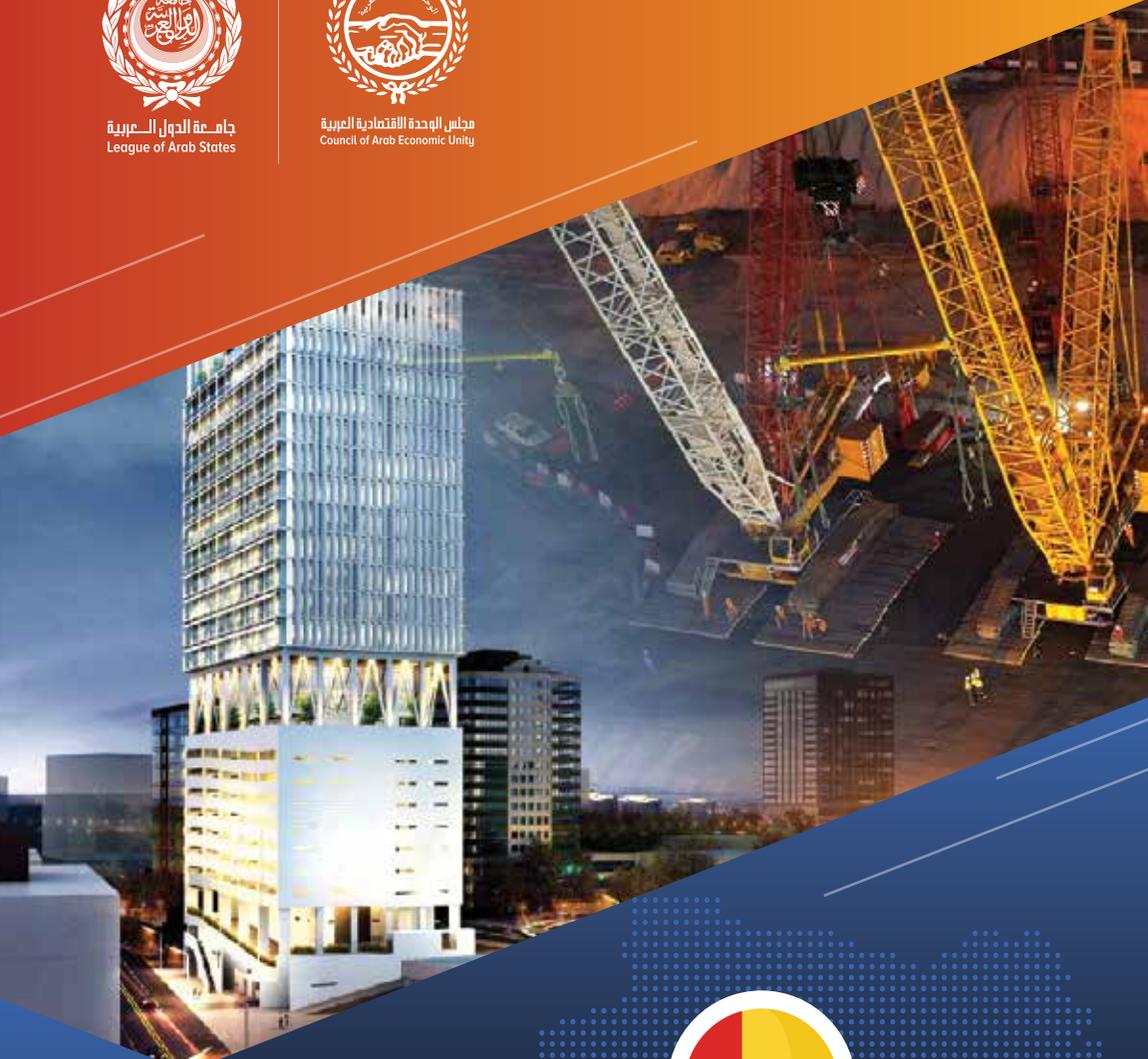




جامعة الدول العربية
League of Arab States



مجلس الوحدة الاقتصادية العربية
Council of Arab Economic Unity



GUINEA

DIGITAL ROAD MAP







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DIGITAL ROAD MAP

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PREFACE

This document is prepared to provide a digital strategy for the Government of Republic of Guinea in line with the PNDES the government has prepared. This strategy approach has been guided by Arab League Digital Strategy and applies the specific areas for Guinea to enable the Guinea to transform itself to the next level. The result of this strategy is to identify and provide details for key bankable projects which could create maximum impact in Guinea's effort to transform. This document is prepared by Arab League



Executive Summary

Executive Summary

The new digital economy has the ability to both decrease and increase the digital gap among developed and lesser developed countries. The ability of lesser developed countries to adapt and begin to flourish in the new digital economy will determine whether or not the digital gap is narrowed or broadened.

Least developed countries like Guinea have to start to create a digital foundation in order to be one of the lesser developed countries that decreases the digital gap. Developing a digital strategy will enable Guinea to create an environment in which the country will start to benefit from the creativity and innovation that the digital economy has already brought elsewhere and will continue to bring in the future.

The Guinea digital strategy will build on the work done by the European Union in financing the Guinea 2040 Vision, the African Development Bank with its Guinea - Country Strategy Paper 2018-2022 and the Government of Guinea's National Plan for Economic and Social Development (PNDES) for 2016-2020, which are the foundation of Guinea's development. The strategy will prepare the guidelines by which Guinea can benefit from the emerging technologies of the 4th Industrial Revolution and the learning from the development work done in the Arab Digital Economy Strategy.

Guinea's digital strategy will be based on six strategic pillars:

1. Create a knowledge-based society of IT savvy men and women;
2. Create a sustainable environment to create more job opportunities and entrepreneurs;

3. Introduce digital transformation to strengthen the mining and agriculture sectors;
4. Introduce digital tools to effectively manage and reduce the current adverse effects of urbanization; enabling City administrations
5. Promote a government that engages and empowers its citizens through the national government portal and on social media platforms;
6. Promote an Open and Transparent Government;

These 6 strategic pillars will identify 12 initiatives that will serve as potential bankable investment projects.

CONCLUSION

The Guinea Digital Economy Strategy will focus on education and qualifications, expansion of infrastructure, and the use and security of data.

Digitization is creating and giving rise to new services, solutions and new business models. It has the potential to become a turning point in addressing many issues in the African world including education, social welfare, job creation, infrastructure and employment among other issues.

In order for Guinea to fully benefit from the innovations and new technologies that the 4th Industrial Revolution is currently providing and will provide in the future, it must embrace technology and ensure that the government has the necessary resources to strengthen the government's infrastructure, internal capacity, relationships with the people, businesses and civil society, build trust and have effective programs and projects.



INTRODUCTION



INTRODUCTION

This digital strategy will build on the work done by the European Union in financing the Guinea 2040 Vision, the African Development Bank with its Guinea - Country Strategy Paper 2018-2022 and the Government of Guinea's National Plan for Economic and Social Development (PNDES) for 2016-2020, which are the foundation of Guinea's development. The strategy will prepare the guideline by which Guinea can benefit from the emerging technologies of the 4th Industrial Revolution and the development work done in the Arab Digital Economy Strategy.

The Government of Guinea approached the Arab Federation for Digital Economy for support in developing a digital transformation strategy based on the work done in the Arab Digital Economy Strategy. The Government of Guinea has appointed Dr. Ali Mohammed Al Khouri, who also heads the Arab Federation for Digital Economy, as a special advisor to the Government of Guinea, to benefit from his vast expertise in digital transformation and development. A Memorandum of Understanding, MoU, was signed between the Government of Guinea and the Arab League's Economic Unity Council (EUC) for the implementation of similar projects in Guinea, based on the joint Arab vision for the digital economy. It was signed by Guinean Prime Minister, Ibrahima Kassory, and Dr. Al Khouri.

Guinea Vision 2040

The Guinea Vision 2040 document, financed by the European Union, looks at the challenges and opportunities of urbanization in the country. The Vision identifies the way forward for implementing sustainable development in the country in the short, medium and long run. It lays the foundations for strategic partnerships for the country by engaging

the private sector, NGOs, and civil society. This holistic approach should increase the success rate of implementing this Vision.

Main Challenge of Vision 2040

The problems of urban congestion, flooding, pollution, and growing poverty, combined with rapid population growth, which are expected to double by 2040, will inevitably lead to a deterioration in living conditions. It will also lead to an increased exposure to natural risks and the disappearance of natural habitats – mangroves and wetlands, agricultural and forest zones. In view of this, the Greater Conakry – Vision 2040 study proposes a balanced scenario built on a threefold strategy:

- The strengthening of secondary urban polarities to ease the demographic pressure on the peninsula;
- the control of urban sprawl to avoid continuous and unchecked urban development;
- the densification of urban areas on the peninsula and the renewal of the existing urban fabric.¹

The Vision will tackle the preservation of Guinea's national resources while reducing the effects of environmental degradation by enhancing urban development management.

The Guinea Vision 2040, represents the creation of a new mode of 'governance', essential for the modernization of the economy and the balance of the social domain. This involves the redefinition of State institutions in charge of sectorial policies, with the aim of reducing State interventionism, to equally redistribute competences by decentralization, and to establish new partnerships with the private sector.²

1. <http://www.arte-charpentier.com/en/projet/greater-conakry-vision-2040/>

2. Ibid

African Development Bank's Guinea - Country Strategy Paper 2018-2022

This Country Strategy Paper proposes the operational strategy of the African Development Bank Group in Guinea for 2018-2022. It is based on the Bank's 2013-2022 Ten-Year strategy, the High 5s and the Strategy for Addressing Fragility and Building Resilience in Africa. Furthermore, it is consistent with the National Economic and Social Development Plan (PNDES) 2016 - 2020 of the Government of Guinea and seeks to:

- (1) Address the challenge of fragility in Guinea;
- (2) Stimulate structural change and catalytic investments to increase access to energy;
- (3) Build the capacity to produce, process and develop agricultural products with a view to achieving food self-sufficiency.³

The strategy has two main pillars:

- Improve access to energy;
- Develop agricultural and industrial value chains.
 - o Emphasis be laid on fragility in the next CSP;
 - o The country's debt level should be closely monitored; and
 - o Sustained policy dialogue should be maintained with Guinean authorities.

