



Spectrum

Digital Migration Process in Kenya

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Report written by
Telecommunications Management Group, Inc

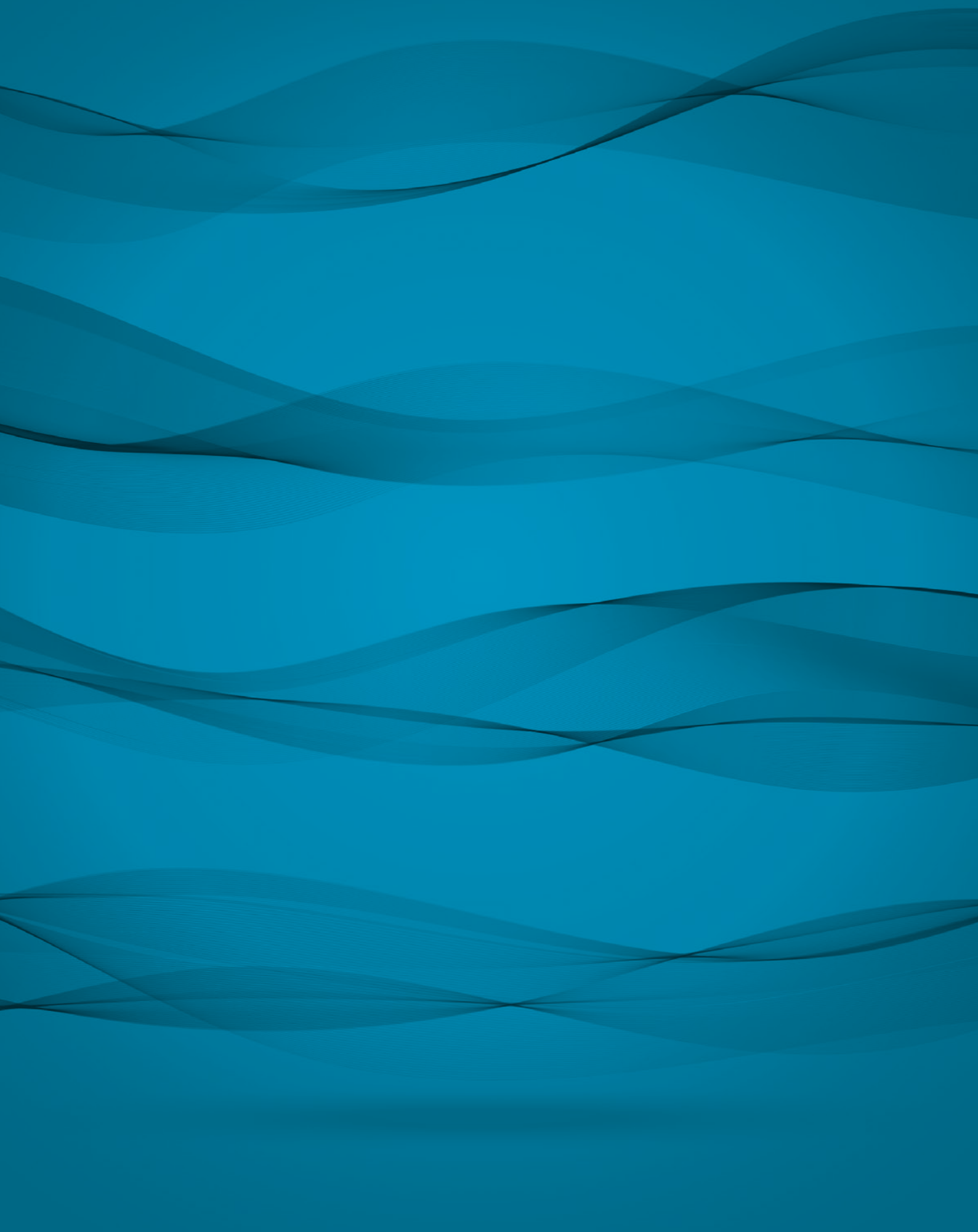
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Executive Summary

This report presents a case study of the digital television migration in Kenya. As one of the largest and most diverse economies in East Africa, Kenya is a hub for technology and innovation in the region. Kenya's experience with the digital television migration, including the key challenges faced and the solutions implemented, highlight valuable lessons that can provide useful information and guidance to regulators and policymakers from other countries where similar migration processes are ongoing or being planned.

Planning for the analogue to digital television migration in Kenya began in 2006. The government viewed the migration as a vehicle to not only deliver improved audio-visual quality and diversity of content to Kenyan consumers, but also to efficiently utilise spectrum, resulting in a digital dividend (freed up spectrum). Compounding the migration's benefits, this digital dividend would later be used to support new mobile services, including 4G, bringing significant benefits to Kenyan citizens.

Lessons

In Kenya, as in other countries, the digital migration process required consideration and implementation of a broad range of topics including policy considerations, the state of the broadcasting market, funding, public outreach, consumer equipment and the inclusion of stakeholders in the planning process. The following are some key lessons from Kenya's migration experience:

- **Governments must play a critical role in facilitating the entire digital migration process by establishing a well-planned migration roadmap and obtaining buy-in from stakeholders, as these tasks greatly increase the chance of a smooth and successful transition process.**
- **Governments should request and give due consideration to industry input throughout the migration process, including during the planning that precedes the actual technical changes. Due consideration of these inputs and well-reasoned decisions will promote buy-in from stakeholders, which reduces or eliminates court challenges.**

