1 REPORT: INTERIM REPORT (R1)

IPSP PROJECT WITH PARTNERS: UK, KENYA AND NIGERIA

CONTENTS

1 SUBJECT OF THE PROJECT

I-Sat Connection & e-finance solutions and access to maternal health in remote locations: Realising the critical role of mobile satellite in the creation of inclusive digital economies

2 IPSP: THE BENEFITS TO THE UK AND PARTNER COUNTRIES

2.1 OVERVIEW OF THE IPSP

The International Partnership Space Programme (IPSP) was established by the UK Space Agency to promote growth of the space sector of the economy through provision of space capabilities that would bring societal and economic benefits to emerging economies. Its objectives are stated as:

> The objectives for this programme are about societal or economic benefits from the use of UK satellite or space technology for countries that currently do not have these benefits. It is about the UK learning from the partnership with these countries and it is about establishing the UK as the partner of choice with these countries once they are in a position to acquire or enhance their own space or satellite infrastructure.[1]

The benefits from the IPSP to the UK space sector are also articulated.

> The rationale for UK companies .... might be about establishing partnerships for the future on which to build trade. .... By working with emerging space countries for example by offering training and technology transfer, the UK can build both strong and enduring human links upon which future trade can be built; and also disseminate best practice in licensing, regulation and safe disposal of satellites. In the longer term UK companies become trusted partners to provide high tech exports for the UK thus growing the space sector.

The way the Programme is being presented emphasises benefits not just for the Agency and the UK space sector, but also to a broader range of government departments and interests. This wider impact of the IPSP is addressed in the concluding sections of this Interim Report.

The partnerships established by this Project are between a UK commercial entity and international entities operating in the Partner Countries.

There is also further opportunity for government-to-government involvement in addition to this engagement, perhaps at a regulatory or aid level. This involvement would likely be with the UK Space Agency and the Department for International Development, DfID, furthering the objectives of each. Other Departments, such as Health, might also be involved.

The IPSP can serve many of the needs of the Partner Country while also advancing multiple UK Government interests. To identify some of these needs and interests, consider the following.

[1] UK Space Agency, International Partnership Space Programme, 2015; https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/383540/IPSP_information.pdf.

2.2 NEEDS OF PARTNER COUNTRIES

Many African countries and emerging economies face a number of challenges to be met by national governments. These include large numbers of poor people and lack of desirable socio-economic benefits in isolated rural areas.

Satellite services can have an impact on these challenges. Satellite and other space services can assist in providing solutions to problems in the following categories, among other potential areas of contribution.

1. Poverty

- Information about market prices for agricultural produce and other goods, thereby improving the price obtained by rural producers
- Access to banking services
- Efficient use of land and its management
- Crop health

1. Lack of access to healthcare

- Telemedicine
- Information about care of infants and children
- Enabling centralisation of health records and early detection of health risks

3. Lack of access to education and educational resources

- Provision of educational material
- Remote access to specialist topics and their teaching by experts

4. Absence of infrastructure and communication services

- Efficient management of utilities
- Access to communication and broadband services

2.3 UK INTERESTS

The UK has both economic and non-financial interests in emerging economies that can be served by space capabilities and satellite service provision.

1. Exports

There is an export potential in each category identified. If not immediately lucrative, they have significant future potential. In many cases there will be opportunities for the manufacturing and space applications sectors to export products and services to the Partner Countries.

2. International Aid

In every category it is more attractive for the UK to support its space entity to provide the foreign aid through satellite services, rather than to fund support of aid provision in the Partner Country. Furthermore, space-enabled solutions can be provided on a national scale.

3. Education

There are many opportunities for UK educational institutions to provide material and services to be delivered via satellite.

4. Agriculture and Climate

UK entities have the capabilities to address agricultural needs of the partner countries, including those relating to weather and climate.

5. International Relations

The UK will benefit from closer relationship with Partner Countries. Diplomatic ties can be strengthened and developed.

6. Security

Improved prosperity and trade relationships with partner countries will advance security interests of both the UK and those countries.

3 THE PROJECT

3.1 BACKGROUND

The Project was commissioned by the UK Space Agency in March 2015, as part of the International Partnership Space Programme (IPSP).

It is one of seven space projects funded through the International Partnerships Space Programme, in which UK companies will work with international partners to develop satellite technology and applications in emerging economies. They are intended to demonstrate how UK satellite or space technology can provide societal and economic benefits to countries that do not currently have such capabilities.

3.2 IMPACT OF THE PROJECT

Programmes like this IPSP Project are considered very important within the partnering countries for a number of reasons. In addition to adding much needed facilities, they show that African nations are capable of making significant contributions within the framework of international partnerships. The kind of collaboration as under the Project can help to dispel any perception that populations of Kenya, Nigeria and other countries lack entrepreneurial capacity.

Enthusiasm for the Project was articulated by the Executive Director of the Africa Centre for Technology Studies. The Centre undertakes policy, legislative and analytical research. The aim is to focus on the environment needed to enable collaborative projects of this kind, as well as to identify constraints, such as intellectual property, ownership or financial incentives.

The Centre's focus is on innovation. Their view is that the science and technology are largely in place, while the strength in Africa is innovation. A good example is the M-Pesa system: Kenyans did not invent the mobile phone, but they found ways of using it that were not envisaged by those who did. This Project is seen in that light.

3.3 PARTICIPANTS

3.3.1 UK Lead Supplier

The UK Lead Supplier is Inmarsat International.

3.3.2 Partner Country: Kenya

Kenya desires to develop and to utilise increased space technology and services, to fulfil the aims of its Constitution and the objectives of other policies and strategies enunciated by the government. One of those strategies is increased access to financial services, which although much improved by recent mobile phone availability, is still very limited in remote areas.

The Project will also provide an ideal opportunity to explore and refine the available information on Kenya's interaction with the UK, the ITU, the UN, other countries, and other international bodies in its present and future satellite and space activities. It will also be useful to identify areas that will benefit from further research in policy and its implementation, including alternative approaches to national regulation, for the benefit of a wider audience.

3.3.3 Partner Country: Nigeria

The Project's focus on provision of medical services by satellite is extremely timely for Nigeria. As will be seen, populations currently lacking necessary care and advice can benefit greatly by such services, which will help to address serious problems arising from poverty, remoteness and lack of access to medical facilities.

The Project will also be of interest to many other countries that currently encounter one or more of these barriers to the provision of medical care.

3.3.4 ISPL's Role in the Project

ISPL is to conduct certain tasks and to prepare a Final Report (ISPL R) on topics enumerated in the IPSP Project subcontract. ISPL is also to deliver this interim Report (R1) on its findings in relation to the following tasks:

3. Determine and advise on Partner Country space policy objectives and their compatibility with those of the UK relating to the proposed satellite services; and
5. Prepare an interim Report (R1) of the findings of WP3.

4 INTRODUCTION TO INTERIM REPORT

This document reports interim results concerning the space policy objectives of each Partner Country and their compatibility with those of the UK in relation to the proposed Project. The section concerning Nigerian policy is necessarily more limited than that relating to Kenya, as the change of government has entailed structural change including a new Cabinet.

The services proposed are to be provided in Kenya and Nigeria. It is possible that other countries will also be served in similar ways in future. This may occur under Phase 2 of the IPSP.

Although the nature of the satellite service is broadly the same in both Partner Countries - communication connectivity - it will serve different needs. From a policy perspective it will meet different objectives. In Kenya the connectivity is to be used to enable access to banking in rural areas. The Nigerian service will provide access to maternal and child health services, also in rural areas.

The Report therefore covers issues relevant to the UK, Kenya, and Nigeria. There is limited mention of sub-Saharan and regional issues where relevant, followed by interim conclusions. These and other matters will be expanded in the Final Report.

5 UK

5.1 UK Policy

Certain UK strategies, objectives and policies are relevant to this Report, especially those related specifically to space activities. These and others will be discussed in more depth in the Final Report.