International Monetary Fund (IMF)

As noted in the IMF report titled "First Review of the Arrangement under the three-year extended Credit Facility, Financing Assurances Review, and Request for modification and for Waivers of Nonobservance of Performance Criteria—Debt Sustainability Analysis Update" of July 2018, although, the Government of Guinea is indebted, they are making strides to settle their external public debt. This is in part due to the

3.<https://www.afdb.org/en/documents/document/guinea-country-strategy-paper-2018-2022-107425>

improvement in real GDP growth of Guinea in 2016 and 2017.

The report further notes that "The Guinean authorities continue to make best efforts to discuss debt relief and normalize these arrears with the creditors, with the aim of reaching an agreement on repayment at the earliest. Creditors have so far not requested payment of these arrears".

Government of Guinea's National Plan for Economic and Social Development (PNDES) for 2016-2020

The Government of Guinea has noted that the new PNDES differs from previous generations of plans by laying the foundations for the structural transformation of the national economy which will put Guinea on a growth ramp that creates wealth and jobs. It is the first milestone of a trajectory that will lead the country to prosperity and benefit the next generation according to the "Guinea 2040" Vision.⁴

4.<http://www.bes.gov.gn/index.php/en/home-english/strategic-plan>



THE FOUR PILLARS OF THE PNDES



THE FOUR PILLARS OF THE PNDES

PILLAR 1: PROMOTING GOOD GOVERNANCE FOR SUSTAINABLE DEVELOPMENT

Through this first pillar, the PNDES strategic objective is to remove the political and social factors weakening Guinea while promoting good governance in its administrative, local, economic and environmental dimensions. The PNDES will contribute to reach the Guinea Vision 2040 mainly through the following objectives: (i) "A strong, peaceful, united and prosperous nation, based on the values of justice and solidarity"; and (ii) "A strengthened democracy with responsible economic governance and a public administration for development". To achieve these objectives, two strategic outcomes are expected by 2020: (i) the consolidation of the rule of law, democracy, security and social cohesion; (ii) public policy is effective, efficient, inclusive and sustainable.

PILLAR 2: SUSTAINABLE AND INCLUSIVE ECONOMIC TRANSFORMATION

The PNDES aims, through this pillar, to put in place structural conditions to stimulate a sustainable transformation of the Guinean economy. The PNDES will contribute to reach the Guinea Vision 2040 i.e.: "A diversified, competitive economy that creates decent jobs and economic poles, with a perfectly integrated mining sector and a private sector driving growth and progress". To achieve this, the strategic outcome expected within the Plan's horizon is accelerated, inclusive and sustainable economic growth.

PILLAR 3: INCLUSIVE DEVELOPMENT OF THE HUMAN CAPITAL

Through this pillar, PNDES seeks to enhance human capital and

strengthen the fight against exclusion and social inequalities. The goal through this pillar is to support the Vision Guinea 2040 entitled: "A valued human capital that gives the country every chance to move towards emergence". Two strategic outcomes are expected: (i) the quality of human capital is improved; (ii) decent employment and inclusion of vulnerable groups are ensured.

PILLAR 4: SUSTAINABLE MANAGEMENT OF NATURAL CAPITAL

In terms of environmental issues, this pillar's objective is to promote sustainable management of natural capital. Through this strategic objective, PNDES aims to contribute to the following goal of Guinea Vision 2040: "Appropriate responses to people's housing and housing needs and a protected environment that guarantees the future of generations to come". Three strategic outcomes are included in this pillar: (i) natural resources are managed rationally; (ii) the environment is protected; (iii) resilience and adaptation to climate change are enhanced.⁵

These four pillars will be the foundation that the Government of Guinea will use to achieve the four key development issues that still persist after the implementation of Guinea's 2011-2015 Five-Year Plan (Plan Quinquennal): (i) the fragility of the "Guinea" system (ii) structural rigidities in the economy, (iii) inadequate human development, and (iv) environmental pressures.

3

THE ARAB DIGITAL ECONOMY STRATEGY



The Arab Digital Economy Strategy.

As noted in the Arab Digital Economy Strategy, the digital economy is changing the world view on value creation. It will not only transform the way we convert our resources into economic value-added outcomes, but it will also redefine our views on the available resources and how to utilize them to address existing economic and social challenges.

The main resource that drives the digital economy is the people, and this is where the Arab World can have a real chance to join the new age economic revolution. With youth representing more than 60% of the total Arab population, and a future focus on innovation and digital augmentation of the way we live and work, we will be able to change the way the Arab world creates value and leaves a mark.⁶

The Arab Digital Economy Strategy has five dimensions:

Box 1:

■ "The first dimension " of the strategy, digital foundation, provides the necessary foundations for a robust digital ecosystem and comprises five pillars: infrastructure, policies and regulations, digital skills, funding and governance. Each of the pillars is critical in developing the digital system at the international, regional, national or even organizational level. Any successful strategy has to address these five components.

■ "The fourth dimension " is digital business which will benefit tremendously from the digital transformation. The latter will increase customer value proposition, improve cost efficiencies, and establish a wider customer base by entering new markets.

Support should be extended to SMEs in their digitization efforts as they play a fundamental role in the digital economy.

■ "The second dimension" digital innovation, addresses innovation as a catalyst for digitization. New disruptive technologies such as 3D printing, artificial intelligence (AI), big data and cloud computing are revolutionizing concepts and creating new sources of value for many industries.

They can significantly alter the way businesses or entire industries operate.

■ "The fifth dimension " is the digital citizen. The digital ecosystem should be citizen-centric. Digital technologies enhance the quality of lives of citizens and civil society, including vulnerable and minority groups

Acquiring basic digital skills will empower citizens to seize opportunities presented by technology and digitization. By providing cheap, secure, accessible and affordable digital services to all people regardless of skills and financial abilities, will act as an enabler for greater participation and contribution to community development.

■ "The third dimension" digital government, addresses the needs of people through service provision, will improve the delivery of these public services. Digitization will improve efficiency and transparency within the government sector, thus down on bureaucracy.

Similarly, public services will be moved closer to civil society and enterprises, which will not only facilitate the open government but also the decision-making process as a whole. Technology including smart and mobile-friendly devices, plays a crucial role in achieving these goals through the wider adoption of digital government services.

5. Ibid

6. Arab Digital Economy Strategy

7. Ibid

The above dimensions will be one of the key foundations in which the Guinea Digital Transformation strategy will be based on. These dimensions will provide the Government of Guinea the knowledge necessary to develop the right infrastructure, policies, guidelines and laws to enable the country to be better equipped for the emerging technologies of the fourth industrial revolution. They will also set the scene to develop IT savvy young men and women entrepreneurs that will build up the Guinea economy, create more jobs and improve the quality of life among the people of Guinea.

4

GUINEA DIGITAL TRANSFORMATION POLICY



Guinea Digital Transformation Policy

Background

Digital transformation can be seen by the rapid integration of innovative technologies that is disrupting governments, businesses, societies and economies. Countries need to be prepared to embrace this digital transformation in order to thrive in the Fourth Industrial Revolution. The dynamics of digital transformation has forever changed the relationships between governments to people, governments to businesses and government to governments. Citizens and businesses are asking for more and more digital services, content, knowledge and data. There expectations have never been higher in terms of demands from their respective governments. Meeting these new expectations poses a great challenge and potential opportunities for governments. They must develop integrated systems that share data and knowledge among them, eliminating the old silo approach of governance. They must provide more content than ever before. They must embrace the new norms of communication via the social media platforms. They must provide open and transparent data almost immediately. Finally, they must see citizens, businesses and civil society in a completely different light.

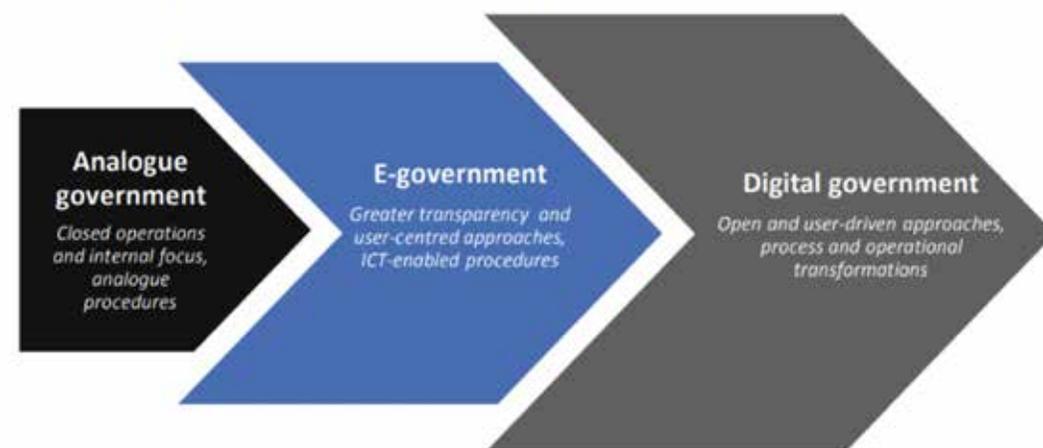
In order to achieve the above, the digital transformation of governments themselves is mandatory. They need to change the way they work and manage themselves differently, and ensure that their civil servants have the skillsets needed to use new digital tools, engage collaboratively and empower citizens and businesses. This will require, among others, creating or updating relevant legal, regulatory and governance frameworks and improving their digital infrastructure, which the Arab Strategy notes as “Digital Foundation”.

A digital government is a fundamental requirement to meet the current and future needs of citizens, businesses and civil society.

The Government of Guinea fully understands that becoming digital is the way forward to becoming an economic viable country in today’s world and the future.