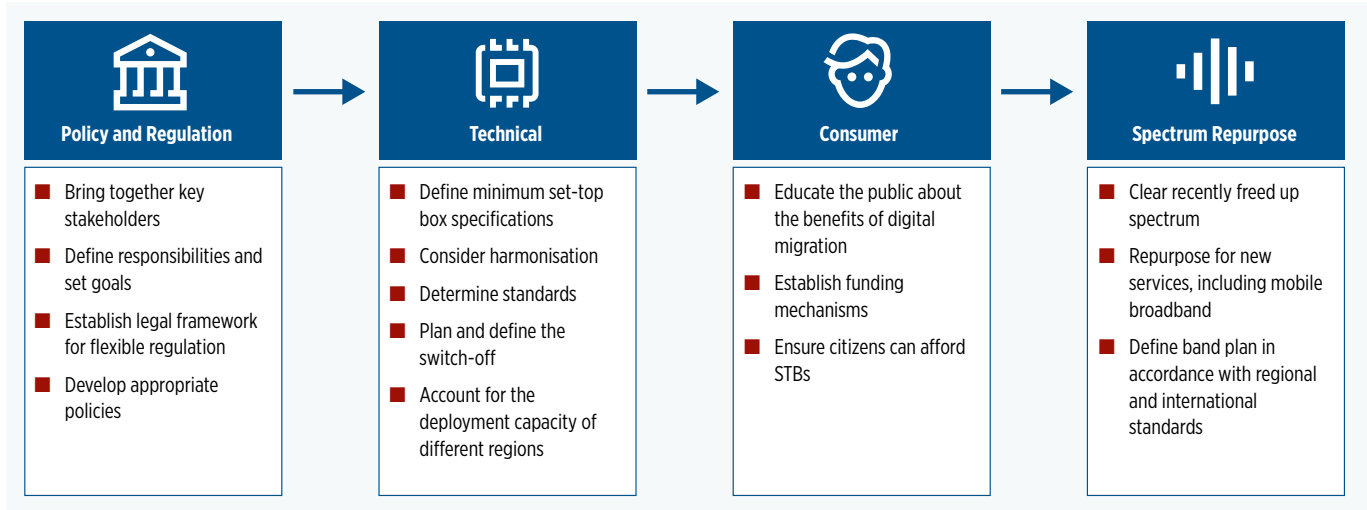
- **In developing timelines for the process, all stakeholders should understand that adjustments will likely be necessary to address challenges and unanticipated developments.**
- **At the same time, multiple timeline adjustments may create confusion and lack of certainty among consumers about the digital migration process. Such adjustments should be implemented only when objectively necessary and when their benefits outweigh the increased uncertainty.**
- **When choosing technical standards, it is important to seek international harmonisation in order to benefit from economies of scale. On the consumer side, the provision of set-top boxes (STBs) is key, including its affordability and availability. For both the network and consumer perspectives, proper consideration should be given to the digital television deployment capacity in different regions of the country.**
- **Opting to use a wholesale model for broadcast distribution may be a useful tool to allow broadcasters to focus on content and ease the costs of infrastructure and other financial requirements, but relying solely on a government-owned entity to provide such services may limit roll-out due to funding constraints and generate concerns about content control from private broadcasters.**

- When implementing a wholesale model for distribution services, the government should establish a licensing framework that allows the private sector to obtain distribution service licences, thereby providing greater flexibility and encouraging investment in the sector.
- In developing consumer awareness campaigns, governments should provide incentives to ensure cooperation from media outlets and should be prepared to combat misinformation to consumers. Emphasis should be placed on media outlets with the greatest reach, which may include more traditional channels, such as radio.
- The migration plan should include details regarding the repurposing of the digital dividend spectrum, including specific timelines for clearing the band and awarding the spectrum. In addition, the plan should specify the

process the government will use to grant the spectrum to new operators. Transparency regarding the process will greatly enhance the credibility of the sector and allow for proper planning by interested participants.

Adapting lessons learned from Kenya’s experience, Figure 1 summarises key considerations regarding policy and regulation, technical decisions, consumer awareness and spectrum planning that governments should consider when undertaking a digital migration process.

FIGURE 1: KEY POINTS FOR THE DIGITAL MIGRATION PROCESS

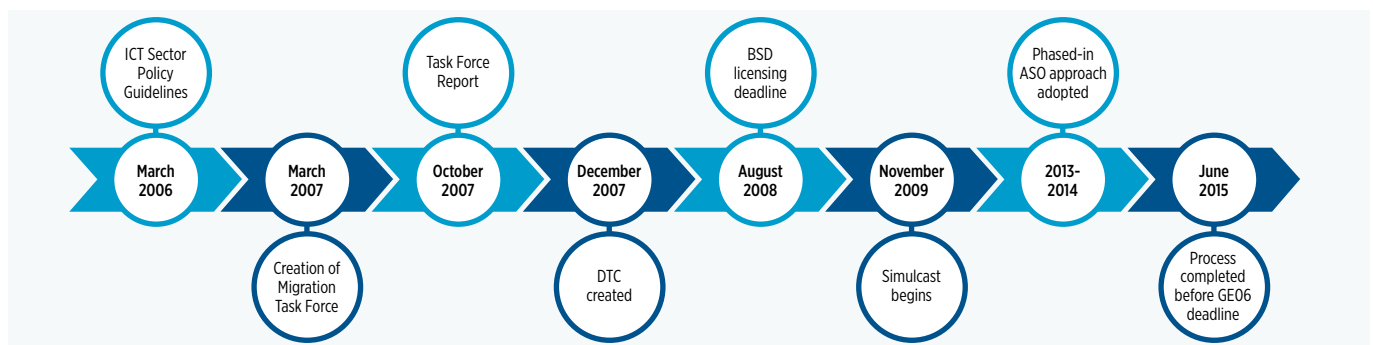


Source: TMG analysis.

Process

As a signatory to the ITU Geneva 2006 (GE06) Agreement, the Kenyan government originally agreed to an analogue switch-off (ASO) date of 17 June 2015. But during the planning process, it opted for a more ambitious schedule, advancing the switch-off date by three years and setting a deadline of June 2012. See Figure 2 for the overall timeline of the digital migration process.

FIGURE 2: OVERALL TIMELINE OF KENYA'S DIGITAL MIGRATION PROCESS



Source: TMG research.

To plan the digital migration process, the government created a multi-stakeholder Digital Migration Task Force that advised the Minister for Information, Communications and Technology (MICT) and developed a report that provided the roadmap for the migration process. The report recommended:

- **establishing the Digital Transition Committee (DTC) to manage the migration process;**
- **implementing a phased ASO during the migration process;**
- **licensing broadcast signal distributors (BSDs) to provide signal distribution services separately from content licensing;**
- **implementing a dual illumination (simulcast) period of three years from 2009 to 2012 during which analogue and digital television would be simultaneously broadcast; and**
- **initiating the ASO from 1st July 2012 in a phased manner.**

Pursuant to the report, the MICT created the DTC, chaired by the Principal Secretary of the MICT, to manage and implement the roadmap. The DTC was comprised of the Communications Commission of Kenya (CCK), which subsequently became the Communications Authority of Kenya (CA), the MICT, broadcasters, set-top box (STB) vendors and consumer associations.