5.1.1 UK Space Policy

- The UK Space Agency Corporate Plan 2015-2016 declares:

- We will have clear established space policies and policy positions.
- UK Space policies and policy positions will be effectively represented at a national and international level.

- Although a UK Civil Space Policy document has been prepared, it has not been issued or made public. While the UK does not have an explicit national space policy, UK policies with respect to space are reflected in the instruments creating the UK Space Agency[2] and in other supporting documents, and are inherent in the strategies that it choses to follow. For the purposes of this Report, where UK policy is known, it will be compared to those of the Partner Countries in relation to this Project.

[2] The United Kingdom Space Agency (Transfer of Property etc.) Order 2011; SI 2011 No. 822; www.legislation.gov.uk/uksi/2011/822/pdfs/uksi_20110822_en.pdf

5.1.1.1 Space Policy Aims and Objectives

Certain aims and objectives of UK space policy are relevant to this Project.

5.1.1.1.1 Serving Public Interest

Almost every national space policy or lower tier policy makes reference to serving the needs of that nation's citizens. By implication this is the case with UK space policy, as the UK Space Strategy calls upon the UK Space Agency to serve other government departments in order to facilitate informed policy decisions to serve the public interest.

5.1.1.1.2 Growth

A primary space policy aim is the promotion of growth in the UK space sector, along with the growth and benefits that will accrue to other domestic and international sectors and markets. The strategies pursued by the UK Space Agency focus mainly on enlarging the UK share of the global space market, which comprises manufacturing, infrastructure and applications.

5.1.1.1.3 Smart government

The Space Strategy also highlights space-related facilitation of smarter government.

> Government will increasingly rely on satellite-derived services and data. In many areas, information gathered from space enables government to make better informed public policy decisions. For example, space can provide data on the environment, climate, weather, security, agriculture, coastal management and disaster mitigation. The UK Space Agency will support the development of 'smarter', more efficient government through the use of space data by providing the strategic leadership and acting as the centre of expertise for Government departments.[3]

5.1.1.1.4 International Development

The object of the UK Space Agency's International Development Policies is the delivery of international collaborative space programmes, to assist development in regions lacking the necessary infrastructure or capabilities. The provision of capabilities that assist in developing space-based applications is an important factor in delivery of these programmes, and is part of UK space policy.

The IPSP is one way in which the UK Space Agency meets this policy objective. It also fits well with the remit and objectives of the Space Applications Catapult.

The infrastructure being established by Inmarsat in Kenya and Nigeria will be critical to encouraging and enabling the introduction of other applications. In particular, data collection and delivery will lead to space applications not prevalent in the regions under consideration. The role of Inmarsat in each of the Partner Countries is to provide access and to deliver information.

[3] Graham Gibbs, An Analysis of the Space Policies of the Major Space Faring Nations, Annals of Air and Space Law, 2012, Vol XXXVII.

In this regard the Project is fully consistent with these objectives and with the UK policy direction.

5.1.1.1.5 Security and Export Control

Further guidance on space policy is provided by the Space Security Policy, which addresses Earth observation by satellite.

> In *maximising export opportunities* with full regard for security interests, we shall ensure that export control policy considers the complex issues surrounding service provision agreements and data and imagery transfer. However, within that framework individual licensing decisions will continue to be made on a case-by-case basis in the light of that policy and consistent with the United Kingdom's European Union and wider international obligations and commitments.[4]

5.2 Relevant Government Bodies & Documents

5.2.1 UK Space Agency

In 2010 the government authorised the creation of a space agency to achieve the UK's policy aims and objectives. The UK Space Agency became a fully executive agency on 1 April 2011.

5.2.1.1 Policy Direction in UK Space Strategy

Coincident with the creation of the UK Space Agency, the 'UK Space Agency Strategy 2011-2015' was released for consultation, culminating in the UK Civil Space Strategy 2012-2016.[5]

The strategy provides the overall policy direction of the UK civil space agenda by setting out six areas of focus and describing how each area is important to the UK's "growth agenda". In the context of this Report, the relevant strategy is to achieve growth from exports.

5.2.1.2 UK Space Agency International Policy

The UK international space policy resides in the Agency as opposed to anywhere else. It is focused on forming international relationships that are helpful to advancing industry objectives. In keeping with general UK Space Policy, the international policy aims to increase the UK's share of the international space market.
To achieve this aim the Space Agency works through ESA and EUMETSAT and, where possible, through CEOS and other gatherings of institutional communities.

Where space is an enabler for industry and for government, the Agency forms relationships with appropriate governments and their agencies to further industry and government

[4] Emphasis added.
[5] http://webarchive.nationalarchives.gov.uk/20121212135622/http://www.bis.gov.uk/assets/ukspaceagency/docs/uk-space-agency-civil-space-strategy.pdf

interests. The Agency recognises that the interest of governments is often not in space per se, but in using space to achieve their broader policies.

5.2.2 Satellite Applications (SA) Catapult

5.2.2.1 Role of the SA Catapult

To promote its underlying objective to capture 10% of the world market in space products and services, the UK has established the SA Catapult. The remit of the Catapult is to facilitate and promote opportunities to encourage growth in the space sector and its export potential.

5.2.2.2 International focus of SA Catapult

The SA Catapult's role in the IPSP is part of its support to further "the UK ambition to grow its exports. Over the next five years, the Catapult's focus on international engagement will increase. It works with UK Trade & Investment (UKTI) to find overseas partners with potential to provide export opportunities for the UK supply chain"[6].

5.3 Regulatory Regime

Space activity in the UK or by UK nationals is governed by the Outer Space Act 1986. Broadly, the Act requires space activities to be conducted only under licence from the Secretary of State and provides for certain terms to be included in the licence. Ofcom administers orbital and spectrum assignments.

6 KENYA

6.1 POLICY - SOCIAL AND ECONOMIC

6.1.1 National Priorities

6.1.1.1 Policy and Vision 2030

In approaching policies to be pursued in Kenya, Vision 2030 plays a major role. It is central to all policies adopted by the Government, including those in ICT and space.

6.1.1.1.1 Vision 2030 Stages

The Kenya Vision 2030 is to be implemented in successive five-year Medium-Term Plans, with the first such plan covering the period 2008–2012, the second covering 2013-2017.

At an appropriate stage, another five- year plan will be produced covering the period 2018 to 2022, and so on until 2030.

[6] Satellite Applications Catapult, Delivery Plan 2015-2020, https://sa.catapult.org.uk/documents/10625/53676/Delivery+Plan+-+Public+version+March+2015.pdf/e07ee971-a0f2-42be-989b-f6882c304144

6.1.1.1.2 Vision 2030 Objective

The Kenya Vision 2030 is a long-term development blueprint for the country. The aim of the Vision is to make Kenya "a globally competitive and prosperous country with a high quality of life by 2030". It aims at transforming Kenya into "a newly-industrialised, middle income country providing a high quality of life to all its citizens in a clean and secure environment". Simultaneously, the Vision aspires to meet the Millennium Development Goals (MDGs) for Kenyans. The Vision is anchored on economic, social and political pillars.

6.1.1.1.3 IPSP Project Advances Vision 2030 Goals

This IPSP Project aims to extend access to banking services to rural areas and the poor, which clearly advances the Vision 2030 goals. In particular, given experience with M-Pesa,[7] the Project will spread access to funds to reduce poverty.

It is now obvious that financial inclusion has become a vantage point for the poor. A 14-month ethnographic study in Kenya concluded in 2008 by the Consultative Group to Assist the Poor (CGAP) revealed that rural income increased by 30 percent after factoring in the M-Pesa service.

6.1.1.2 The MDGs

The UN's Millennium Development Goals (MDGs) commit African nations to a global partnership meant to reach eight internationally-agreed goals for socio-economic development that emphasise the following: elimination of extreme poverty and hunger; universal primary education; gender equality; reduction in child mortality; improvement in maternal health; lower HIV/AIDS and major disease incidence; environmental sustainability; and better partnerships with international development partners.