To become fully digital, governments need to adopt and use digital technologies and data as strategic components of their efforts to modernize the public sector. Digital technologies and data reuse need to be integrated in core processes and activities in order to establish new ways of working and promote greater openness and collaboration. This requires new governance and institutional frameworks and the development of new capabilities and skills to be able to sustain a digital public sector culture. Digital technologies should not just be used to digitize existing government processes or to offer public services online. Governments should prioritise using digital technologies and data to rethink the design and implementation processes of public services and policies in order to achieve more citizen-driven approaches. Ultimately, a transformed public governance should produce outcomes that best meet user needs.⁸

Figure 1. Progression towards the digital transformation of governments



Source: Based on OECD (2014), “Recommendation of the Council on Digital Government Strategies”, <https://www.oecd.org/gov/digital-government/Recommendation-digital-government-strategies.pdf>.

8. <https://www.oecd.org/going-digital/strengthening-digital-government.pdf>

Vision

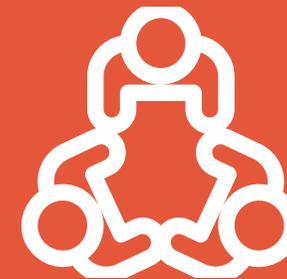
To become one of the leading digital countries in West Africa by 2025.

Strategic Pillars

1. Create a knowledge-based society of IT savvy men and women;
2. Create a sustainable environment to create more job opportunities and entrepreneurship;
3. Introduce digital transformation to strengthen the mining and agriculture sectors;
4. Introduce digital tools to effectively manage and reduce the current adverse effects of urbanization;
5. Promote a government that engages and empowers its citizens through the national government portal and on social media platforms;
6. Promote an Open and Transparent Government;

5

CREATE A KNOWLEDGE-
BASED SOCIETY OF IT
SAVVY MEN AND WOMEN



Create a Knowledge-based Society of IT savvy Men and Women

In order for a country to compete and thrive in the new digital economy, it must have the internal capacity to use and create innovative technologies. Therefore, capacity building and the development of IT skillsets are critical to harnessing the transformative potential of the emerging and future technologies that the 4th Industrial Revolution will bring such as: artificial intelligence (AI), blockchain technology, virtual and augmented reality, gamification, cloud technology, data analytics, big data, the use of drones to deliver government services and the integration of government services.

Developing and emerging countries have seen an explosion in mobile penetration and Guinea has benefitted from this phenomenon over the last decade. This has led to an increase in the Internet availability in the country, which has created greater opportunities to access information, communicate and collaborate, and to improve its economy. It is suggested to use Mobile first approach to deliver the services which would have far better impact in the country in terms of reach and quicker delivery.

As ICT acts as an enabler, the ongoing need for ICT capacity building and skills development is one of the challenges that the country needs to meet in order to ensure that its population has the knowledge and know-how to effectively use this new access and tool.

As the ITU noted, “ensuring that digital skills keep pace with technology is extremely challenging given the dynamic nature of ICT, reflected in the rapid development of networks, modes of service delivery, technology speeds and devices. Today multiple services are delivered

on smart devices using converged networks. While traditionally separate networks delivered telephony, television and Internet services, now all of these services can be performed over an IP network. This network convergence has led to the emergence of triple- and quad-play packages – providing VoIP, IPTV, video chat, video and photo sharing, social networking and other applications – which are becoming increasingly popular. A growing number of people are now using over-the-top (OTT) communication services and accessing Internet, watching videos/TV and interacting with others on personal smart devices”⁹

Thus, Guinea plans to substantially increase the number of youth and adults who have the digital skillsets necessary to compete in the digital economy by expanding access to technical and vocational skills, which should spur a growth in employment and entrepreneurship. Thus, the country will invest in increasing the number of technical and vocational schools that provide digital skills such as: coding, data analytics, artificial intelligence, gamification, blockchain technology and other digital tools.

Guinea also plans to start teaching IT-related skills at an earlier stage in the elementary and secondary schools in the country. The Ministry of Education will revamp the current curriculum to incorporate some basic digital tools for children and young adults to get them ready for digital economy. This also means that the teachers and professors in our elementary and secondary schools need to upgrade their own digital skills in order to impart that knowledge to the students.

The Ministry of Education will also to promote STEM (science, technology, engineering, and mathematics) to young girls and young women to build their digital capacities. This effort will help bridge the gender gap in digital education.

9. https://www.itu.int/dms_pub/itu-d/opb/phcb/D-PHCB-CAP_BLD.01-2018-PDF-E.pdf

The Ministry of Education will also to promote STEM (science, technology, engineering, and mathematics) to young girls and young women to build their digital capacities. This effort will help bridge the gender gap in digital education.

The rural area poses its own challenges for Guinea due to its lack of digital infrastructure and lack of skilled IT people. In order to cover the majority of the country, the government will use distant learning and video lessons to reach the rural areas. In addition, this technology-based approach to deliver the learning content to the rural areas also creates employment opportunities and potential to export content to the surrounding French speaking ECOWAS countries.

As ITU also noted “the evolution of machine to machine (M2M) communications can enable networked devices to directly exchange information and perform required actions. This is also related to the emerging Internet of Things (IoT) which allows anything (including people, machines, animals and plants) to transfer data over a network. Another key trend is the development of numerous sophisticated applications across many sectors, driven by significant increases in the speeds of fixed and mobile technologies”.¹⁰

This will continue to put pressure on the capacity building efforts of the country. Thus, Guinea will also adopt the concept of life-long learning to keep the population abreast of the current and new tools that will be developed. This will be especially important to the government officials and civil servants. As Guinea becomes more digitally capable, the population will demand more online services, data, information and knowledge and the government must be in a position to meet those needs.

10. Ibid

Multiple opportunity exists in various government agency transformation wherein Pay per transaction is also possible. Some examples are the following:

- Skill development – e Learning program
- Government eProcurement Marketplace targeting SME development
- MAMRI (Domestic Revenue Optimization agency) revenue management system which is developing various taxation systems
- Various Government systems including Healthcare and education

Program(s):

1. Implement a STEM (science, technology, engineering, and mathematics) to young girls and young women to build their digital capacities.
2. Implement digital learning courses for the STEM Teachers which could be used to monitor, measure and qualify teachers for the upcoming challenges. Use regional level video and smart communication technologies.
3. Provide facilities and platform for the content building and animation companies to develop content.
4. Set up and use the central and regional ICT Academy facilities to develop skill sets for the youths.

“Teach For All’s Global STEM Initiative was established to increase the impact of STEM educators across the network by

- Supporting partners in recruiting, training, and developing an increasing number of STEM teachers
- Helping partners cultivate their alumni as leaders who will fuel transformative change in STEM education both inside and outside of the classroom

- Building a STEM community that connects STEM leaders and practitioners across the global network, enabling them to share insights and innovations, best practices, and sustainable solutions
- Partnering with external organizations, academic institutions, and corporations that are leaders in the STEM fields to increase access to local and global STEM conversations, resources, and training for network partners and their participants and alumni.”¹¹

6

CREATE A SUSTAINABLE ENVIRONMENT TO CREATE MORE JOB OPPORTUNITIES AND ENTREPRENEURSHIPS



11. <https://teachforall.org/global-stem-initiative>

Create a Sustainable Environment to Create more Job Opportunities and Entrepreneurships

As the OECD noted “The digital economy has the potential to enhance productivity, income and social well-being. It is creating job opportunities in new markets and increasing employment in some existing occupations. As digital technologies enable the production of more goods and services with less labor, they also expose some workers to the risk of unemployment or lower wages. They also enable changes in the organization of work, with implications for the capability of existing policies and programmes to ensure labor market inclusion, job quality and skills development. To reap the benefits of the adoption of digital technologies, governments, businesses, trade unions and academia will need to address new economic and labor market challenges. The panel will focus on policies to foster growth and employment in new economic activities enabled by digital technologies, to accompany workers along the transition to new jobs, and to help ensure job quality in the digital economy.”¹²

Although technology will eliminate some of the labor intensive and repetitive jobs in the economy, it will also create more job possibilities in the future. Every industrial revolution that took place thus far has eliminated jobs, but they have created more jobs than they have eliminated.

Guinea will look to create innovation hubs and parks in the country to strengthen the IT capacity internally and provide an environment

12. <http://www.oecd.org/internet/ministerial/meeting/New-Markets-and-New-Jobs-discussion-paper.pdf>

where an IT industry can start to develop.

Therefore, Guinea is going to prepare itself to harness the new job opportunities that will arise in the future and look at the possibility of retraining those workers whose jobs will be adversely affected.

We have seen the use of new technologies disrupt major companies and sectors in the world. Air B&B and Uber are some examples of technology affecting hospitality and transportation sectors. We have also seen new technologies creating new sectors, as in the case of social media, such as: Facebook, Twitter,

Instagram, WhatsApp, etc. All of these disruptive companies have one thing in common, they were all start-ups. They were all ideas that grew and were nurtured to become the giants that they are today.

The World Bank noted that “The new typology shows that “digital jobs” range from microwork-type jobs that need very basic ICT and cognitive skills to more formal ICT sector jobs like network administration that require advanced digital and analytical skills. Other types of digital jobs included are Business Processing Outsourcing (PBO) sector jobs, such as call centers, virtual freelancing, digital platform-linked jobs, digital entrepreneurship or public sector driven jobs. Each category requires a different type of skillset. Using this typology, the report suggests, could help policy-makers assess existing levels of demand for skills and identify opportunities to stimulate job growth for a variety of target groups.”¹³

13. <https://blogs.worldbank.org/jobs/creating-new-opportunities-young-women-digital-economy>

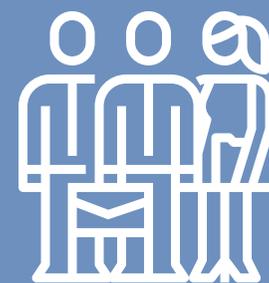
Guinea will position itself to take advantage of the new employment opportunities that will be created. The government will look to partner with the private sector to develop business incubators that will provide the environment and mentorship to support Guinea start-ups. The focus of the start-ups will be in agriculture, mining and urbanization. The goal is to have these start-ups use the Content development, BPO, KPO, which could be used for overall skill development and to educate masses, Internet-of-things, 3D printing, artificial intelligence and the other tools and platforms available to improve the agriculture production, mining resources and identify new ways of managing urbanization.