To complement the DTC's work and facilitate the deployment of the digital infrastructure and generate greater content, as recommended in the report, the CCK developed a new

broadcasting licensing framework that unbundled content from distribution and created two categories of licences – content licences and BSD licences.

The government viewed the new “unbundled” licensing framework as a means to reduce market entry barriers and operating costs for broadcasters because they would no longer need to deploy and operate expensive networks, such as television transmitters and associated infrastructure, or acquire spectrum. Kenya was not alone in using this approach. Other countries in the region, including Rwanda, South Africa, Tanzania and Uganda also opted to unbundle content from distribution. Initially, Kenya awarded only one BSD licence to SIGNET, a newly created subsidiary of the public broadcaster, KBC. After roll-out was delayed and funding was insufficient, the government opened a competitive tender process and awarded a second licence to Pan African Network Group (PANG), a private Chinese-owned entity.

In addition to amending the licensing framework, the government sought to raise awareness and educate the public on the migration process. As part of this effort, CA and DTC conducted a wide range of media campaigns, including television and radio commercials, print advertisements, billboards and social media initiatives through Facebook and Twitter accounts. The authorities also held several roadshows, mobile clinics and other outreach activities to better engage consumers including consultation forums, and interviews.

Challenges

Similar to other countries, Kenya's digital migration process faced numerous legal, technical, funding and consumer challenges (see Table 1). These challenges required significant resources and resulted in disruptions and delays.

TABLE 1: KENYA DIGITAL MIGRATION - CHALLENGES AND SOLUTIONS

Challenges	Issue	Solution	
Legal	Litigation brought by broadcasters seeking redress from not being allowed to obtain BSD licences. This litigation prompted delays in ASO timelines.	<ol style="list-style-type: none"> 1. Changed to a phased ASO. 2. Initiated a licensing process to allow a private sector entity to be awarded a BSD licence. 	3 years (June 2011 - April 2014)
Technical	<ol style="list-style-type: none"> 1. Limited availability of STBs. 2. Affordability of STBs. 	<ol style="list-style-type: none"> 1. Established minimum STBs specifications, fast tracked vendor authorisation. 2. Removed import duty and reduced type approval fees. 	1 year (2012 - 2013 government fiscal year)
	<ol style="list-style-type: none"> 1. Decision to switch from DVB-T to DVB-T2 to take advantage of new standard. 2. Change in standard created misinformation about existing DVB-T infrastructure and STBs 	<ol style="list-style-type: none"> 1. Deployed a parallel DVB-T2 network in Nairobi. 2. Established minimum STB specifications and delayed ASO to build up inventory. 	7 months (June 2012 - December 2012)
Funding	Delayed digital BSD network rollout due to legal uncertainty and inadequate funding.	Awarded additional BSD licence to PANG, a private sector company to assist with rollout.	4 years (June 2011 - June 2015)
Consumer	Lack of public awareness concerning the migration.	Demonstrated benefits of digital migration through consumer awareness campaigns, using social media, print and TV/radio, and creation of a specific website containing DTV information	Ongoing process (2010 - present)

Legal challenges. The legal challenges, which took several years to resolve, were based primarily on the new broadcasting licensing framework. With only SIGNET and PANG as BSD licensees, broadcasters felt unfairly excluded from the signal distribution market and challenged the BSD licensing process in court. Ultimately, the Supreme Court determined that while the migration process was legal, the broadcasters were entitled to obtain BSD licences. CA decided to grant the broadcasters self-provisioning BSD licences. These licences are more limited than standard BSDs licences as the licensees can only transmit their own content over their infrastructure, not that of third parties. In 2015, the first self-provisioning licence was issued to African Digital Network (ADN), a consortium of the Nation Media Group, Standard Group and Royal Media Services. SIGNET and PANG continue to hold standard BSD licences.

Technical challenges. Kenya also faced technical challenges with its migration process. Initially, in 2009, Kenya adopted the first-generation Digital Video Broadcasting – Terrestrial (DVB-T) television transmission standard and MPEG 4 video compression standard, but soon after, switched to the second-generation DVB-T2 standard in 2010 due to its greater channel capacity. The change in standards reduced the number of compliant set-top boxes (STBs), prompting the government to institute various measures to address the resulting challenges. It established new minimum STB specifications for DVB-T2, fast-tracked vendor authorisation to expand the STB supplier pool, reduced taxes on digital television receivers to make them more affordable, removed import duties and reduced type approval fees.

Funding challenges. Funding a digital migration process is a challenge in any country and particularly so in emerging markets with more limited resources. Moreover, the initial approach of using SIGNET, a public entity, as the BSD, limited this entity to public funding. Initially, the DTC recommended that SIGNET receive funding to support the provision of BSD services during the simulcast period, but SIGNET did not receive sufficient public funding. The lack of funding (as well as the five-year process to incorporate SIGNET and obtain its licence) delayed SIGNET's infrastructure deployment.

Consumer challenges. The government, recognising that STBs needed to be affordable and well-marketed, launched consumer awareness campaigns in 2006. Despite the government putting a great deal of effort into these campaigns, many consumers were still either left in the dark or even opposed the migration. Additionally, since public funds were limited, the government encouraged media owners to assist with consumer awareness. Unfortunately, the opposite occurred, with traditional media running negative ad campaigns, aimed at derailing the migration process and discouraging consumers from buying STBs. Some consumers also fell prey to certain media reports that PANG, as a Chinese-owned company, would be prone to censoring content if the Kenyan government requested it.