6.1.1.2.1 MDG Achievement

As Kenya makes progress to middle-income status through these development plans, it is expected to have met its Millennium Development Goals (MDGs) whose deadline is 2015.

This Project is focused on and will form part of achieving the elimination of extreme poverty in Kenya and reduction in child mortality in Nigeria. The latter is addressed in the Section on Nigeria.

6.1.1.3 ICT Policy & Strategy

6.1.1.3.1 ICT Strategy

6.1.1.3.1.1 Strategy 2013-2017: Role of ICT in Kenya's Development Agenda

The Government recognises ICT as a foundation for economic development. Kenya's vision of a knowledge-based economy aims at shifting the current industrial development path towards innovation where creation, adoption, adaptation and use of knowledge remain the key source of economic growth. ICT is a critical tool for expanding human skills and rests largely on a system of producing, distributing and utilising information and knowledge that in turn plays a role in driving productivity and economic prosperity.

[7] M-Pesa, or Mobile Money, facilitates financial transactions via mobile phones.

6.1.1.3.2 STI focus on ICT 2008

The Science and Technology policy of Kenya addressed the creation of an ICT infrastructure and access to information as a priority in advancing and achieving national development targets. In its Science Technology and Innovation Policy and Strategy of March 2008, the Ministry of Science and Technology emphasised the role of ICT.

> 3. National Priority Sectors for ST&I Policy Interventions
>
> To address the macroeconomic and social challenges and achieve the transformation to a knowledge based economy, priority sectors in which ST&I will be strategically integrated to create technology platforms for enhanced productivity growth were identified through a consultative process. The national sectors significant to achievement of national growth and development targets are:
>
> h) Information Communication Technology (ICT) – Provision of a robust ICT and infrastructure to stimulate and support local ICT industry growth, improved service delivery in both public and private sectors.[8]

6.1.1.3.3 ICT Legislation further aims of 2010 Constitution

Kenya enacted a new Constitution in 2010. The Constitution brings with it significant changes to the political system of governance of Kenya, expands rights and fundamental freedoms, and introduces a new system of public finance, among other changes.

ICT is one of the means by which some of the objectives of the Constitution are to be attained. These objectives include realising democracy through participation of citizen as defined in the Constitution; efficiency of the Government; effective methods to provide public service; and the citizen's right to know. ICT is imperative for the cost-effective achievement of constitutional requirements.

In particular, relevant requirements of the Constitution that can be delivered by ICT include Article 6 (3) on equitable delivery of public services to Kenyan citizens regardless of their domicile; Article 232 on quality service delivery by the public service; Article 35 on the correctness of information held by the state as well as ensuring public access to the information; and other articles concerning accountability of public officers, transparency of Government and participation of citizens in Government processes.

6.1.1.3.4 Role of the Information, Communication and Technology Authority, ICTA, and the Communications Authority, CA

The ICTA plays a major role in proposing policy directions related to communications. The CA, together with the ICTA, implement ICT policies of the Government. The policies it has developed give effect to the Constitution as well as to Vision 2030.

[8] Ministry of Science and Technology, Science, Technology and Innovation Policy, March 2008; http://www.ist-africa.org/home/files/Kenya_STI-Policy_Mar08.pdf

6.1.1.3.5 Stability of Policy

According to the ICT Authority, no significant changes in policy or regulation have taken place in recent years, although there have been incremental improvements. All government policies are being placed on-line and will be easily accessible.

6.1.1.4 Specific Areas of Focus

6.1.1.4.1 Education and Health

Education and health are a primary focus of the policies and strategies being pursued in Kenya. The Chief Executive of the ICT Authority stated:

> The most important things are education and health. As a service is introduced we must consider how it affects and improves these. These are the things that are going to drive this economy. Whatever we do we build it around that model.

While there has been considerable comment during the course of this Project to indicate that education and healthcare are considered to be more critical than banking, financial access contributes to these. Financial services are universally considered to be an important factor in the reduction of poverty and the safe circulation of funds. In turn, improved economic circumstances could lead to better health and educational outcome for the population.

6.1.1.4.1.1 Education

6.1.1.4.1.1.1 Emphasis on Education

The emphasis on education and health are widely shared among officials, academics and the business community.

Those at the A-G's Office expressed the view that the UK should concentrate on education and not banking. Although convinced that a banking service is important and will succeed, the African Centre for Technology Studies believes that education will make a huge contribution to the success of Kenya and connectivity could and should be extended to E-Education and Mobile Education, as well as other services such as environmental conservation.

Even those in the business community are keen to advance children's education.

6.1.1.4.1.1.2 How can banking support education

A broader perspective on the provision of the banking service is to link it to education. In Kenya primary education is free and secondary education is subsidised. As the banking service is introduced one must consider how it affects and improves education at all levels. "If banking can support those it would be a winner".

6.1.1.4.1.2 Health

6.1.1.4.1.2.1 Responsibility for Health

Healthcare is devolved to county governments. It would be very appealing to link the rural population to health services. In terms of meeting the need there is still a challenge but it will have a strong impact on the people.

6.1.1.4.1.2.2 Health Services Relation to Banking Services

As already noted, health and education are critical. The official at the A-G's Office expressed some reservations about an emphasis on banking services in preference to health services. She indicated that:

> For banking services Kenyans largely get by and it is not an essential of life. Delegates at the Committee on Peaceful Uses of Outer Space (COPUOS) meeting this year were not moved by talk about banking.
>
> There must be many health related organisations. In rural areas more so than NGOs and International NGOs. Through the national Health Ministry and local government Health Ministries the connections can be made very easily to take health services to the rural community.

However, access to banking services can be viewed as a promoter of health. Healthcare is expensive in Kenya and access to it by the rural poor very limited. Services that reduce poverty, such as provision of banking, would lead to greater access to health services.

6.1.1.4.2 Banking & Financial Access

Safaricom and other companies provide mobile access to banking services, like M-Pesa, where bank branches are not within reach. To serve those in rural areas, where there is also a lack of connectivity, will serve a need demonstrated by M-Pesa elsewhere. Clearly, to achieve sustainability depends on the extent of that need and the cost at which it can be met.

6.1.1.4.3 Improved Standard of Living

Alleviation of poverty and increased access to goods and services are primary aims of much of Kenyan policy.

6.1.1.4.4 Development of Infrastructure

Kenya is not, of course, the only country with the ambition and the need to enhance its infrastructure and to provide access to services in underserved locations. Each country will have its own particular objectives for specific services such as education, health and disaster response coordination. There is a strong Kenyan focus on improved infrastructure, including service provision by satellite.

6.1.1.4.5 Connectivity

There is a clear desire in Kenya to expand its digital infrastructure. In his April 2013 inaugural speech, President Uhuru Kenyatta stated:

> We will build on the accomplishments of the last administration in infrastructure, by increasing accessibility through roads and rail networks, *as well as increasing digital connectivity*.[9]

[9] Emphasis added.

The current government's focus on increasing connectivity is shared by others across the spectrum. Interviews and research through the early stages of this Project confirm the widespread need in a number of areas.

The need for connectivity and its impact on the achievement of policy objectives are evident in a number of areas, including the following:

- Government Policy: Vision 2030;
- Primary aims of access to educational and health are impossible for many without connectivity;
- Business, commerce and innovators look for support from access to the Internet;
- Academics also benefit in significant ways, and interact with government and business; and
- International partners, NGOs, IGOs need to monitor, comment and lobby on social and economic matters.

6.1.1.4.5.1 Current Level of Connectivity

At a national level there is reasonable connectivity, but it is poor or non-existent in many rural areas. There are other barriers to connectivity which will be explored in the Final Report. It is clear that space applications are important for bringing connectivity to these areas and to overcoming other barriers to provision of a wide range of necessary services, including banking.

6.1.1.4.6 Space Science Development

Another area of focus in Kenyan policy is strengthening national space science programmes.

6.1.2 Policy Relevant to the Project in Kenya

Policy areas that are relevant to the Project include access to finance and banking, communications and relief of poverty. The responsibilities and objectives of various Kenyan Government departments and agencies in those areas are briefly discussed in this Report, along with how they relate to UK policy.