Program(s)

5. Create incubators for young entrepreneurs
6. Develop a technology park where concentrated effort to develop the local industry can be focused



GENDER GAP IN DIGITAL EMPLOYMENT



Gender Gap in Digital Employment

In most developing and emerging countries there is a gender gap in employment. More boys than girls are getting opportunities to develop digital skillsets that enable them to find and obtain higher paying jobs. The European Union launched a study on “Women in the Digital Age”. “The study found that, despite the growing demand of ICT specialists and digital profiles, the percentage of Europeans with ICT-related education is decreasing. Although this is a common trend for both genders, there are less women than men who are taking up ICT related jobs and education.

The main findings of this study are:

- There are four times more men than women in Europe with ICT-related studies. There is a decrease in women taking up ICT related higher education when compared to 2011.
- The share of men working in the digital sector is 3.1 times greater than the share of women.
- The annual productivity loss for the European economy of women leaving their digital jobs to become inactive is calculated to be about EUR 16.2 billion
- Although female owned start-ups are more likely to be successful, there is decrease in participation, leadership and investment in the entrepreneurial digital sector.¹⁴

The gap is more pronounced in developing and emerging countries. Thus, Guinea will increase its efforts in bringing young women into the digital workspace. This will be done by creating the project “African Women in the Digital Age”, which will encourage more young women to receive STEM education; create special incubators for female entrepreneurs; and provide micro loans for female start-ups. The Government of Guinea will also reach out to international donors to help support this project.

14. <https://ec.europa.eu/digital-single-market/en/news/increase-gender-gap-digital-sector-study-women-digital-age>



RESOURCES OF GUINEA



Resources of Guinea

Introduce digital transformation to strengthen the mining and agriculture sectors

“As is the case with most countries in Africa, Guinea relies heavily on agriculture. Consequently, it should not come as a surprise that about 84% of the population practices agriculture. In addition, the sector contributes around 20% of the nation’s GDP. Historically, the sector has endured fluctuations mainly due to illegal smuggling, which adversely affected the prices of exported foods. The sector also employs the heavy use of children aged between 5 and 14 who should be in school. An estimate from 2013 by the U.S. Department of Labor placed the percentage of children working in farms at a staggering 76.2%.

Despite all these problems, the country has a very high potential in agriculture. This potential is because of things like natural fertile soils, high amounts of rain, and suitable climatic conditions. The potential also exists in other kinds of agriculture such as fish farming and not just crop farming. Investors from other countries are unwilling to step in and make significant investments due to the poor infrastructure.

Some of the plants grown in the nation include rice, sweet potatoes, yams, and corn. Cash crops include the likes of bananas, pineapples, coffee, citrus fruits, and sugarcane. Among these plants, the most popular crop is rice, which is grown mainly in the flooded regions of the country. Despite a huge chunk of the population involved in the growth of the crop, it is not enough to meet the national needs. Imports from Asia usually supplement the local need.”¹⁵

15. <https://www.worldatlas.com/articles/what-are-the-major-natural-resources-of-guinea.html>

The use of agriculture digital tools and innovative techniques could increase the agriculture harvest of Guinea’s cash crop, while heavily reducing child labor in the agriculture sector. This win-win proposition will have more children in school rather than working the field, at the same time provide high yields for the agriculture sector.

Improvement in the physical infrastructure of the country will lead to better logistics that will increase the number of crops that go from harvest to market. Currently, too many crops end up being spoiled and wasted because they cannot come to the market in time. This causes farmers to lose money and a reduction in food security.

Guinea has Most Favorite Nation (MFN) status with both Europe and the US. In addition, UAE can use Guinea as an export house (Government of Guinea is even ready to provide “Produce of UAE” label.

Agriculture information about Guinea

- 6 M Ha of Arable and Cultivable Land
- Less than half is being used for cultivation
- Mostly Small Holding farmers
- Agriculture is the largest employment opportunity in Guinea
- Lack in usage of Technology and Techniques
- Availability of Credits
- Availability of Farming Equipments
- Storage and Processing facilities
- Government is ready to provide up to 60,000 Ha of cultivable land to for investment purpose

Agriculture Technology

“By far, the greatest development in agricultural technology (AgTech) comes in the form of connected sensors and the Internet of Things (IoT).

Successful agricultural production in digital transformation is becoming a numbers game. With the help of AgTech, connected farmers are beginning to share data, and make improvements in input, efficiencies, and operations processes, largely due to AI-driven sensors. These sensors can be ground, aerial, or machine-based, and all hold huge potential for agricultural production.

On the ground, sensors can monitor the quality of plants, soil, animal health, and weather. They can determine the best place to plant for the highest yield, and how much to plant to prevent waste. In the air, drones and satellites can monitor crop health and pest disease, preventing the surprise of a lost crop at harvest time. Farm equipment can also capture data on anticipated crop production. For instance, high-speed planting equipment can provide “as planted” estimates on crop yield and harvest output, allowing farmers to plan for sales forecasting, overflow and shortage. Robotic harvesting equipment can even use AI to pick ripe fruit and vegetables at just the right time, saving time, manpower, and waste.”¹⁶

Guinea has great agriculture potential based on its available farming land, fishing prospects, ample forests and the capacity to raise livestock. However, the majority of farmers primarily engage in subsistence agriculture, growing crops on small plots of land to feed themselves and their families. This coupled with a lack of logistical infrastructure that can facilitate production from harvest to market has led to a high spoilage rate. In addition, most farmers do not have access to agricultural extension services, and technologies. This has created a gap between what Guinea produces and what the demands are for food products in the country, which has resulted in exporting food products from the region and internationally.

16. <https://www.convergetechmedia.com/digital-transformation-in-agriculture/>

Guinea needs to improve its agriculture logistical infrastructure in order to reduce the spoilage rate of agriculture products. This can be done by creating better ways to bring food products from harvest to market at a faster rate, and by creating more effective storing equipment that will keep agriculture products fresher over a longer period of time.

Developing agricultural value chains in Guinea will be difficult, because institutions and the regulatory framework are weak, government services have limitations, basic infrastructure is inadequate and there are too few rural finance institutions.

The International Fund for Agriculture Development (IFAD) proposed the following activities to strengthen decentralization and local development, and the development of agricultural value chains.

- “Strengthening local governance and increasing participation by rural poor people and their associations in policy development and budget planning at local and national levels;
- Improving small-scale producers’ access to services that can enhance production efficiency, helping them enter competitive markets, supporting farmers’ organizations and building transparent value chains; and
- Helping marginalized groups, particularly women, access microcredit facilities adapted to their needs.”¹⁷

In addition, the Ministry of Agriculture should look at providing real time data such as: weather, market prices, microfinancing to small and medium size farms to support and improve the production levels.

Guinea will look to adopt the above recommendations and will engage

17. <https://www.ifad.org/en/web/operations/country/id/guinea>

in introducing agricultural technologies to boost the food production in all agricultural sectors. Guinea will embrace the Internet of Things (IoT) through the use of agriculture sensors to monitor food and animal production. These sensors will be used to monitor soils, water levels, pesticides, temperature, livestock, etc. The data obtained from these sensors will allow farmers to make better decisions based on data as opposed to guesswork.

Guinea will benefit from existing success stories that have already been put into practice around the world, which will reduce the risk involved in food production and livestock management.

Guinea will also look for potential investment in community poultry production.

Figure 2 poultry investment opportunity

COMMUNITY POULTRY FARMS

CLUSTER BASED POULTRY FARM

Develop, supply, buy back and process

\$ 10 M - \$ 32 M
(Breeder, hatchery, vaccine, feed mill, processing plant and digital platform) (32 M includes ferment credit line)

Expected Revenue
Year 1 of full operation:
\$ 25M with PAT of \$ 2.2M
5 year cumulative :
\$ 287M with PAT of \$ 61 M PAT

Does not include digital platform revenue

Partner networks are available for developing end to end from supply of Hatchery to Process chicken meat

Program(s)

7. Implement the African Growth Opportunity Act in the agriculture sector through informative workshops
8. Develop agriculture audit trail for quality control
9. Use the Internet of Things sensors to improve agriculture outputs
10. Develop ICT Platform for enabling Small holding farmers in terms of weather, market and input / output information which could also could provide facilities for micro credit to the farmers for targeted intervention
11. Facilitate technology enabled cluster approach for the availability of agricultural equipment for the small holding farmers
12. Develop Technology enabled warehouse and cold storage chain with market linkage

Mining Technology

“The mining sector in the country has been present and has been developing ever since the country was still under the rule of the French. Some of the major minerals that the nation is endowed with include iron, diamond, bauxite, and gold. In 2010, the mining sector was responsible for around 17% of the nation’s GDP while the sector usually accounts for at least half of the country’s total exports. However, in recent years, the sector has had to endure controversies arising from blocked mines and the iron industry. Both of these issues have had a negative impact on their mining and sale. Aside from these recent issues, the country also faces long-term problems to do with widespread corruption and poor infrastructure.

Guinea is one of the global leading producers of bauxite. Estimates place the bauxite reserves of Guinea at a whopping 25 billion metric tons. This amount of reserve equates to almost half of the total bauxite reserve

in the world. Aside from bauxite, Guinea is blessed with massive high-grade iron ore reserves that total at least 4 billion tons. Other significant, albeit undetermined amounts, mineral deposits include deposits of uranium, diamond, and gold. Oil deposits have also been discovered in parts of the nation although the exploitation of this natural resource was not deemed economically. Other small deposits include those of cement, nickel, manganese, and nickel. Figure 2 shows the amount of mining resources available in Guinea

Figure 3 Resource data



Incredibly, the production of bauxite and alumina normally account for a huge portion (around 80%) of the nation’s foreign income. In terms of employment opportunities, the sector has been able to employ at least 10,000 people. Investors are also attracted to the mining sector as evidenced by the foreign companies (at least two dozen) operating in the nation.