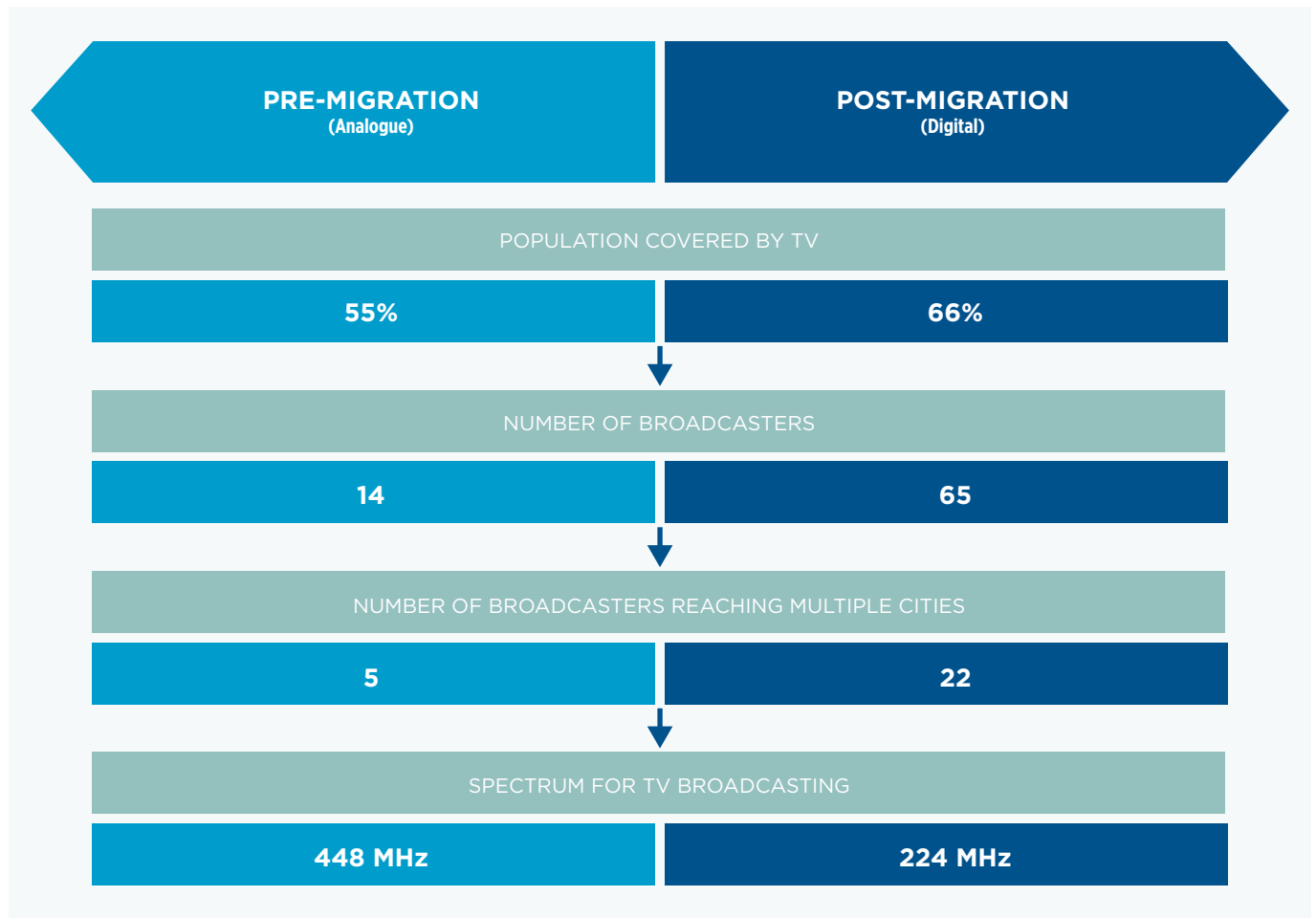
Results

Kenya's ASO was finalised in 2015. The process took nine years, three more than originally planned, but still in keeping with the GEO6 deadline of 2015. Setting an earlier timeline allowed the government greater flexibility to make any necessary adjustments while still meeting the GEO6 deadline. The transition allowed the government to recover 168 MHz in the 700 MHz and 800 MHz bands and repurpose these frequencies for mobile services.

- **800 MHz band (the first digital dividend).** The government first moved forward with the 800 MHz band. It divided the band into three blocks of 2 x 10 MHz; and in June 2016, awarded trial mobile licences to Kenya's three main mobile operators. These operators have begun deploying new 4G networks to provide mobile broadband services. In November 2016, the government plans to award a final licence to Safaricom. Airtel and Telkom Kenya should receive their final licences in March 2017.
- **700 MHz band (the second digital dividend).** For the 700 MHz band, Kenya adopted a 2 x 30 MHz channel arrangement, consistent with the ITU regional recommendations. Kenya has allowed public and private entities to launch trial networks in the 700 MHz band and is expected to auction this band sometime in the near future.

Ultimately, Kenya overcame the challenges outlined above and successfully created a more robust broadcasting sector. The government met the GEO6 deadline, and also increased the population covered by television by 20% and the total number of broadcasters by four and a half times (see Figure 3). In addition, the number of broadcasters reaching multiple cities grew from five to 22, allowing for greater consumer choice and tailored-content.

FIGURE 3: KENYA BROADCASTING MARKET



Source: TMG research.