6.1.2.1 Banking and Financial Access

The need for and socio-economic desirability of access to banking services have been amply illustrated by Financial Sector Deepening, popularity of M-Pesa and research by the Consultative Group to Assist the Poor among others.

6.1.2.1.1 Current Financial Access Position in Kenya

Proximity to a physical bank branch or a contact point is a significant factor in financial access. Where these are available, the use of portfolios of financial services is more prevalent, helping to address many socio-economic problems.

A large number of poor Kenyans are remote enough from a branch to make access difficult. While wireless service is available to a majority of them, varying by province, there are still many who have no such connectivity.

According to the Central Bank in 2014, The percentage of Kenyans living within a 3km distance of a financial access touch point was 58.7%. However, financial services touch points tend to be located in economically active regions of the country, more in urban than in rural areas. Furthermore, financial services touch points tend to be located away from areas of high poverty, disproportionately favouring less poor areas.

6.1.2.1.2 Overcoming Limited Access in Rural Areas

While the banking sector provides on-line services, it is not clear whether there is a sufficiently strong market in rural areas to develop these more aggressively, given the infrastructure costs. In addition, most banks have no experience serving poor customers in rural areas. One of this Project's strengths is that Equity is considered a rural bank, and attracts the kind of customers that would benefit most from access.

6.1.2.1.3 Need for Cashless Payments in Public Sector

The market for cashless payments in Kenya has hugely expanded, accounting for most transactions that were previously carried out with cash in sectors like foreign travel visas and transport. Recent government and commercial regulations have also restricted cash payments in some sectors.

6.1.2.1.4 Affordability

Alleviation of poverty is a goal of the Kenyan Government and one of the obligations it has accepted under the UN Millennium Development Goals, (MDG). One aspect of this obligation is ensuring that banking services are reasonably priced.

6.1.2.1.4.1 Making Agency Banking More Affordable

Off-grid agency banking is particularly vulnerable to high costs. In Kenya, every transaction has to be carried out in real time. Transactions cannot be batched for later transmission to the bank. Using an off-grid satellite phone, which is the only option in many cases, is very expensive. Multiple calls only increase the cost of the enterprise. Extension of the satellite-provided banking service to rural areas may therefore be a solution to the problem of high cost.

6.2 SPACE POLICY

6.2.1 Views on Relevant Kenyan Policy

Kenya does not currently have a space policy in place, but is in the process of developing one.

The ICT policies directly affecting the current Project appear well established. An official at the ICTA stated:

> The necessary policies are in place and the regulatory environment is right. Kenya has very clear policies to facilitate [the Project]. The policies and regulations are very permissive. If an activity is not already regulated there are no barriers.

It is rarely easy to identify documents specifying space policy in many countries, given weaknesses in official databases along with the constant discussion and revision of space policy as part of changes in broader government policy. One of the aims of ISPL's Final Report on this Project is to clarify as much as possible what exactly constitutes official government policy in Kenya.

The following policy discussion assumes that statements of relevant government officials and published reports can be taken as authoritative as of this date, pending official creation of the space agency and related regulation and legislation.

6.2.2 Current Space Policy in Kenya

6.2.2.1 Kenyan Space Policy in Context

Kenyan space policy has to be seen in the context of Vision 2030, Kenya's blueprint for development covering the period from 2008 to 2030. It aims to transform Kenya into an industrialising "middle-income country providing a high quality life to all its citizens by the year 2030". It is based on the premise that "the pursuit of space science and technology shall contribute to the country's economic growth and socio-economic transformation in addition to service to all humankind". It aims to "promote and enhance social and economic development through the utilisation of space technology in order to uplift the standard of life for all citizens".

In addition, there are specific needs to be addressed, such as training and education of scientists and technologists, government use of space services and development of applications.

6.2.2.1.1 Compliance with International Regulations and Treaties

In formulating policies and regulation, international obligations have been taken into consideration. Kenya is bound by the space treaties, and the draft policies being put forward comply with them.

6.2.2.1.2 Fundamental Value of Technology

In Kenya the uptake of technology is still low, but two factors indicate the probability of changing that position.

1. Development of the currently non-existent space industry which Kenya wants to foster; and

2. The contribution that science and technology can make to solving existing socio-economic problems.

Application of space technology is believed to help solve many socio-economic problems of Kenya. There is a desire to leverage space technology as a driver for developing other sectors and industries, such as advanced manufacturing, electronics, and so on. Space technology could have a trickle-down effect, leading to a much more vibrant economy that has a local manufacturing base.

There was a view among those interviewed that the Project could provide a model that will generate such solutions and that it may lead to the identification of other collaborations between Kenya and Britain.

6.2.2.1.3 Promotion of Space Services

Kenya has affirmed its intention to encourage and assimilate space capabilities, particularly by the creation of a space agency.

6.2.2.1.3.1 Use of Space Applications

Kenya recognises the value of space applications in meeting its socio-economic goals. Kenya is already benefitting from a number of space applications aside from telecommunications.

For instance, according to Unesco, about 17 million of Kenya's 41 million people lack access to safe water. During the course of a 2013 survey of groundwater conducted for the Kenyan Government on behalf of the UN, aquifers were detected by space-based technology and Landsat imagery, in Turkana County of Northern Kenya. This groundwater could potentially improve the livelihoods of the Turkana people, most of whom live in poverty.

6.2.2.1.3.2 Satellite to Provide Connectivity

The Communications Authority also sees this Project as a good tool for achieving policy objectives, particularly as the infrastructure roll-out has not covered most of the country because of the demographics. The objectives are connectivity in unconnected areas, and narrowing the digital divide. This Project will help to achieve these objectives.

6.2.2.2 Upcoming Formalisation of Space Policies and Agency

6.2.2.2.1 Space Policy Formulation

At the beginning of July 2015 a final draft of the proposed space policy was completed. It is to be submitted to the Cabinet for approval, and then it will be taken to Parliament for discussion and adoption.

6.2.2.2.2 Establishment of Space Agency

Kenya also does not yet have a Space Agency, but a Bill is ready to present to the President for his assent. It is expected that the Agency will both promote the space sector and the use of space, as well as regulate space activities. The focus will be on topics such as launching, education, and the like.

6.2.2.3 Areas of Future Space Policy Focus

Future space policy may be expected to focus on a number of areas, including

- social economic benefits;
- national security and defence;
- international cooperation;
- promotion of research, development and innovation;
- sustainable use of outer space; and
- general access to space technology.

6.2.2.3.1 Revision of Space Policy

The ICTA view is that future changes to policy or regulatory systems to accommodate desirable projects will not be difficult. Where policies or regulations fall short, the system is such that regulations and policies can be made to facilitate good proposals.

6.2.2.3.2 Education, Environment and Conservation

The Communications Authority of Kenya is convinced that satellite provision of banking will be successful. It will increase inclusion not just for financial access, but could be extended to e-education and mobile education, environmental and conservation applications.

6.2.2.4 Cooperation Between UK and Kenya

To create a thriving space sector there must be readiness in political, legal and governance realms to embrace space technology. Notably, Kenya has shown its intention to encourage space capabilities, through the planned creation of a space agency. It also recognises the benefits of close relationships with countries having space capability. With Inmarsat's infrastructure in place, many benefits can be achieved for the Kenyan nation.

There is also a firm basis for the UK Space Agency and the Satellite Applications Catapult to benefit from operational experience and new applications that may develop through the cooperation, while furthering their remit to promote the UK space sector.

Although much of the dialogue in Kenya has been about technological capability, there is also a perceived need for new applications, spin-offs and innovation. These can be further enhanced by engagement with the Satellite Application Catapult, in keeping with the policies of the UK.

6.2.3 Specific Space Policies

6.2.3.1 Foreign investment

6.2.3.1.1 CA Requirements for involvement of nationals

One of the important consideration that the CA emphasises is the need to have at least 20% of the business owned by locals. The percentage is kept low to encourage foreign investment. Each application undergoes a case-by-case assessment.