The potential for diamond is estimated to stand at around 40 million carats. According to the Kimberley Process Certification Scheme, the

nation's production of about 266,800 carats in 2012 made Guinea the 13th largest producer of diamonds in the world. Looking at the gold deposits, most of them are located in the Lefa mine, which is one of the largest mines in Guinea. In 2011, Guinea managed to produce about 15,695 kilograms of gold.”¹⁸

With such an abundance of mineral wealth, one of the biggest issues is the accountability of these resources to ensure that this potential wealth benefits the country. Artificial Intelligence and blockchain technology will play an important role in ensuring that the audit trail of Guinea's natural resources is accounted for in a seamless manner. This will reduce the potential for corruption and provide more financial resources to the country.

The Internet of Things will also play a major role in reducing corruption and increasing the country's wealth by monitoring all the mining sector by placing sensors in all mining equipment that will monitor the output in each mine to ensure accountability.

As the consulting firm, Deloitte noted “a majority of mines still using legacy technology and facing the growing need to drive operations deeper underground, easily attainable cost and productivity savings are getting harder to obtain. Moreover, productivity in mining operations world-wide continues to decline—despite continuous improvements to operations and even after adjusting for declining ore grades. On top of that, the industry continues to face:

- Volatile commodity prices—which continues to squeeze cash flow and put pressure on profitability;

- Changing the nature of work—where changing demographics, the nature of jobs and perceptions of mining as a career choice are heightening the need to re-envision talent management;
- Maturity of existing mines—leading to lower ore grades and longer haul distances;
- Innovation barriers— mining companies tend to be risk averse and have an inclination to distrust collaboration due to IP and competition concerns.¹⁹

The use of artificial intelligence has great potential in the mining sector. It has the opportunity to be a disrupter in the mining sector, permanently changing the way mining operations are working today. “While artificial intelligence is still an emerging suite of advanced and practical technologies, AI is enabling mining companies to become insight-driven enterprises that utilize data to derive key benefits.”²⁰

China has approved a \$ 20 Billion credit line with an innovative approach which includes grants, soft loans and credit lines. Routing their royalty payment to an account against which (the future cash flow) the loans are given by the Chinese banks.

19. <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Energy-and-Resources/deloitte-norcat-future-mining-with-ai-web.pdf>

20. Ibid

18. <https://www.worldatlas.com/articles/what-are-the-major-natural-resources-of-guinea.html>

Figure 4 – Deloitte's Definition AI:

Untangling what we mean by AI

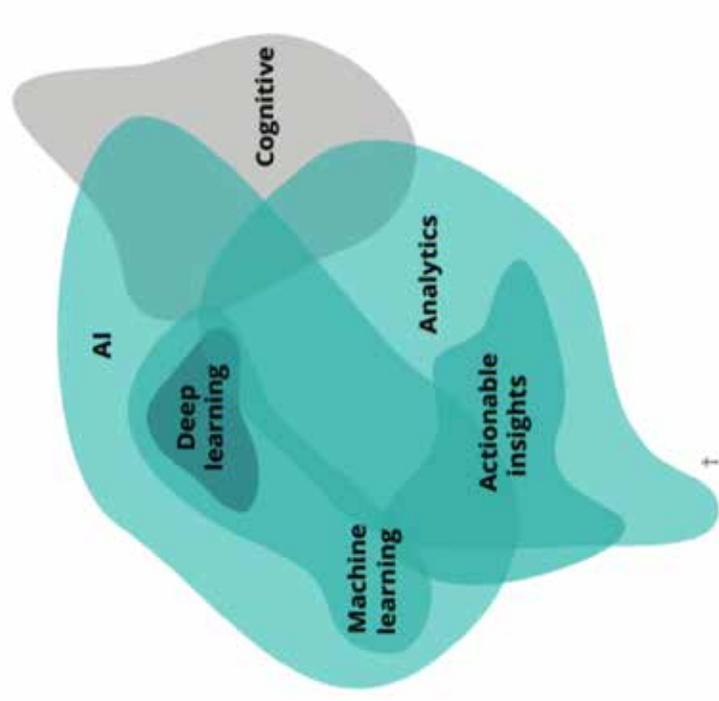
ACTIONABLE INSIGHTS
Result of extensive data analytics where information gives enough insights to drive decision making

ANALYTICS
The use of data and algorithms to improve decision making by generating insights

COGNITIVE
Component of AI containing a human-like layer of interaction between people, underlying data and technologies that form AI

MACHINE LEARNING
Algorithms that improve over time through exposure to more data

DEEP LEARNING
Subset of Machine Learning that uses neural networks' with massive amounts of data to learn



21

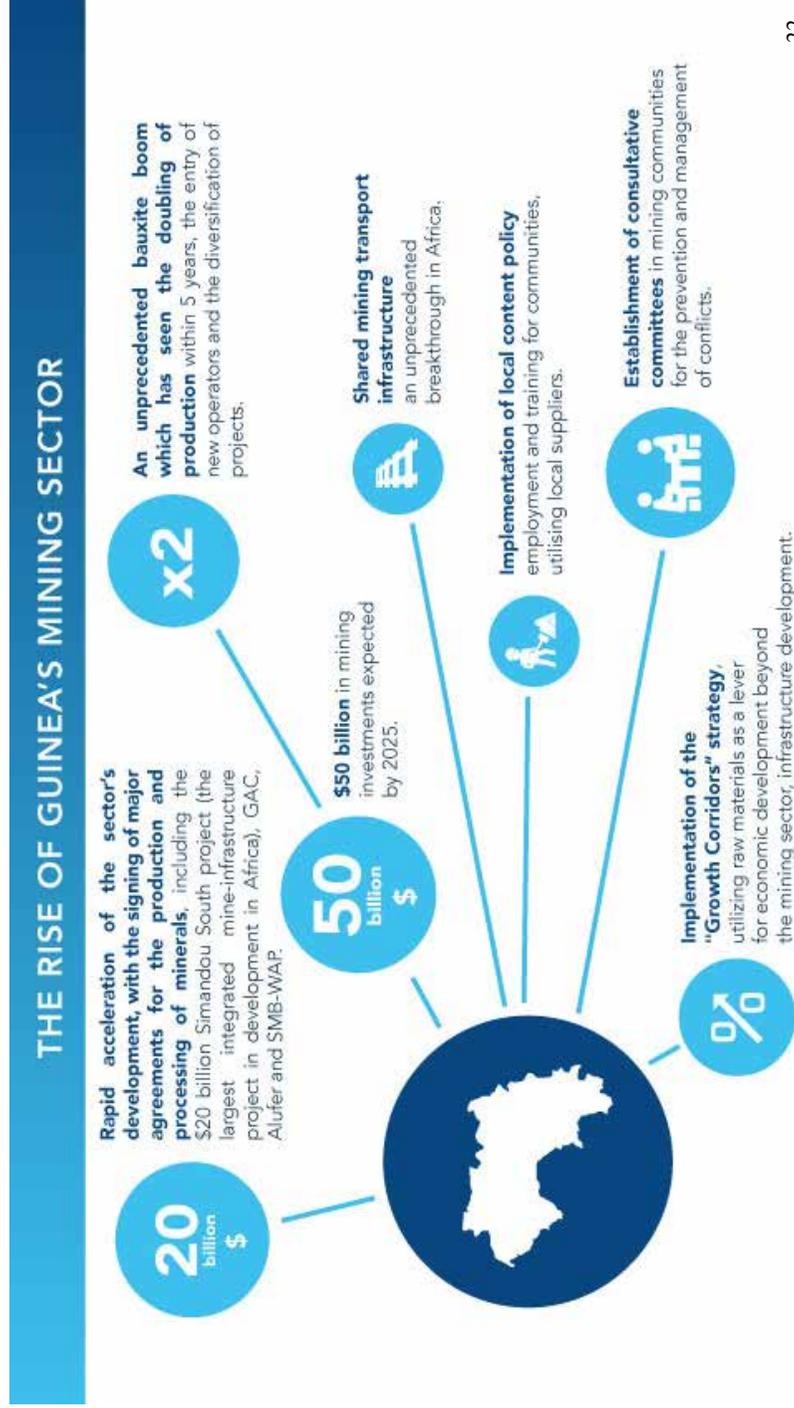
21. Ibid

AI and Robotics have revolutionized the automobile industry and the same can and will be done in the mining industry. AI will have the following benefits in the mining sector just as it had in the automobile sector namely:

- Better decision-making through better and more accurate data
- Safer working conditions
- More environmentally friendly
- More efficient operations
- Less errors, which will lead to less waste and better products
- More profits.

Guinea has an abundance of natural resources such as, iron ore, gold, diamonds, and the world's largest reserve of bauxite, the chief element used in manufacturing aluminum.

Figure 5 – Guinea’s Mining Sector



22

22. <https://blogs.ei.columbia.edu/2018/04/20/deep-dive-guineas-mining-industry-undp/>

The Government of Guinea will be using new technologies such as artificial intelligence and data analytics to reduce the negative effect on the environment. Similar to the proposed new technologies in the agriculture sector, sensors may be increasingly used to monitor and track the mineral movement across the country from the source to port avoiding the leakages and enabling proper accountability and revenue. It would also provide safer working environment. Proper use of AI could help access the deposits in a much easier and quicker way using the tons of data produced by the mining companies in the lifecycle of mine development. Instead of taking only the paper documents, Guinea may insist to share the data which is used in a common platform to access and account. The “Internet of Things” IoT sensors will be increasingly used to monitor the air quality of the mining sector, in order to ensure a safer working environment as well as improve the quality of life in mining cities and villages. The sensors will also be used to increase the volume of bauxite, iron ore, gold and diamonds in a more efficient manner. This will lead to more mining employment opportunities as well as having the potential of creating new mining related sectors, such as: data management, big data analytics, etc.

Program(s)

- Use the Internet of Things sensors to improve mining outputs
- Use the Internet of Things sensors to track mining resources
- Develop a common platform for the data capturing and analyzing using AI

Energy Production

“In 2013, the national production of electricity stood at around 971 million kWh. Most of the electricity in the country (around 67.8% of the national demand) originates from fossil fuels. The remaining electricity is accounted for by hydroelectric power from the water resource in the nation. Estimates place the hydroelectric power production potential

of the nation at a massive 19,300 GWh every year. Unfortunately, the lack of development means that only a small fraction of this potential is utilized.