1 Key Characteristics of the Digital Migration Process in Kenya

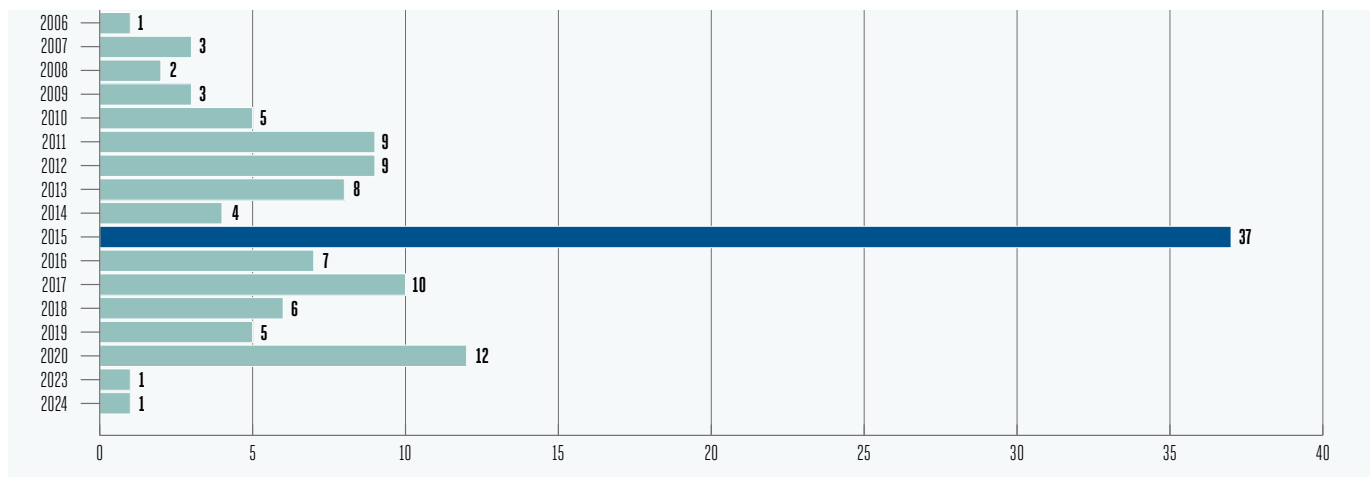
1.1 Background

1.1.1 Kenya's Implementation of the GE06 Agreement

Prior to 2006, regional treaties dating as far back as 1961 governed the allocation and management of terrestrial television spectrum in Kenya.¹ In 2006, the ITU Region 1 member states,² including Kenya, entered into the GE06 Agreement (GE06), which replaced part of these older agreements, and set an analogue switch-off (ASO) deadline of 17 June 2015.³

For Kenya, the GE06 was considered a binding agreement under its constitution and international law. Pursuant to the GE06, Kenya initiated the migration from analogue to digital broadcasting technologies and developed a digital broadcasting plan covering the 174-230 MHz and 470-862 MHz bands.⁴

FIGURE 4: NUMBER OF COUNTRIES COMPLETING THEIR ASO PER YEAR (2006-2024)



Source: ITU Status of the Transition to Digital TV.⁵

Between 2006 and 2015, 66% of the 123 GE06 signatory countries completed their ASO. Kenya was one of the 37 countries that completed its ASO in 2015 (See Figure 4). To date, Kenya is one of only seven of the 54 African GE06 signatories to have completed the ASO. A list of countries that have not yet completed their ASO is in Appendix B.

1.1.2 Stakeholders in the Digital Migration Process

The government engaged a broad group of stakeholders to participate in the digital migration process, including some representatives from the public sector, the private sector (e.g., broadcasting and mobile operators), and other relevant industry participants (See Figure 5). The two primary government entities included were the Ministry of Information, Communications and Technology (MICT) and the ICT regulator, the Communication Authority (CA).⁶ The MICT developed the policies relating to the digital migration process and CA implemented the GE06.⁷

1 Regional Agreement for the European broadcasting areas, Stockholm 1961 and Regional Agreement relating to the planning of VHF/UHF television broadcasting in the African broadcasting area and Neighbouring countries, Geneva, 1989.

2 Region 1 covers countries in Europe, the Middle East, the former Soviet republics, Africa, and the Middle East west of the Persian Gulf

3 Regional Agreement relating to the Planning of VHF/UHF Television Broadcasting in the African Broadcasting Area and Neighbouring Countries, Geneva 1989 (as revised by RRC-06-Rev.GE89).

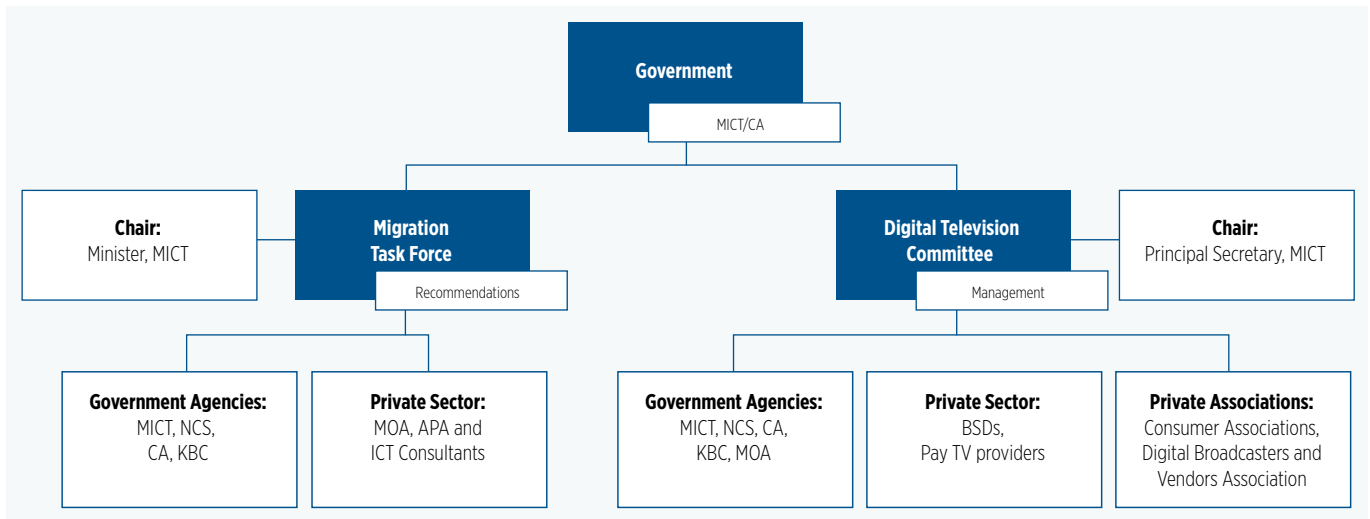
4 During the RRC-06, the various national draft frequency plans were presented by the member states so that the television channel arrangements could be reorganised for coordination and avoidance of interference. Communications Commission of Kenya, Understanding Migration From Analogue to Digital TV Broadcasting in Kenya. <http://oncu.digital.com/digitalmigration/wp-content/uploads/2016/08/UNDERSTANDING-MIGRATION-FROM-ANALOGUE-TO-DIGITAL.pdf> Section 6

5 <http://www.itu.int/en/ITU-D/Spectrum-Broadcasting/Pages/DSO/figures.aspx>, visited on 13 Sept. 2016.