If there is no partner at the outset, the investor is given 3 years to achieve the 20% local shareholding. As there is a Kenyan partner in the Project, that period is not relevant. Given the structure of the arrangement between Inmarsat and Equity, these rules are also unlikely to apply.

6.2.3.2 International Collaboration

Kenya is working with the Italian Space Agency, Agenzia Spaziale Italiana (ASI) in various projects, including education and training programmes in space technology. ASI is using a system in Kenya for satellite tracking. Agreement between the parties expired in March 2010, but has been extended repeatedly by 2 or 3 months at a time. Kenya is renegotiating the Agreement to derive greater benefit from the arrangement.

There are also collaborations between Nigeria, South Africa, Algeria and Kenya on environmental resource management, under the African Resource and Management Satellite Constellation. Each country contributes assets to the constellation.

6.2.3.2.1 Other Cooperation agreements

Regional Centre for Mapping of Resources for Development, located in Nairobi
NASA and the United States Agency for International Development, USAID, opened the SERVIR-Eastern and Southern Africa hub in 2008 at the Regional Centre for Mapping of Resources for Development, RCMRD, in Nairobi, Kenya. The hub serves all of eastern and southern Africa, which faces regular, often disastrous flooding conditions, interspersed with periods of extreme drought, with far-reaching economic and public health ramifications.

Broglio Space Centre, located in Malindi
As noted above, there is a cooperation agreement with the Italian Space Agency, ASI. The agreement is being renegotiated to secure greater benefits for Kenya. It was due to expire at the end of October 2015, but no doubt it has been extended again.

6.2.3.2.2 UK as partner

One of the authors of the Kenyan documents for the formation of the Space Agency expressed the view that:

> This is a good proposal and for us it is a good idea and we are open to partnerships. We can implement a project together, which can be business for a UK company, but also a learning opportunity for us.

This view and the collaboration agreements already in place is strong indication that Kenya is a willing and enthusiastic partner for the UK.

6.2.4 Policy Implementation and Legislation

6.2.4.1 Lack of Space Law Legislation to Date

Space legislation has been passed by some African countries. Kenya does not yet have specific space law.

In general, Kenyan law focuses on the technology, but not on applications by third parties. It addresses what government agencies can and will do, but does not sufficiently anticipate non-government activities. Nor does it facilitate the role of third parties.

However, space legislation will be critical to the successful development of a space sector, and there is the will to pursue enactment of space law. The existing plans for the formation of the space agency and the policies to be advanced include indications of broad elements of the legislation to be fully drafted and put before parliament.

6.2.4.2 Timeline

It is unlikely that Kenya will pass space legislation within the time frame of the Project. However, assuming that the Space Agency is created this year, and national policy is approved, there could be regulatory and other legislation fairly soon.

So far, the indications that have been received in the course of the Project do not flag up any areas of concern for the banking connectivity Project.

6.3 Relevant Government Bodies & Documents

6.3.1 Stability and Independence of Government Bodies

6.3.1.1 Frequent change of government

6.3.1.2 CA Policy Stability and Independence

Ministry of Information, Communications and Technology, ICT Ministry, is responsible for the policy affecting the envisaged services. Once formulated they are implemented by the CA to progress the industry. However, through the process of formulation the CA is always involved as user of the policies and it contributes immensely.

This is a thoughtful and slow process which is not prone to sudden unpredictable changes. Although it is influenced, it is not controlled by the political system.

Policy stability leads to changes in the law also being stable and they take time and are usually improving exercises to accommodate new technologies. Thinking takes place more at the administrative level and changes come about that may effect policy shifts.

6.3.2 Communications Authority

6.3.2.1 Role of the CA of Kenya

The Communications Authority of Kenya is the regulatory authority for the communications sector in Kenya.

Established in 1999 by the Kenya Information and Communications Act, 1998, the Authority is responsible for facilitating the development of the Information and Communications sectors including broadcasting, multimedia, telecommunications, electronic commerce, postal and courier services.

6.3.3 ICTA

6.3.3.1 ICT Authority

The Information and Communication Technology Authority, (ICTA), is a State Corporation under the Ministry of Information, Communications and Technology. The corporation was established in August 2013.

The Authority is tasked with rationalising and streamlining the management of all Government of Kenya ICT functions. Its broad mandate entails enforcing ICT standards in Government and enhancing the supervision of its electronic communication.
The Authority also promotes ICT literacy, capacity, innovation and enterprise in line with the Kenya National ICT Master Plan 2017.

6.3.3.2 National ICT Master Plan 2008

> The Information and Communication Technology Authority, ICTA, rolled out the National ICT Master Plan that will set the pace for progression of the country in ICT for 2008 – 2013. The master plan, once fully rolled out, will completely transform government processes, services and management, and make information access and service delivery more efficient. The master plan, which announced flagship projects to pilot its implementation, will steer the march towards the digital future that will transform the country to a regional technical hub, raise the country's competitiveness and align the country with Vision 2030's ICT goals.

6.3.3.3 Master Plan 2013-2017

This 5 year reiterative Master Plan determines priorities and key initiatives to be undertaken across the Vision 2030 socio-economic pillars. Vision 2030 Pillars to be addressed are:

Social Pillar

This pillar will specifically dwell on seven priority areas, namely:

Education and Training
The Health Sector

Water and Sanitation
The Environment
Housing and Urbanisation
Gender, Youth and Vulnerable groups
Social Equity and Poverty Reduction

Economic Pillar

Under the economic pillar, there are six key intervention areas i.e.:

Tourism
Agriculture
Wholesale and Retail Trade
Manufacturing
Business Process Outsourcing
Financial Services

The inclusion of financial services for intervention is clearly helpful to and supportive of the Project.

6.3.4 Space Agency

6.3.4.1 Creation of Space Agency

One of the functions of the Space Secretariat, part of the Ministry of Defence, was to oversee the transition of the Secretariat into a fully fledged Kenya Space Agency.

6.3.4.2 Current Position

As of the date of this Report, the Space Agency has not yet been formally created. Statements by those interviewed in Kenya bear out the hope that a Space Agency should be formed before the end of 2015. To speed up its formation, those tasked with its formulation have decided to create the Agency under a Presidential Order, and then have a Bill to go through Parliament. Cabinet minutes have been prepared and have been taken to the President.

Other relevant documents for a Space Agency have also been finalised, and are going through the approval process. The Minister of Defence has forwarded them to the Cabinet. If it is established by Presidential Decree, the Agency can be set up more quickly than by other means.

The potential Kenya Space Order (decree) is likely to include licensing requirements.

6.3.4.3 Operation

Personnel for the Agency may present a challenge, but initially appropriate individuals can be seconded from the Ministry of Defence, MoD, and other organisations. If the Agency does not work there may have to be changes of policy. The leaders will have to identify changes needed in the light of experience.

6.3.4.4 Meeting international obligations

Once the Agency is established it will promote the passage of legislation to implement Treaty obligations, including licensing, penalties and other measures.

6.3.5 Space Centre

Kenya is also in the final stages of establishing a space centre, with similar functions to those of the National Aeronautics and Space Administration (NASA) agency.

6.4 Regulatory

6.4.1 Regulatory and Policy Environment

There is a good policy and regulatory environment in Kenya. Both services and connectivity are encouraged and supported.

The interest is in both the technology and applications. Once technology is developed it needs to used. But while Kenya develops technology it will also encourage applications to be in that forefront.

6.4.2 Banking Regulation

6.4.2.1 No Known Regulatory Barriers

Kenya encourages wider access to banking, and agency banking services close to the user. The Government is very supportive of the idea of agency banking, as is the Central Bank. The Financial Sector Deepening, (FSD), is not aware of any current or anticipated regulatory barriers to the provision of agency banking in rural areas.