The company responsible for producing and supplying electricity in Guinea is Electricité Nationale de Guinée. At the current production level, most parts of the country do not have access to electricity. Even the capital city, Conakry, gets less than 12 hours of electricity in a day. Most of the population, which does not have access to electricity, is forced to rely on biomass as the main source of fuel. According to the International Monetary Fund, more than 74% of the nation's households rely on firewood for energy while 23% relies on charcoal."²³

Investment in hydroelectricity will enable Guinea to meet more of its electricity needs. The digital economy has developed better hydroelectric equipment and platforms that will enable the country to benefit from the country's 129 waterfalls.

The Internet of Things will also be useful in place water sensors in key logistic location to monitor flow and intensity of the water. This will produce greater amounts of electricity.

Based on the natural resources and the potential of people resources available to the country, the following strategic pillars have been identified.

Guinea could address the immediate needs of its citizens, by launching the Community Solar system and Direct House solar panel project to provide on grid and off - grid for the remote areas.

Here is some information about the energy sector:

- Guinea is one of the poorly electrified country with about 26% coverage in Cities and 11% in the rural areas
- Currently there are fossil fuel based power generation is done
- Currently about 600 MW is being produced
- There is an electricity reform program in practice where the government is putting lots of emphasis on generation and grid
- Grids are yet to be developed in Remote areas
- Potential Solar energy plants

China is building a Dam and Hydro power plant with about 400 MW capacity with about \$ 500 M investment. In addition, Guinea is endowed with 1,600 of water streams and rivers with a potential of 6,000 MW hydroelectric power generation potential to be exported to the surrounding countries.

23. <https://www.worldatlas.com/articles/what-are-the-major-natural-resources-of-guinea.html>

Figure 7 shows the population versus the on-grid capacity

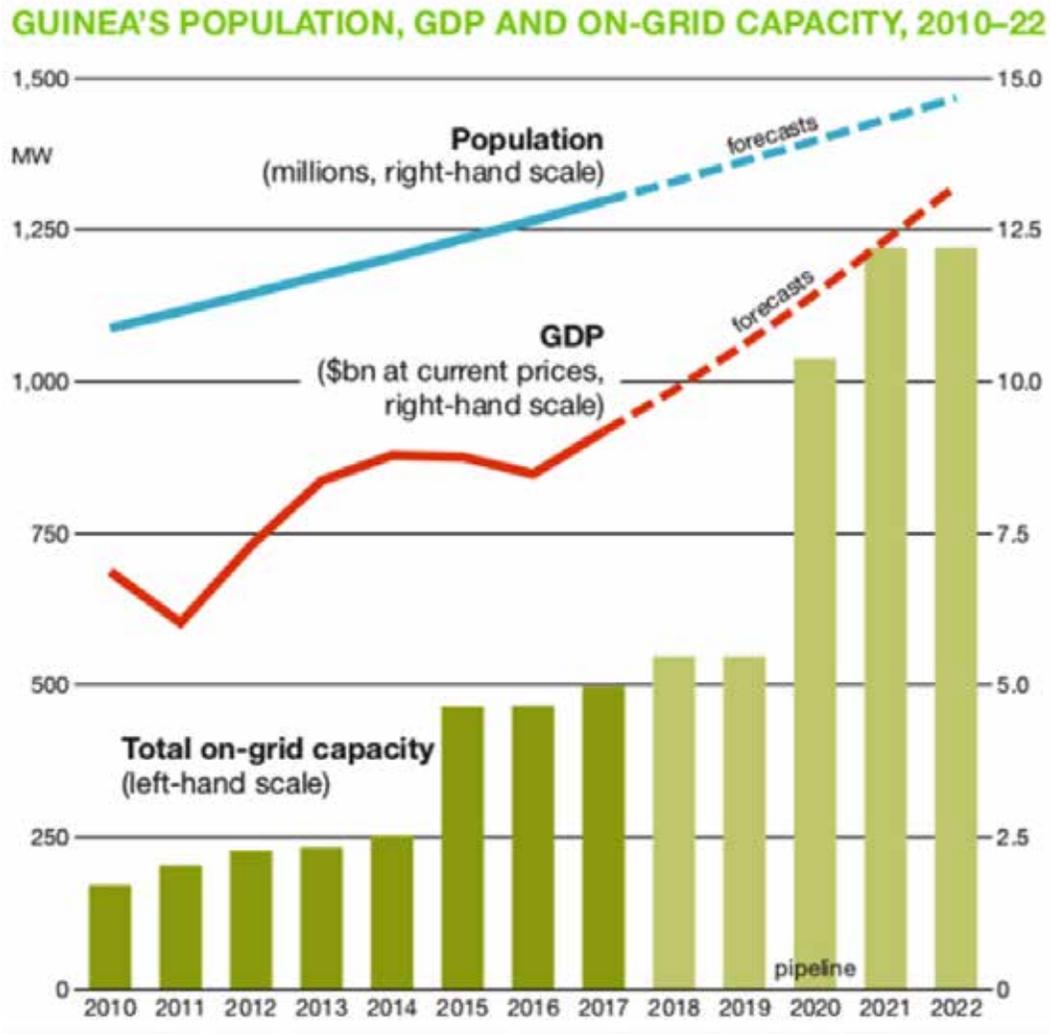
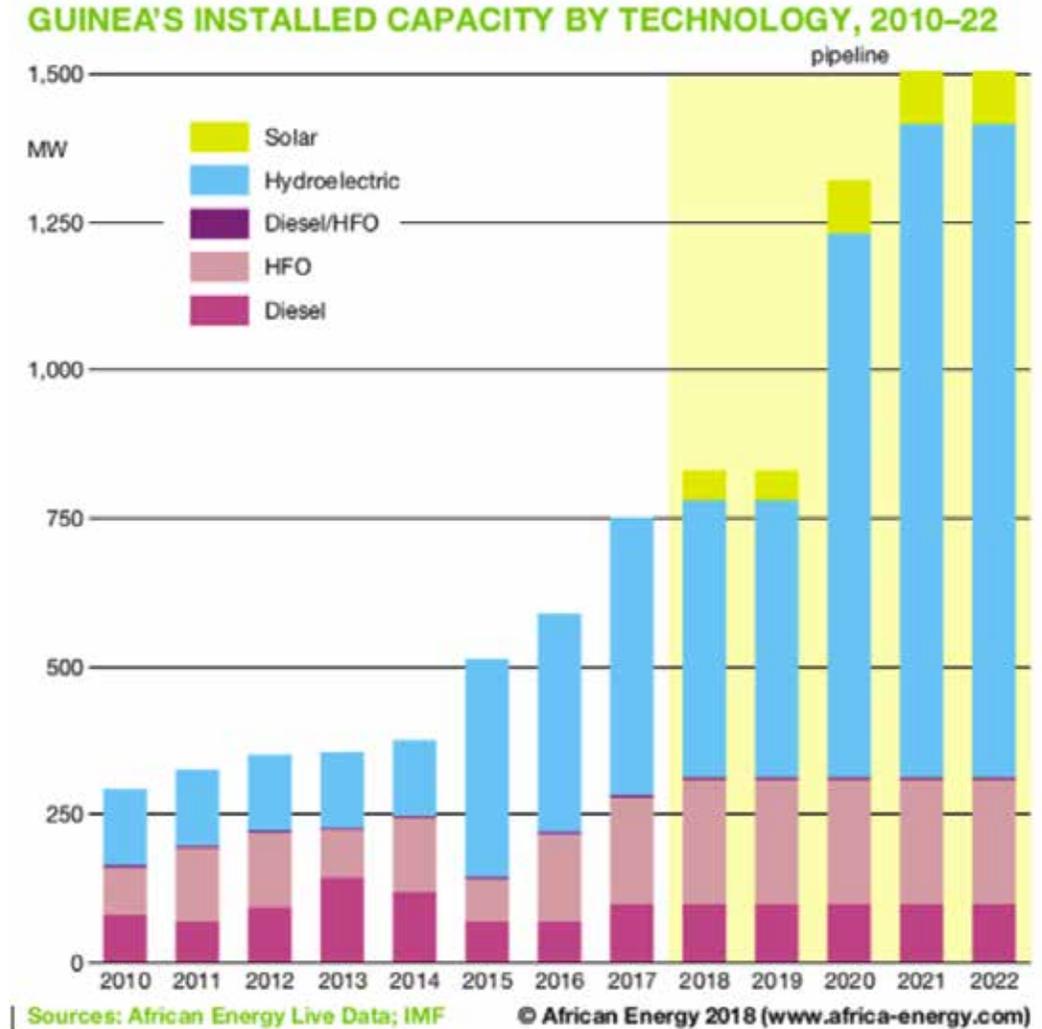