6 When the digital migration was initiated the regulatory body was the Communications Commission of Kenya (CCK), established by the Kenya Information and Communications Act, 1998 (KICA). Pursuant to the Kenya Information and Communication (Amendment) Act of 2013, the CCK was rebranded in 2014 as the Communications Authority (CA). For purposes of this document, we will use CA to refer to the regulator unless the context requires otherwise.

7 Under its Constitution and its interpretation of international law, the Kenyan government viewed the Final Acts of RRC-06 as legally binding.

FIGURE 5: DIGITAL MIGRATION STAKEHOLDERS



Source: TMG research.

As part of its policy-making responsibility, the MICT developed two multi-stakeholder groups to assist with the migration process – the Task Force on the Migration from Analogue to Digital Broadcasting (Migration Task Force) and the Digital Television Committee (DTC). The Migration Task Force prepared a report that became the roadmap for the digital migration process. The DTC, in turn, implemented the roadmap and managed the process.

The use of a multi-stakeholder group approach to develop and implement the digital TV migration was also adopted in other East African countries, such as Rwanda, Tanzania and Uganda. This approach has proved useful by bringing together diverse interests involved in a digital broadcasting transition – government, regulator, broadcasters, equipment manufacturers,

advertisers and other supporters of broadcast business models. To this end, a key factor determining the success of a country's digital migration is the participants' level of engagement in a multi-stakeholder group. In this respect, Tanzania's approach was designed to maintain the participants' focus on specific tasks and engage them throughout the process. In contrast, some participants in Kenya's multi-stakeholder groups, particularly broadcasters, did not believe that their viewpoints were considered. Rather than view the multi-stakeholder approach as collaborative, some broadcasters felt that their input was not considered and that the process was perfunctory. As a result, Kenya's process did not result in the different stakeholders reaching agreement on the way forward. Instead, it culminated in litigation that contributed to significant delays in the overall transition.

Task Force on the Migration from Analogue to Digital Broadcasting (Migration Task Force)

Kenya's Migration Task Force, established in 2007,⁸ was responsible for providing recommendations and assisting in the development of a national strategy for the ASO.

The Task Force members consisted of government representatives and private sector stakeholders with a role in television broadcasting.⁹ These included:

- MICT;
- National Communications Secretariat (NCS);
- CA;
- Kenya Broadcasting Corporation (KBC);
- Media Owners Association (MOA);
- Association of Practitioners in Advertising (APA); and
- individual ICT consultants.¹⁰

Although CA stated that the Migration Task Force's final decisions were mainly reached by consensus, some broadcasters disagreed.¹¹ These broadcasters felt that their opinions were not fully considered when final decisions were reached.¹² The resulting litigation demonstrated how it is not only important to establish the vehicle for participation, such as through the creation of a multi-stakeholder forum, but it is equally important to ensure that all stakeholders feel that their input is considered, and reflected in the roadmap and implementation. In addition, it is also important that persons speaking on behalf of a particular stakeholder group are widely accepted as representing the broader community within the multi-stakeholder group. If representatives of a stakeholder group are not seen as valid, then their opinions and commitments may not be accepted by the broader stakeholder community.

Digital Television Committee (DTC)

In December 2007, the MICT established the DTC, which was divided into three subcommittees – technical, regulatory and consumer awareness. The multi-stakeholder DTC included CA, the MICT, broadcasters, BSDs, STB vendors and consumer associations (i.e., the Consumer Unity & Trust Society-Africa Resource Centre, the Kenya Consumers' Organisation and the ICT Consumers Association of Kenya).

The DTC's tasks included:

- managing the migration process within a specified timeframe;
 - developing an appropriate switchover strategy;
 - recommending measures to be taken to ensure availability of STBs;
 - responding to public concerns;
 - identifying likely bottlenecks to the uptake of digital broadcast;
 - making recommendations related to fiscal measures, if any, that need to be taken to encourage uptake of digital television services;
 - developing and implementing an appropriate consumer awareness strategy; and
 - monitoring and evaluating the awareness, uptake and use of new services and adjusting the campaign accordingly.
- The primary DTC outputs were a schedule of ASO phases and dates, and implementation of the Migration Task Force's recommendations.

8 Understanding Migration from Analogue to Digital TV Broadcasting in Kenya, Section 8

9 Communications Authority of Kenya (2016, September 9). Telephone interview with Alfred Ambani, Assistant Director.

10 Report of the Task Force on Migration of Terrestrial Television from Analogue to Digital Broadcasting in Kenya, July 2007, Section 15.

11 Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani, Assistant Director.

12 Media Owners Association (2016, September 13). Phone interview with Lynette Mwangi.

1.1.3 Roadmap

The Migration Task Force drafted the Report of the Task Force on Migration of Terrestrial Television from Analogue to Digital Broadcasting in Kenya (Task Force Report) in July 2007.¹³ MICT approved the Task Force Report in November 2007. This document became the roadmap for the digital migration process. It included the key policy and technical recommendations, as well as the ASO timelines, addressing:

- digital broadcasting standards:
- signal distribution:
- content issues in digital broadcasting:
- policy and regulatory considerations: and
- consumer issues.

While the government expressed certain views prior to the establishment of the Migration Task Force (e.g., the concept of signal distribution),¹⁴ the issues addressed by the roadmap covered the major problems facing Kenya, or any other country, in preparing for a digital migration process. The roadmap included a clear timeline (even though it was ultimately delayed in Kenya’s case), which was crucial for ensuring that all stakeholders had a clear understanding of the process and its milestones. Similarly, the roadmap emphasised early consideration of consumer issues – an element critical to minimising confusion among viewers.