6.4.2.2 Need for Communications Authority and Central Bank Approval

The Financial Sector Deepening (FSD) recommend going to the Communications Authority and the Central Bank to get their approval of the Project, or a letter of no objection. Our view is that these or other necessary steps will have been taken by Equity Bank.

6.4.2.3 Potential Data Provisions Applicable to Foreign Partners

For non-Kenyan service providers, the banking regulations to be observed may contain rules on data in relation to agency banking. Privacy and data protection laws are currently before Parliament.

6.4.2.4 CA Question About Need for Banking Licence

The Communication Authority of Kenya raised the question of licensing by the Central Bank to permit the operation of the service being undertaken through the partnership with Equity Bank.

6.4.2.4.1 Arguments on Licence Requirement

Two points arise in relation to licensing. First, the role of Inmarsat in this operation is the provision of connectivity between the rural agents appointed by Equity and the bank. No part of the banking operation is being undertaken by Inmarsat.

Secondly, similar questions arose in relation to M-Pesa, with the Central Bank asserting the need for authorisation of the service. The dispute between the Central Bank and M-Pesa (or more accurately, Safaricom) was resolved in favour of the latter. Subsequently, new provisions were introduced to ensure customer security and integrity of the service.

> Banking regulation mentioned by CA does not apply. Inmarsat is providing connectivity. That battle has been fought and won by M-Pesa.[10]

6.4.2.5 Larger Policy Context

When this Project is introduced there will inevitably be some confusion, particularly about security and data. The introduction of M-Pesa on a successful scale raised similar questions within banking and communications regulation circles. Because of the satellite element, the tendency in response to this Project may be to look at space law for answers. But there is no current space law that has anything to say about this kind of banking service.

Current legislation focuses on technology and not on applications. It will be necessary to examine policy and administrative governance to identify gaps in the regulatory regime, to ensure the creation of an enabling environment. This is the way to address space applications like the Project that have social and economic outcomes.

> Considering the various elements as an eco-system, it is clear that there will be a similar argument to that relating to Internet regulation, but this Project is in a different environment both technically and legally. Analysis of legislative and policy frameworks is needed to identify opportunities and challenges. Such analysis will be a real service not just for this Project, but also a public service and benefits many others for future projects.[11]

6.4.2.5.1 Regulation of space services

The relevant areas of regulation in Kenya that relate to space services, and specifically to this Project, are discussed in the Final Report. These may include spectrum and licensing, telecoms, equipment, cooperation agreements, technology neutrality, minimum coverage requirements, point-to-point services, government funding and preferences, as well as ITU issues and potential restrictions or barriers.

6.5 OTHER FACTORS

6.5.1 Ease of Doing Business

On 28th October 2015 at the launch of World Bank's Ease of Doing Business 2016 report, the Head of DFID-Kenya, Lisa Phillips observed:

> On behalf of the British Government, I congratulate the Kenyan Government on the progress it has made this year to qualify as one of the global top ten reformers on the ease of doing business. The progress that Kenya is making against the Ease of Doing

[10] Observation by ACTS Director, 29 July 2015.
[11] Observations by ACTS Director, 29 July 2015.

> Business indicators may seem very remote from the lives of ordinary Kenyan businesses and households, but is actually very significant for three reasons.
>
> Firstly, it can result in increased domestic investment and jobs.
>
> Secondly, it can result in increased foreign investment in Kenya. This is because being rated as a top ten reformer signals to investors that Kenya is genuinely open for business.
>
> And finally, these reforms are positive sign of the Government's commitment to fight corruption. This is because the use of electronic and streamlined regulatory processes significantly cut the opportunity for corruption.

These comments support the conclusions advanced in this Report.

7 NIGERIA

7.1 NIGERIAN POLICY: SOCIAL AND ECONOMIC

Any assessment of up-to-date policy in Nigeria must take into account the recent transition to a new government. President Muhammadu Buhari took office in May 2015. Following confirmation screening by the Senate, the Cabinet list was announced in November.

As of November 2015, the Presidency's National Planning Commission website still features the Vision 20:2020 documents, which is assumed for the purposes of this Interim Report to be still official policy.

The President in the meantime has not articulated new policy in relation to space activities. Nor is there any record found of other government officials articulating new policy. There is therefore no reason to suppose that the policy has been altered.

7.1.1 Poverty in Nigeria

Government sources indicate that of 170 million Nigerians, 110 million are living in extreme poverty.

7.1.2 Need for Economic Development

Economic development, along with transmission of benefits to those in poverty, has therefore been at the forefront of Nigerian policy.

> The overall goal of economic development is improvement in human well-being. To attain Nigeria's Vision 20:2020 would, therefore, require the translation of the nation's economic growth into tangible improvements in the well-being of the majority of our citizens.

7.1.3 Vision 20:2020

Vision 20:2020 is an articulation of the long-term intent to launch Nigeria onto a path of sustained social and economic progress and accelerate the emergence of a truly prosperous

and united Nigeria. Recognising the enormous human and natural endowments of the nation, the blueprint is an expression of Nigeria's intent to improve the living standards of her citizens and place the country among the Top 20 economies in the world.

The following are the basic aims for achieving the NV20:2020, for the well-being and productivity of Nigerians, and fit well with the Millennium Development Goals.

1. Eradicate extreme hunger and poverty
2. Enhance access to quality healthcare
3. Provide sustainable access to potable water and basic sanitation.
4. Provide accessible and affordable housing.
5. Build human capacity for sustainable livelihoods and national development.
6. Improve access to micro – credit.
7. Promote gender equality and empower women.
8. Foster a culture of recreation and entertainment for enhanced productivity

7.1.4 MDGs

Nigeria aims to meet the targets of Millennium Development Goals (MDGs). These are eight internationally-agreed objectives for socio-economic development, emphasising the following:

- elimination of extreme poverty and hunger;
- universal primary education;
- gender equality;
- reduction in child mortality;
- improvement in maternal health;
- lower HIV/AIDS and major disease incidence;
- environmental sustainability; and
- better partnerships with international development partners.

7.1.5 Importance of Space Services

According to the National Space Research and Development Agency, NASRDA, space services are important for efficient communication, and enhancement of transportation and tourism sectors, advancement in education and health care delivery systems.

7.1.6 Role of ICT

Multiple research efforts specific to Nigeria have also shown that ICT investments can positively impact jobs, productivity, GDP growth, and innovation.

The demonstrated impacts of ICTs include:

Better quality of life through enhanced education, business practices and healthcare.

Yet another application of ICT that is having far reaching impact on access to and affordability of medical expertise is in the field of Telemedicine. Telemedicine tools enable the communication and sharing of medical information in electronic form, and thus facilitate access to remote expertise. A physician located far from a reference centre can consult his

colleagues remotely in order to solve a difficult case. These same tools can also be used to facilitate exchanges between centres of medical expertise, at a national or international level.

7.1.7 Specific Areas of Policy Focus

7.1.7.1 Health

Nigeria's health objectives, and policies to support them, are expressed in Vision 20:2020. The Vision specifically addresses enhancing access to quality and affordable healthcare.

7.1.7.1.1 Need for Improved Medical Provision

In August 2014, the then Minister of Communication Technology made the following observations:

> Sub-Saharan Africa carries a disproportionate share of global diseases. According to World Health Organisation (WHO) estimates, the region has 11 per cent of the world's population but carries approximately 24 per cent of global diseases. This situation is reflected in high maternal and infant mortality as well as low life expectancy indices.
>
> Nigeria's per capita spending on health is currently $161, comparing unfavourably with the $948 calculated by the WHO as the recommended total global spending on health per person per year. Inherent in this low per capita spend on health is an acute shortage of healthcare workers.

7.1.7.1.1.1 Maternal and Child Death

In 2015 Nigeria accounted for 14% of all annual maternal deaths worldwide, second only to India at 17%. Similarly, Nigeria accounted for 13% of all global deaths of children under the age of five years, again second only to India at 21%.

7.1.7.1.2 Vision 20:2020 Policy for Health

Vision 20:2020 articulates current problems and policy objectives related to health.