Figure 8 Energy technology



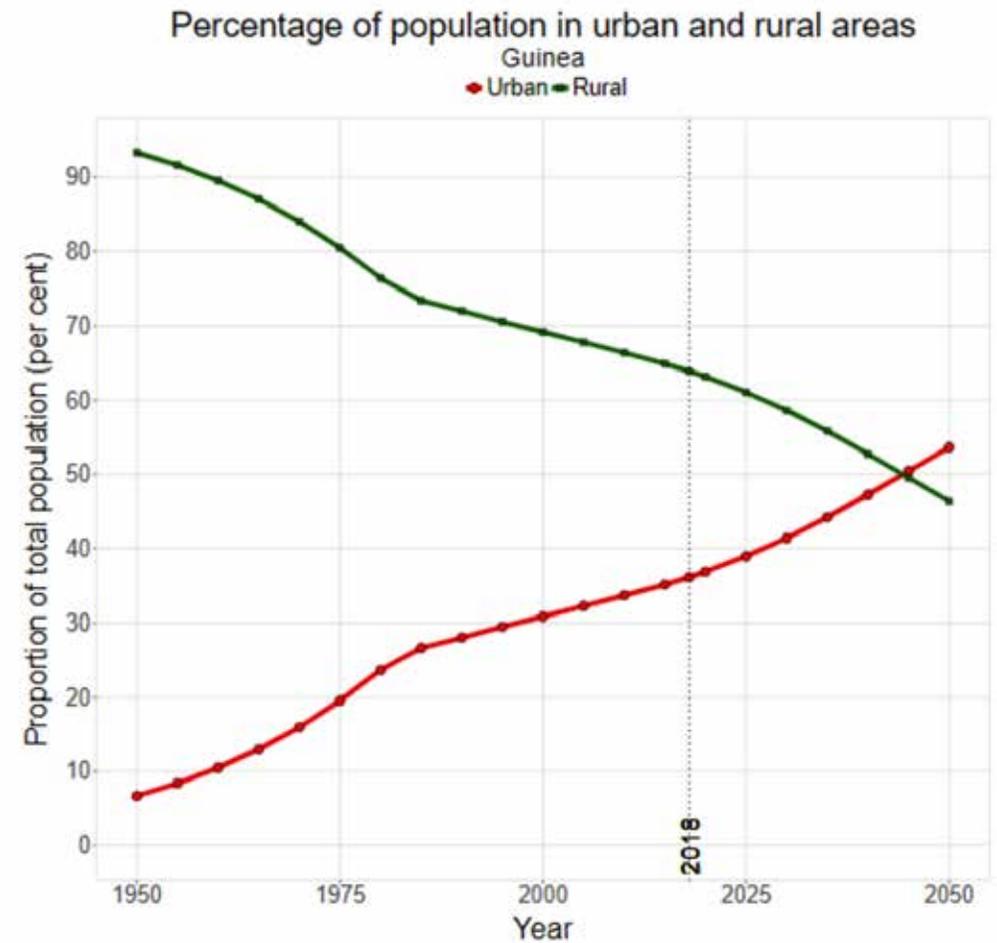
Program(s)

1. Create hydroelectric Dams to improve the electrical grid in the country
2. Develop community solar system for the remote villages
3. Facilitate the direct home solar kits

Introduce digital tools to effectively manage and reduce the adverse effects of urbanization

In the 1950s, 90% of Guinea's population resided in the rural areas. This figure has drastically changed in the past 70 years with a little more than 60% of Guinea's population residing in the rural area. According to the United Nations Statistics Division, by 2050, the majority of Guineans will reside in urban areas and the trend will continue.

Figure 9 – UN Data on Guinean Population



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Note: Urban and rural population in the current country or area as a percentage of the total population, 1950 to 2050.

Urbanization is a world-wide challenge, as many of the world's population move to the urban cities for better jobs, a better lifestyle and to make more money. Urbanization poses a greater challenge to developing countries that do not have the revenue streams to tackle the issue. The growth in the urban population means the following would be necessary: more housing, better sanitation facilities, more food products will be required with less people working the farms, more schools, more healthcare facilities, better management of traffic patterns, etc.

Guinea will need to plan for this impending migration or it will face major overcrowding issues which can lead to the establishment of slums, housing issues, crime, water and sanitation problems, unrest and social disruptions in these newly populated urban areas.

In order for Guinea to adequately prepare for this continuous migration from the rural areas, it will need to have accurate migration data, which would indicate where are the people coming from and where are they moving to.

This data then can be analyzed, which will enable the government to have a better idea of the migration patterns and decide where it should invest in infrastructure, housing, telecommunications facilities, schools, healthcare facilities, etc.

Guinea will use data analytics and artificial intelligence tools to develop the best economic social and environmental scenarios that can best handle the population migration in order to develop sustainable cities. This can lead to an increase in revenues for the country, due to the country having more accurate data on its migration patterns, which will allow to government to effectively charge for its services.

The government can also encourage people to migrate to less populated areas by promoting entrepreneurship, employment opportunities, less crowded schools, and better quality of life.

An example of using data analytics to solve some overcrowding issues is the “Moscow My Street Project”. “Researchers also analyzed population density in each area, traffic patterns, and the efficiency of public transportation. The result was the public transport capacity in the city center was increased by 50 percent, which allowed city planners to actually reduce the number of driving lanes in many areas and turn them into pedestrian and bicycle space.

Smart lighting systems, buried utilities and seamless Wi-Fi coverage further enhance the pedestrian experience, giving Moscow a much more walkable city center.²⁵

One of the innovative ideas of the project was to consult with the people in the city and obtain their feedback. The people were allowed to vote on which streets would be fixed first and the layout of the city. The city of Moscow used crowdsourcing to build a better environmentally sustainable city.

Program(s)

4. Introduce smart planning solutions and revenue management solutions for the Conakry municipality which could be adopted by other cities and towns
5. Introduce the CCTV enabled connected traffic lights for streamlining the traffic with in Conakry
6. Develop apps that allow citizen to report problems in Conakry
7. Create an Urbanization Strategy

25. <https://population.un.org/wup/Country-Profiles/>

Promote a government that engages and empowers its citizens through the national government portal and on social media platforms

Governments are using social media platforms for outreach to citizens, engaging citizens in discussions, getting feedback from citizens, empowering citizens to have a greater say in the way governments interact with them, and improving the trust level between governments and citizens. Trust is an essential element in government; without it, the economy suffers, people and businesses are wary of investing in the country, people circumvent the government, and in some cases, it leads to disruption of society.

Social media allows governments to have a wider access to the population, which allows them to keep more people informed on new policies, projects, guidelines, benefits, and is a fast way of receiving feedback from the people.

Figure 10 – OECD's Trust in Government



As noted in the OECD's why trust in government is critical, trust has to be earned and is not a necessary given. Governments should be as open and transparent as possible with the people and civil society. Otherwise, governments will not succeed and will be unable to sustain economic growth and high employment.

Social media has a number of benefits to governments:

1. Saves money; using social media for community outreach is less expensive than the traditional ways of distributing information;
2. Communication during disasters and emergencies; social media has been used in many countries to manage challenging situations by giving governments alternate means of communicating with people;
3. Engaging and empowering citizens; governments can use social media to obtain their views, feedback, inputs on policies, guidelines, services, content and how the government is performing;
4. Building public trust
5. Testing your message; governments have used social media to test their message, especially during elections.

Guinea has a young population that uses social media regularly to share their content with their friends and family. The Government of Guinea will develop a social media strategy to reach the youth and civil society in a more coherent manner. They will engage the youth on the platforms that the youth are comfortable using such as: Instagram, Twitter, Facebook, etc.

The Guinea Social Media strategy will guide government agencies on how to better use social media to distribute the messages of the government, how to interact with citizens on social media, educate citizens on the work that the government is doing, how to respond to criticisms and how to provide the citizens with a good user experience.

Similarly, developing citizen service centers which could provide government services under one single roof may be a good strategy to immediately provide access to government services from a single-entry point. This would also enable digital transformation of agencies that provide government services to be connected to the common framework. Initially it may work as a coordination unit, however it could be further developed as an integrated service point as more and more agencies get transformed with their respective systems.

Guinea can also develop an online mobile based citizen service and grievance mechanism. This will allow citizens the opportunity to provide feedback and will bring the government closer to the needs of the citizens.

Program(s)

23. Develop a social media strategy for the Government.
24. Develop Citizen service center approach for enabling the citizen to get the services under single roof.
25. Develop Mobile and online based citizen service and online grievance redressal mechanism including social media-based service rendering and complaint redressal.

Promote an Open and Transparent Government

The Council of Europe places great importance on open and transparent governments. They note that “the concept of ‘Open government’ encompasses a wide range of practices, which can lead to new ways of governing, both from the governments’ and citizens’ perspective. It can promote good governance and encourage better decision making by helping to reduce corruption or to promote more effective services. Open government is a powerful tool to tackle some of the problems a local democracy may face.

Transparency, participation and accountability, the key principles of open government, require innovation on the part of local and regional authorities in their interaction with citizens and how they manage their administrations. Transparency requires authorities to make it easier for citizens to access information, notably through open data and records management. It should go in hand with greater participation of civil society in the public decision-making process, including protection for whistleblowers. This increase in participation should also be fueled by greater accountability of authorities, through the use of audits, codes of ethics and public scrutiny.

An ‘Open government’ strategy can be applied to a wide range of government activities, including budgeting, law making and policy making, along with areas such as contracting and service delivery, where local and regional authorities often work with our partners and stakeholders”.²⁷

27. <https://rm.coe.int/transparency-and-open-government-governance-committee-rapporteur-andre/16808d341c>

The above guidelines and concepts are based on having reliable information, knowledge and data. Without those three elements, governments cannot be open and transparent. How the government spends its money should be freely available online and updated on a regular basis. Governments should also develop open data portals that provide citizens with information, knowledge, data on education, health, finance, environment, employment, social development, commerce, trade, migration, investments, etc. By providing all the data available to the government online, a stronger relationship will develop between the government and citizens, businesses and civil society. This will lead to greater trust in government and allow the people to know that their government has their best interest in mind when developing policies and spending government funds.

“In 2015, the International Open Data Charter was launched outlining six principles for the release of data: 1. Open by Default; 2. Timely and Comprehensive; 3. Accessible and Useable; 4. Comparable and Interoperable; 5. For Improved Governance and Citizen Engagement; and 6. For Inclusive Development and Innovation”²⁸

These principles provide the framework by which data should be made available. The concept of open by default is the major principle in that it mandates that all government data should be made available to the public unless the government can prove that the data is confidential or that it has strategic military importance. The onus is on the government to prove that this data should not be released.

Civil society has the right to request data from governments if those datasets are not available online. Having an open data portal that is accurate, up-to-date and relevant is one of the keys to an open and

28. Ibid

transparent government.

The Government of Guinea will put in place an open data portal that will be implemented in phases based on the availability and accuracy of the government data. In most cases, the data will need to be cleansed and made compatible.

Data cleansing takes time, resources, and skill; thus, the Government of Guinea will invest in developing the right framework and strategy to implement an open and transparent Guinea.

Program(s)

26. Create a corporate compact between government and civil society to eliminate corruption
27. Develop an Open Data Portal of government data

The implementation of this strategy will bridge the gaps that currently exists as outlined by Guinea’s PNDES. This will enable Guinea to create the proper foundation for the 4th Industrial Revolution (Digital Economy).