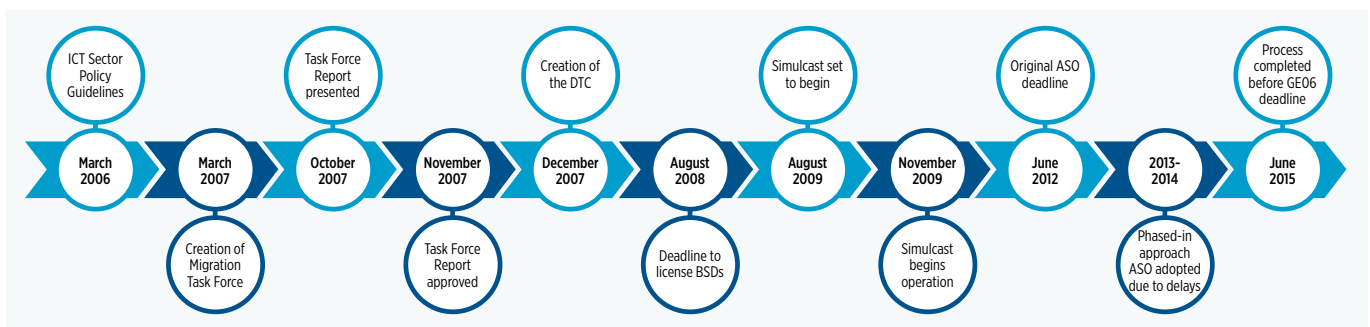
Because the digital migration plan entailed introducing a new digital service in the same frequency range as the analogue service, it required a transition period when both analogue and

digital broadcasting television would be transmitted at the same time (the simulcast period). The Migration Task Force recommended dividing the migration process into three distinct phases: digital switch-on (DSO), simulcast period, and ASO.

The Migration Task Force also considered the impact of multi-channel viewing and on-demand services, and recommended against imposing specific programme requirements for digital television. It noted that programming requirements were warranted for analogue broadcasting because the technical nature of analogue television meant that only one programme could be transmitted per channel during the same time period. In contrast, digital broadcasting technologies enable operators to offer multiple programmes simultaneously per channel.¹⁵ The Migration Task Force adopted a forward-looking perspective by recognising that the new digital environment required a different, more flexible regulatory approach, and recommended against imposing specific programming obligations that could suppress innovation and reduce consumer choice. Thus, the Migration Task Force advocated for light-touch and self-regulation regarding programming requirements.

Ultimately, the work of the DTC and Migration Task Force resulted in the design, implementation and completion of the ASO, beginning in March 2006 and ending in June 2015. A summary timeline of the digital migration process in Kenya is shown in Figure 6.

FIGURE 6: TIMELINE OF KENYA’S DIGITAL MIGRATION PROCESS



Source: TMG analysis.

¹³ Report of the Task Force on Migration of Terrestrial Television from Analogue to Digital Broadcasting in Kenya, July 2007.

¹⁴ National Information & Communications Technology (ICT) Policy Guidelines, Jan. 2006, Section 4.6, available here

¹⁵ Report of the Task Force, Section 5.2

1.1.4 Digital Migration Framework

Creation of Broadcasting Signal Distributors

The Migration Task Force report recommended amending the broadcasting licensing framework by unbundling broadcast content creation from distribution through the creation of signal distributors, consistent with the 2006 ICT Policy Guidelines. The government considered this the best vehicle to expand coverage, enhance competition and achieve greater spectrum efficiency, according to the report (See Box 1).¹⁶

BOX 1: RATIONALE AND BENEFITS OF UNBUNDLING THE BROADCASTING CONTENT

1. **Lack of coverage:** At the time of the start of the transition, analogue television signals covered just 55% of the population.¹⁷ By unbundling content creation from signal distribution, more resources could be deployed to expand coverage instead of being divided between content creation and investments in broadcasting infrastructure.¹⁸ The BSD model creates cost savings because each broadcaster does not need to obtain spectrum and maintain signal distribution infrastructure.
2. **Lack of competition:** The government asserted that the high costs of producing content and deploying transmission infrastructure were barriers for new entrants to enter the broadcasting market.¹⁹ In addition, the frequencies assigned to the broadcasters only accommodated one analogue television channel. The high cost of deploying infrastructure, combined with the scarcity of frequencies, obstructed competition. Considering consumer equipment costs, the government's selection of a uniform digital broadcasting standard prevented BSDs from choosing different standards, which would have required consumers to obtain more complex and more expensive digital receivers.
3. **Taking advantage of the enhanced efficiency of digital distribution:** The government viewed digital broadcasting as an opportunity to expand broadcasting capabilities because digital broadcasting accommodates more television channels than analogue broadcasting, while also using less spectrum bandwidth.²⁰ For example, the adopted DVB-T2 MPEG-4 standard accommodates up to 20 standard definition television channels in the same amount of spectrum used to transmit one analogue television channel. This created better efficiency in spectrum management, allowed for more uniform broadcasting coverage, and reduced potential signal interference. With fewer signal distributors competing for spectrum, the likelihood of signal interference is reduced. All content providers employing a particular BSD will have equal coverage, thereby limiting the coverage variations to the differences between the relatively few BSDs.

To take advantage of this efficiency, the government determined that the best course of action was to implement a BSD licensing framework. Using BSDs would aggregate the distribution channels into designated distributors as opposed to licensing 20 separate standard definition channels that require their own frequencies and infrastructure.²¹ These infrastructure investment costs included investing in a transmitting station encompassing access roads, electricity, buildings, security, ventilation, air conditioning, generators, towers/masts with common transmitting antennas, satellite uplink and receiving facilities, as well as technical staff.²²

¹⁶ Report of the Task Force, Section 4.2.

¹⁷ Alfred Ambani, CA, "Status of Digital Switchover in Kenya," African Forum, May 2016, at 3.

¹⁸ Understanding Migration from Analogue to Digital TV Broadcasting in Kenya, Section 12(b)

¹⁹ Understanding Migration from Analogue to Digital TV Broadcasting in Kenya, Section 12(a)

²⁰ Ibid.

²¹ Id.

²² Report of the Task Force, Section 4.2.

Elements of Broadcast Distribution and Content Framework

Under the proposed framework, separate market segments would exist with broadcasters concentrating only on content production and BSDs providing the broadcasting infrastructure. The BSDs would need to provide: (i) all licensed broadcasters with open access to their digital platform on a fair, non-discriminatory basis; and (ii) digital transmission coverage that was similar to or better than the analogue transmission coverage. In addition, the Migration Task Force recommended that the public broadcaster, KBC, be granted authority as a BSD, but the signal distribution service would be conducted by a separate entity to avoid conflicts of interest or cross subsidies.²³

Licensing of Broadcast Signal Distributors

To implement the recommendations, in February 2008, the MICT granted KBC conditional authority as a BSD licensee. To receive the BSD licence, as recommended by the Migration Task Force, KBC had to establish a subsidiary company, SIGNET, which would provide BSD services. The process of incorporating SIGNET as an independent entity took five years, and SIGNET did not obtain a licence to provide BSD services until December 2013. In the interim, in July 2012, the KBC was authorised to utilise the spectrum set aside for SIGNET and provide BSD services until SIGNET was duly incorporated and licensed.