Healthcare encompasses the prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions in both the public and private enterprises.

The Vision document points to inadequate and poorly maintained facilities, a very high patient to doctor ratio and inefficient service delivery, all of which underlie the current shortcomings in the system.

7.1.7.1.3 MDG Strategy for Healthcare

According to Vision 20:2020, Nigerian MDG targets for child mortality, maternal mortality and nutrition may be missed by wide margins, if current trends continue unabated.

In order to deliver on the health-related MDGs, the Nigerian government is therefore implementing a wide range of initiatives, including the Integrated Maternal, Newborn and Child Health Care Strategy, using the Ward Minimum Health Package. Access to primary health care is also being improved by increased investment in infrastructure, human resources, equipment and consumables. Implementation arrangements are targeting local needs, which vary hugely from community to community and from state to state. There is also improvement in routine immunisation as a way of building on the successes of the near-eradication of polio.

The MDG goals for health also provide important targets for the improvement of the mental and physical well being of Nigerians.

7.1.7.1.4 Consistency of Project with Nigerian & UK Policies

This Project has a significant potential to contribute to achieving better maternal health and a reduction in child mortality in Nigeria.

7.1.7.2 Infrastructure Development

7.1.7.2.1 Nigeria mobile phone statistics 2015

A healthy proportion of Nigeria's population of over 181,000,000 has a mobile cellular subscription. The ITU's figures listed in November 2015 show that compared to about 180,000 landlines, but 139 million mobile cellular subscriptions, or 78 per 100 inhabitants.

However, in very remote and usually poor areas, mobile teams such as that proposed in this Project would normally be reliant on satellite phones, which are expensive to use. Provision of satellite service could be less costly, but would also allow the necessary transmission of large amounts of data.

7.1.8 Use of Spectrum for Socio-economic Goals

The Nigerian Communications Commission (NCC) holds that radio frequency spectrum is one of Nigeria's key natural resources of great economic value as a result of its direct application in telecommunications, broadcasting, military operations, and scientific research in addition to a range of other socioeconomic activities such as social services, law enforcement, education, healthcare, transportation, etc. As a result, many industries depend heavily on the efficient utilisation of radio frequency spectrum.

These crucial factors therefore, make it mandatory for the government to develop comprehensive and clear-cut policies that will ensure that spectrum resource is optimally utilised for the overall benefit of the nation. As an agency of Government, the NCC is charged with the responsibility to develop and adopt polices in accordance with policy objectives that will ensure that this scarce resource is well managed in its area of responsibility.

7.1.8.1 NCC Frequency Management Policy Objectives

To control and encourage the use of spectrum as an instrument for developing telecommunication which is an essential infrastructure for stimulating the economic growth and social development of the nation.

To manage scarce frequency resource, especially in bands where satellite shares frequency with terrestrial systems and to encourage the use of satellite connectivity to un-served areas that lack terrestrial transmission infrastructure backbone.

7.1.9 Project fit with NV 20:2020 and MDG

This Project serves both the NV 20:2020 aims and the MDGs for are improvement in maternal health and reduction of child mortality. It also fulfils the requirement to use radio spectrum in the service of healthcare.

7.2 Nigerian Space Policy

7.2.1 Space Policy Documents

The most detailed and apparently complete document accessed in this research, setting out Nigerian space policy, is undated. The title is 'National Space Policy' and it includes an Executive Summary, Application Areas, Scope of the National Space Programmes, an Annex on National Space Research and Development Agency (NASRDA), and citations to previous documents along with membership information of a Technical Advisory Committee. This document is posted on a non-governmental website.[12] It seems to date to about 2000, and may be a version of the document referred to as a 'National Space Policy' that was said by many sources to have been approved in 2001.

It contains this statement:

> The Policy Document and Programme attached herein are definitive and authoritative statements, roadmaps and signposts that, if faithfully followed, will transform Nigeria from the status of a consumer nation to an active participant in space technology and allied fields within three years.

This website is not an official Nigerian source or that of another body that can be taken as authoritative. However, the document does appear to closely parallel the 2010 powerpoint slides identified online and attributed to Seidu O. Mohammed PhD, Director-General of NASRDA. The slide presentation is entitled "Nigeria Space Programme" and states that it was produced for the Bengaluru Space Expo 2010.

Note: References cited in the 'National Space Policy' report refer to documents that not yet found:

1. National Policy on Space Science and Technology, May, 1993.

[12] The website was set up and may still be run by a Nigerian medical doctor. It includes current and archived news and commentary about Nigeria: www.dawodu.com.

2. Nigerian Space Programme, A Blue Print for Scientific and Technological Development, September, 2000.

3. Report of the Special Committee to Review Space Matters in Nigeria, October, 2000.

7.2.2 Basis in Vision 20:2020

As of November 2015, the Presidency's National Planning Commission website still features the Vision 20:2020 policies, which are assumed for the purposes of this Interim Report to be current policy.

In November 2015 the new government's Cabinet was announced, as well as directors of NASRDA and other relevant government bodies. However, since election in May, the President has not articulated new policy in relation to space activities. Nor is there any record found of other government officials articulating new policy. There is therefore no reason to suppose that the policy has been altered.

7.2.3 Overall Focus of Space Policy

Based on the available documents, the National Space Policy of Nigeria enumerates a number of policy areas and acknowledges the need for cooperation in attaining its objectives. Specific aspects of the Policy are clearly relevant to the Project.

7.2.4 Objectives

Professor Seidu O Mohammed (D-G NASRDA) described space technology as an essential tool for Nigeria's socio-economic development, noting that it was capable of enhancing the quality of the lives of Nigerians. A few of the national objectives are discussed below. These and others will be more fully discussed in the Final Report.

7.2.4.1 Health

Among the missions specified in the Space Policy for the use of space capabilities, the Policy refers to the need for the "[d]evelopment of education and healthcare delivery systems both rural and urban".

> 6.2 Government shall use satellite communication system to enhance telecommunication services and *applications*.[13]

The Objectives of Section 6.2 include:

> (vii) Enhance healthcare delivery through telemedicine.

As the thrust of this Project in Nigeria is increased access to healthcare, it is consistent with the space policy objectives. If the technology can be adapted or extended to serve other policy areas, its benefits to Nigeria will be enhanced.

[13] Emphasis added.

7.2.4.2 Development of Nigerian Space Sector

Nigerian Space Policy also focuses on the development of indigenous space capabilities.

> Section 1.2: Government shall develop a "critical mass" of Nigerians in the area of space science and technology to enable the country realise its objectives for achieving Technological, industrial, Commercial and economic self- reliance.

7.2.4.2.1 Cost to Nigeria

NASDRA's Director-General Prof. Seidu Onailo Mohammed says it is "disturbing" that 97 per cent of the satellites covering Africa are foreign owned, and earning "millions" for their foreign investors. He urged Nigeria's government to take an urgent look at how it allocated space resources.

NASDRA's ambitions to increase the satellite communications capacity of Nigeria, and to reduce reliance on non-Nigerian providers, are matters to be considered in the long-term planning of the Project. They will be discussed further in the Final Report.

7.2.4.3 Peaceful Use of Space and International Collaboration

The Nigerian Space Policy includes the following statement.

> 9.2 (a) Nigeria supports international cooperation for the peaceful uses of outer space for the benefit and interest of mankind.
>
> (b) Nigeria shall implement its space programme taking advantage of multilateral and bilateral cooperation with other space-related organisations in the world to promote domestic economic growth and development.

7.2.4.4 Value of radio spectrum

The Nigerian Communications Commission regards radio frequency spectrum as one of Nigeria's key natural resources of great economic value as a result of its direct application in telecommunications, broadcasting, military operations, and scientific research. In addition the NCC recognises the valuable contribution it makes to a range of other socio-economic activities such as social services, law enforcement, education, healthcare, transportation, etc.

It therefore encourages the use of spectrum for the purpose of providing access to healthcare.

