796)	(615,303)	330,749	2,777,967
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Interest Expense	(136,975)	(220,653)	(297,973)	(367,355)	(315,929)
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Interest Income	56,284	90,667	122,439	150,948	129,817
Pre-Tax Profit (Loss)	(5,123,964)	(1,134,181)	(829,337)	65,243	2,533,955
Add (Subtract) to Tax Loss Carryforward	5,123,964	1,134,181	829,337	(65,243)	(2,533,955)
Taxable Income (Loss)	-	-	-	-	-
Tax Expense	-	-	-	-	-
Net Income	(5,123,964)	(1,134,181)	(829,337)	65,243	2,533,955

Project Valuation

Weighted Average Cost of Capital	15.5%
Terminal Value Growth	3.0%

	2016	2017	2018	2019	2020
Operating Income	(5,043,273)	(1,004,196)	(653,803)	281,649	2,720,067
Tax Expense	-	-	-	-	-
Tax-Effectuated EBIT (Earnings Before Interest)	(5,043,273)	(1,004,196)	(653,803)	281,649	2,720,067
Plus: Depreciation Expense	19,750	29,400	38,500	49,100	57,900
Capital Expenditures	(68,000)	(45,500)	(45,500)	(53,000)	(44,000)
Changes in Working Capital	(73,326)	(41,949)	(73,604)	(130,113)	(231,191)
Changes in Other Assets & Liabilities	-	-	-	-	-
Unlevered Free Cash Flow	(5,164,849)	(1,062,245)	(734,407)	147,636	2,502,776
Present Value of Unlevered Free Cash Flow	(4,471,973)	(796,357)	(476,718)	82,977	1,217,950
Terminal Value					20,633,195
Present Value of Terminal Value					10,040,934
NPV based on terminal year 5	5,596,814				

Sensitivity analysis

A sensitivity analysis has been conducted to test the viability of the project and determine the risk management. The results show that the project profitability is relatively robust and could withstand quite large variation in some variables (everything else remaining equal) without compromising the sustainability of the project.

An increase of the income tax rate would have no effect on the profitability because of substantial investments at the beginning of the project are generating tax profit loss to carry forward.

A discount rate of 34.2% (evaluated at 15.5% today) would make the project unprofitable.

The project profitability is relatively sensitive to sales variations; a 10.7% decrease would make the overall project unsustainable. The penetration rate and its growth is key to the success of the project. The company has to reach sub-region markets which are more mature and where the demand for data centre services is already high, it includes Nigeria, Ghana and Senegal.

Costs have to be maintained at a reasonable level to keep the project profitable. Power cost and servers price are the main costs to control. Second hand or “low cost” servers and low PUE¹² should be a priority, as well as alternative energy sources - other than the national grid.

	NPV=0
Tax rate¹³ (Level)	no effect
Discount Rate (Level)	23.6%
Sales Revenues (% change)	-10.7%
Operating Costs + COGS (% change)	+11.9%

¹² **PUE** is the ratio of total amount of energy used by a computer **data centre** facility to the energy delivered to computing equipment.

¹³ It is Income tax rate, other taxes are not taken into account here.

PROJECT RISK AND SUSTAINABILITY FACTORS

	Issues	Impact rating	Description
Socio-political	Tertiary education	medium	The Gambia has a lack of tertiary level ICT and business education. The majority of ICT workers in the country at present were educated abroad. Any business investing in the country should expect to provide a large amount of training internally.
	Low internet penetration	medium	Internet penetration within the Gambia is currently very low. This will have an impact on both the market size and also the ability for ICT employees to work remotely.
Macro-economics	Access to bank loans	medium	Bank loans in The Gambia are hard to obtain and interest rates are often too high to be a feasible option for businesses.
	Utility Costs	high	The price of electricity in the Gambia is among the highest anywhere in the world. The supply is also highly unreliable and the requirement of generators, and the fuel they burn, is a significant addition to the investment needed to operate successfully. Recent increases in fuel costs give this issue even greater importance.
	Increasing wages	low	The Gambia is currently in a position to use low labour costs as a major pull in attracting foreign investment. However, Increasing success will inevitably push up these costs and potential investors need to be certain that increasing costs can be covered.
Infrastructure	Single data cable connection	high	While the connection to the ACE cable provides The Gambia with an abundance of bandwidth to grow its ICT economy, it presents a major risk if this single access point was to ever fail. Additional connections to the wider global network would be of huge benefit to the country's ambitions within the sector.
	Poor road infrastructure	low	Many of the country's roads are in poor condition making travel throughout the country difficult and even impossible at times.
	Poor internet infrastructure	medium	Gambia's internet coverage is limited and the speeds are often slow.



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