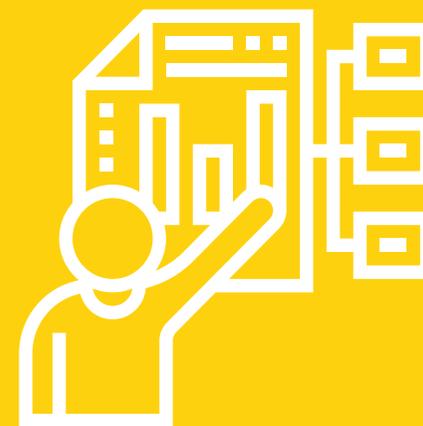
Pillar(s)	Gap(s)	Improvement Areas	Added Value Projects
Promoting good governance for sustainable development	Lack of digital tools to effectively manage and reduce the current adverse effects of urbanization	Strengthening revenue streams Improving quality of life	Introduce smart planning solutions and revenue management solutions Introduce the CCTV enabled connected traffic lights Create an Urbanization Strategy
	The need to promote a government that engages and empowers its citizens through the national government portal	Improve citizen engagement	Develop apps that allow citizen to report problems Develop a social media strategy for the Government.

Pillar(s)	Gap(s)	Improvement Areas	Added Value Projects
	and on social media platforms		Develop Citizen service center approach for one-stop shop Develop Mobile and online based citizen service.
	The need to promote an Open and Transparent Government	Increase Trust in Government	Create a corporate compact between government and civil society to eliminate corruption Develop an Open Data Portal of government data
Sustainable and inclusive economic transformation	Lack of a sustainable environment to create more job opportunities and entrepreneurship	Develop IT Structures	Create incubators for young entrepreneurs Develop a technology park
Inclusive development of the human capital	The need to create a knowledge-based society of IT savvy men and women	Gender Equity in Education Build digital IT capacity	Implement a STEM (science, technology, engineering, and mathematics) to young girls and young women Implement digital learning courses for the STEM Teachers which could be used to monitor, measure and qualify teachers for the upcoming challenges. Set up and use the central and regional ICT Academy facilities to develop skill sets for the youths
		Increase agricultural outputs	Implement the African Growth Opportunity Act in the agriculture sector. Develop agriculture audit trail for quality control Use the Internet of Things sensors to improve agriculture outputs Develop ICT Platform for Small holding farmers

Pillar(s)	Gap(s)	Improvement Areas	Added Value Projects
Sustainable management of natural capital	Lack of digital tools to strengthen the mining, energy and agriculture sectors		Develop Technology enabled warehouse and cold storage chain with market linkage
		Increase Mining Outputs	Use the Internet of Things sensors to improve mining outputs Use the Internet of Things sensors to track mining resources Develop a common platform for the data capturing and analyzing using AI
		Increase Energy Outputs	Create hydroelectric Dams to improve the electrical grid in the country Develop community solar system for the remote villages Facilitate the direct home solar kits

9

CONCLUSION



Conclusion

As the Arab Digital Economy Strategy noted “The fundamental themes of digitization are clear: it is all about education and qualifications, expansion of infrastructure, and the use and security of data.

This wave of digitization is creating and giving rise to new solutions and new business models. New services are expected from digitization. Hence, digitization has the potential to become a turning point in addressing many issues in the Arab world including social welfare, job creation and employment, etc.”²⁹

The following advice should assist potential investors:

- There is immense potential in almost all sectors including Tourism, Education and Healthcare which are not discussed in this document
- The investments in large scale non-ICT areas depends on the risk appetite the investment team has
- Due diligence meetings may be organized with the respective ministries, departments for the investment plan finalization in various areas including Mining, Agriculture, Energy etc.
- There are quantified investments and support required for those projects
- The recovery of the investments may be done from the operational revenue

In order for Guinea to fully benefit from the innovations and new technologies that the 4th Industrial Revolution is currently providing and will provide in the future, it must embrace technology and ensure that the government has the necessary resources to strengthen the

government’s infrastructure, internal capacity, relationships with the people, businesses and civil society, build trust and have effective programmes and projects.

It must also fully implement the six strategic pillars:

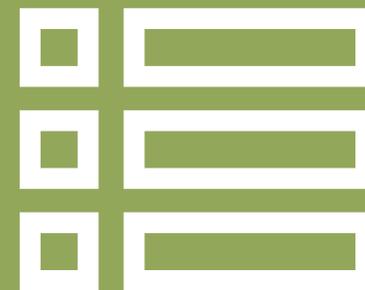
1. Create a knowledge-based society of IT savvy men and women;
2. Create a sustainable environment to create more job opportunities and entrepreneurship;
3. Introduce digital transformation to strengthen the mining and agriculture sectors;
4. Introduce digital tools to effectively manage and reduce the current adverse effects of urbanization;
5. Promote a government that engages and empowers its citizens through the national government portal and on social media platforms;
6. Promote an Open and Transparent Government;

Implementing this strategy will enable Guinea to transform its digital economy, improve the quality of life of its citizens, create a more efficient and effective government, will create several revenue streams that did not exist before, and will build greater trust and confidence of the citizens towards the government.

29. 2019 Arab Digital Economy Strategy

10

ANNEX 1



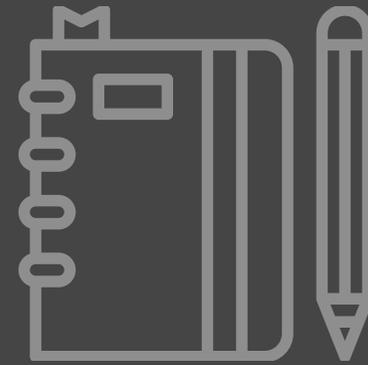
Annex 1

Programs Initiatives for Guinea

	Initiatives	Potential Partners	Potential Donors
1	Implement a STEM program (science, technology, engineering, and mathematics) to young girls and young women to build their digital capacities	Teach For All's Global STEM Initiative Anita Borg Institute for Women and Technology Chicktech Women Who Code	UNESCO Ministry of Education Guinea Bill and Melinda Gates Foundation
2	Implement digital learning courses for the STEM Teachers which could be used to monitor, measure and qualify teachers for the upcoming challenges. Use regional level video and smart communication technologies.	Facilitated by Arab League	UNESCO Ministry of Education Guinea Bill and Melinda Gates Foundation
3	Provide facilities and platform for the content building and animation companies to develop content.	Facilitated by Arab League	Private Sector
4	Set up and use the central and regional ICT Academy facilities to develop skill sets for the youths.	Facilitated by Arab League	World Bank
5	Create incubators for young entrepreneurs	Guinea Chamber of Commerce	World Bank African Development Bank
6	Develop a technology park where concentrated effort to develop the local industry can be focused	Facilitated by Arab League	Private Sector AfDB
7	Implement the African Growth Opportunity Act in the agriculture sector through informative workshops	US Agency for International Development (USAID) Ministry of Fishing & Aquaculture of Guinea	US Agency for International Development (USAID)

	Initiatives	Potential Partners	Potential Donors
8	Develop agriculture audit trail for quality control	US Agency for International Development (USAID) Ministry of Fishing & Aquaculture of Guinea	US Agency for International Development (USAID) UAE (Agriculture Projects are currently operational in some African countries)
9	Use the Internet of Things sensors to improve agriculture outputs	US Agency for International Development (USAID) Ministry of Fishing & Aquaculture of Guinea	World Bank AfDB
10	Develop ICT Platform for enabling Small holding farmers in terms of weather, market and input / output information which could also could provide facilities for micro credit to the farmers for targeted intervention	Facilitated by Arab League	FAO AfDB
11	Facilitate technology enabled cluster approach for the availability of agricultural equipment for the small holding farmers	Facilitated by Arab League	Private Sector FAO AfDB
12	Develop Technology enabled warehouse and cold storage chain with market linkage	Facilitated by Arab League	Private Sector
13	Use the Internet of Things sensors to improve mining outputs	Ministry of Mines & Geology of Guinea	THE WORLD BANK GROUP'S MINING DEPARTMENT Private Sector Mining Companies
14	Use the Internet of Things sensors to track mining resources	Ministry of Mines & Geology of Guinea	THE WORLD BANK GROUP'S MINING DEPARTMENT Private Sector Mining Companies
15	Develop a common platform for the data capturing and analyzing using AI	Facilitated by Arab League	UNDP World Bank

	Initiatives	Potential Partners	Potential Donors
16	Create hydroelectric Dams to improve the electrical grid in the country	Ministry of Energy & Water Resources of Guinea	World Bank AfDB Government of China
17	Develop community solar system for the remote villages	Facilitated by Arab League	AfDB Private Sector
18	Facilitate the direct home solar kits	Facilitated by Arab League	Private Sector
19	Introduce smart planning solutions and revenue management solutions for the Conakry municipality which could be adopted by other cities and towns Conakry	Facilitated by Arab League	World Bank
20	Introduce the CCTV enabled connected traffic lights for streamlining the traffic with in	Facilitated by Arab League	Private Sector
21	Develop apps that allow citizens to report problems in Conakry	ICT Private Sector	Government of Guinea UNDP
22	Create an Urbanization Strategy	Ministry of Public Works, Urban Affairs & Housing of Guinea	Government of Guinea World Bank
23	Develop a social media strategy for the Government	ICT Private Sector	Government of Guinea UNDP
24	Develop Citizen service center approach for enabling the citizen to get the services under single roof.	Facilitated by Arab League	Government of Guinea World Bank
25	Develop Mobile and online based citizen service and online grievance redressal mechanism including social media-based service rendering and complaint redressal.	Facilitated by Arab League	Government of Guinea World Bank
26	Create a corporate compact between government and civil society to eliminate corruption	Ministry of Economic & Financial Control, Ethics & Transparency	Government of Guinea UNDP
27	Develop an Open Data Portal of government data	UN Statistics Unit Guinea Statistic Department	Government of Guinea World Bank





جامعة الدول العربية
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Council of Arab Economic Unity

GUINEA DIGITAL ROAD MAP