7.2.5 Partnerships

7.2.5.1 Cooperation agreements

The UK High Commission in Abuja confirmed that Nigeria is party to several space cooperation agreements and arrangements, and that it is open to greater cooperation with the UK.

7.2.6 Compatibility of Nigerian Space Policy with UK Space Policy

There is broad agreement between the two national space policies, particularly in relation to healthcare provision, the international development aims of the UK and Nigeria's aim to grow its national space sector.

7.2.7 Compatibility of IPSP with Nigerian Space Policy

Clearly the space-related policies of Nigeria are consistent with the objectives of the Project, in relation to healthcare provision, peaceful use of space, and development of international cooperative activities.

7.3 NIGERIAN GOVERNMENT

7.3.1 General Remarks on the Nigerian Government

7.3.1.1 Introductory Comment on New Nigerian Government

Although it has been possible to have some general telephone conversations with Government officials and at the British Embassy in Nigeria, it has not been possible to arrange personal interviews in Nigeria or through telecommunications channels. There is consequently no clarity about any new policies or the extent and manner in which existing policies will be carried forward.

Following the election of President Muhammadu Buhari in May 2015, no Ministers were nominated until October, when a list of nominees was issued. The confirmation process has now been completed by the Senate, and the Cabinet was announced in November.

7.3.2 Relevant Government Bodies & Documents

7.3.2.1 National Space Council

The National Space Council is the highest policy making body for space science and technology development in the country. The Ministry of Science, Technology and Information, and subsequently NASRDA and its various subsidiary bodies, are under its direction.

7.3.2.1.1 NSC Membership in Previous Government

The National Space Council was inaugurated in 2013 by former President Jonathan, along membership lines set out in the National Space Policy. There is no indication that the structure of the Council has been changed since the new government has been in place, although there are new Ministers in place.

The composition of the council was as follows, including three Academic members:

1. The President – Chairman
2. The Vice-President – Deputy Chairman
3. Minister of Science & Technology
4. Minister of Communication Technology
5. Minister of Education

6. Minister of Defence
7. Minister of Interior
8. Minister of National Planning
9. Attorney-General of the Federation & Minister of Justice
10. Professor Elijah Mshelia
11. Professor Vincent Olunloyo
12. Professor Francesca N. Okeke
13. Director-General, National Space Research and Development Agency (NASDRA)

7.3.2.2 NASRDA: The Nigerian Space Agency

7.3.2.2.1 NASRDA Policy

The "… National Space Research and Development Agency (NASDRA) shall pursue the development and application of space science application and technology for the socio-economic benefits of the nation".

7.3.2.2.1.1 Leadership

As of November 2015 Professor Seidu O Mohammed is still shown on the NASRDA's official website as Director. It is assumed he will continue to play a major role in the development of Nigerian space policy. It is reasonable to assume that the Policy is unlikely to undergo any significant change.

7.3.2.2.2 Compatibility of the Project with NASRDA Functions

7.3.2.3 NOTAP

The Project is consistent with several functions of NASDRA, as among other things it will aid in;

(e) developing national strategies for the exploitation of the outer space and making these part of the overall national development strategies…

7.3.2.3.1 NOTAP's Mandate

The National Office for Technology Acquisition and Promotion (NOTAP) is a parastatal of the Science and Technology Ministry. Its mandate includes:

- Encouragement of a more efficient process for the identification and selection of foreign technology;
- Development of the negotiating skills of Nigerians with a view to ensuring the acquisition of the best contractual terms and conditions in the transfer of foreign technology agreements;
- Provision of a more efficient process for the adaptation of imported technology;
- Registration of all foreign technology transfer agreements having effect in Nigeria;

- Monitoring on a continuous basis of the implementation of any contract or agreement registered pursuant to the Act setting up the Office;
- Commercialisation of R&D Results and Inventions;
- Promotion of locally generated technologies;
- Promotion of Intellectual Property; and
- Promotion and encouragement of the development of creative and inventive skills among Nigerian Scientists, Researchers, Inventors and Innovators.

7.3.2.3.2 Partnership Between NOTAP and NASRDA

In pursuit of its aims, the National Office for Technology Acquisition and Promotion (NOTAP) announced in September 2015 that it will work in partnership with the National Space Research and Development Agency (NASRDA) to promote technologies emanating from space science, for the benefit of Nigerians.

7.4 CONCLUSIONS ON NIGERIA / UK PARTNERSHIP AS OF NOVEMBER 2015

Across the Nigerian policies in the relevant areas, ranging from communications and spectrum utilisation, ICT and space, there appears to be no impediment to the provision of the services envisaged by the Project.

8 CONCLUSIONS

This Report is based on research and interviews carried out in the UK, along with research and interviews conducted in Kenya. The section on Nigeria is largely based on publicly available documents and telephone conversations with a few individuals in Nigeria.

At this stage of the Project, our findings are as follows.

Both Kenya and Nigeria are interested in developing indigenous space sectors, to advance their scientific and technical capabilities and to achieve their socio-economic policy aims. In so far as they exist, their space policies are formulated to meet these objectives.

Therefore, to assess the compatibility of the Project and the policies of Kenya and Nigeria, it is necessary to consider the wider policies of the relevant country.

In the case of Kenya, the provision of access to banking services has been considered largely in relation to its policy to reduce poverty, as that most directly affected by the Project. Access to financial services will also have an impact on a large number of other problems.

In Nigeria, the service being provided by the Project relates to maternal and child health information and support, although its impact will not be limited to health issues.

In Kenya, the Project will provide access to banking services through agents in partnership with a bank that has demonstrated its effectiveness in serving the needs of poor customers in rural areas. This is fully consistent with the Kenyan policies to reduce poverty, use spectrum for social and economic benefit of Kenyans, with potential impact on education and health.

The service being enabled by the Project in Nigeria will provide direct improvement of the health of mothers and their infants. This serves both the Nigerian policy on maternal and child health, and Nigeria's obligations under its declared policy, including the Millennium Development Goals.

Nothing in either part of the Project runs contrary to UK space policy or objectives. It can be argued that it advances many of the objectives of the UK Space Agency, including the growth of the space sector and creating opportunities for closer links between the Agency and the governments of Kenya and Nigeria. The Department for International Aid is already involved in the Project. Furthermore, the objective of the IPSP to provide "societal or economic benefits from the use of UK satellite or space technology for countries that currently do not have these benefits" can be achieved.

Finally, the results of this Project can lay the groundwork for other UK departments and agencies, as well as those in the Partner Countries, to expand the benefits of satellite services to a very wide range of aims and objectives.

9 ANNEX: ABBREVIATIONS

A-G	Attorney-General
AIDS	Acquired Immunodeficiency Syndrome
ASI	Agenzia Spaziale Italiana, Italian Space Agency
CA	Communications Authority
CEOS	Committee on Earth Observation Satellites
CGAP	Consultative Group to Assist the Poor
COPUOS	Committee on Peaceful Uses of Outer Space
DfID	Department for International Development
E-education	Application of Internet technology to the delivery of learning experiences
ESA	European Space Agency
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
FSD	Financial Sector Deepening
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus

ICT	Information and Communication Technology, or Information, Communication and Technology
ICTA	Information, Communication and Technology Authority
IGO	Inter-governmental Organisation
IPSP	International Partnership Space Programme
ISPL	The London Institute of Space Policy and Law
ITU	International Telecommunication Union
MAMA	Mobile Alliance for Maternal Action
MDG	UN Millennium Development Goals
MoD	Ministry of Defence
MTP	Medium Term Plan
NASA	National Aeronautics and Space Administration
NGO	Non-governmental Organisation
M-Pesa	Mobile Money (Pesa means money in Swahili)
NASRDA	National Space Research and Development Agency
NOTAP	National Office for Technology Acquisition and Promotion
RCMRD	Regional Centre for Mapping of Resources for Development
ST&I	Science, Technology and Innovation
STEM	Science, Technology, Engineering and Mathematics
UK	United Kingdom
UKTI	UK Trade & Investment
UN	United Nations
USAID	United States Agency for International Development
WHO	World Health Organisation