Initially, as recommended by the Migration Task Force, SIGNET would provide BSD services funded by the government during the simulcast period. However, SIGNET delayed its digital infrastructure deployment due to funding constraints and the delay in obtaining incorporation and the licence.

As a result, the DTC later recommended that the MICT license private BSD providers through a competitive procurement process. CA launched the tender process in February 2011. Of the nine firms that expressed interest in obtaining a BSD licence, six prequalified to proceed to the tender stage of the process, but only four submitted bids to participate in the technical evaluation stage. Of these four, only one bidder, Pan Africa Networks Group (Kenya) Co. Ltd. (PANG), qualified to proceed to the financial evaluation stage. In October 2011, PANG was awarded a BSD licence.²⁴ At the time of the award, PANG was 100% Chinese-owned. This foreign ownership prompted certain media reports

and consumer concerns that, as a Chinese-owned company, it would be prone to censoring content if the government requested it.²⁵ In 2014, PANG was made to divest 20% of its equity to local shareholders within three years, a requirement it subsequently met.²⁶

The award of the licence to PANG prompted three major private broadcasters, the Nation Media Group, Standard Group and Royal Media Services, to launch legal challenges before different courts arguing for their right to have BSD licences.²⁷ In 2015, as part of the resolution from the litigation between the government and the broadcasters, a self-provisioning BSD licence was issued to a consortium composed of the three private broadcasters, called the African Digital Network (ADN). Self-provisioning BSD licences differ from standard BSDs as the licensees can only transmit their own content over their infrastructure.

Despite delays caused by SIGNET and litigation, the “unbundled” licensing framework has had positive impacts on the broadcasters’ business models. Broadcasters are no longer required to focus on infrastructure investment. Instead, they are able to concentrate on content production. Also, by eliminating the need to invest in the transmission network, the migration reduced entry barriers for new broadcasters, leading to a significant increase in broadcasters. According to the MICT, Kenya had 14 broadcasters before the migration started and now has 65, an increase of four and a half times.²⁸ Many broadcasters are forming partnerships with smaller broadcasting companies that produce local content for the large national broadcasters. This arrangement is a win-win for both parties, with larger broadcasters having access to a broader pool of content and smaller broadcasters generating revenues from the local content.²⁹

1.2 Policy and Regulation

1.2.1 Legal Implementation of the International Digital Migration Obligations

In addition to establishing a timeframe for the ASO in signatory countries, the GEO6 established a digital television plan for both the VHF and UHF bands. Kenya incorporated the plan into its ICT Policy Guidelines of 2006. The Guidelines set forth the high-

²³ Id. Section 4.6.

²⁴ Understanding Migration from Analogue to Digital TV Broadcasting in Kenya, Section 12(c)

²⁵ <http://www.ipsnews.net/2014/01/chinese-dominance-digital-migration-raises-alarm/>; <http://www.standardmedia.co.ke/?articleID=2000152920>

²⁶ See Supreme Court, Media Summary, at 5.

²⁷ See Section 2.3.

²⁸ Ministry of Information, Communications and Technology (2016, September 27). Phone interview with Sammy Itemere, Principal Secretary, TCRA, Communications Statistics Report, Jun. 2016, available at <https://www.tcra.go.ke/images/documents/telecommunication/CommStatJune16.pdf>

²⁹ Media Owners Association (2016, September 13). Phone interview with Lynette Mwangi.

level parameters of the digital television migration, specifying that: (i) the MICT would manage the transition from analogue to digital broadcasting;³⁰ and (ii) the government would license signal distribution services to ensure that the use of broadcasting infrastructure is maximised.³¹

1.2.2 Regulatory Authorities

Before the digital migration, the broadcasting licensing framework involved a two-stage process between the MICT and CA. The MICT issued broadcasting permits, while CA, in turn, performed the technical function of assigning the broadcast frequencies to the permit holders. In 2009, the Kenya Information and Communications Act (KICA) expanded CA's mandate to include the licensing and regulation of broadcasting services.³² This change streamlined the licensing process, and gave CA greater independence and responsibility, enabling CA to issue broadcasting permits and perform the technical function of assigning frequencies and regulating licensees.

1.2.3 Legal Authority

The ICT Policy Guidelines and the KICA allowed the MICT to issue general policies, such as adopting the ASO timelines as recommended in the Task Force Report, while CA focused on implementation of the policies.³³

The KICA also defined the obligations of broadcasting services, established KBC as the public broadcaster, and gave powers to the MICT and CA to regulate broadcasting. Among other rights, the KICA expanded the scope of the broadcasting permits to include signal distribution services, as well as mechanisms enabling the transition to the new framework.³⁴ The KICA's transitional provisions allowed existing licensees to continue operating for up to one year under the terms of their existing licence, but during that period, they were required to apply for licences under the new regime.³⁵ This clear transition period has been adopted elsewhere. For example, in Tanzania, content service provider licences lapsed at the end of the 18-month transition period, requiring the surrender of spectrum used for analogue broadcasting.³⁶

1.2.4 Regulatory Framework for Broadcasting Services

The Information and Communications (Broadcasting) Regulations, implemented in 2009, regulate content and licensing for broadcasting and pay television services, including terrestrial, cable and satellite distribution.³⁷ The regulations task CA with specifying the multiplex capacity for broadcast content and the technical specifications of the multiplex and associated digital transmitters. They also define the conditions for offering commercial free-to-air (FTA) broadcasting service and BSD services. In addition, certain other regulations imposed additional conditions to offer broadcasting and BSD services. The conditions include the following:

- **All analogue television broadcasters must return their FTA television broadcasting frequencies to CA and apply for new broadcast licences.³⁸**
- **BSDs may impose charges in relation to contractual arrangements, the reception of broadcasting services requiring conditional access, and the provision of any apparatus or device enabling the reception of digital broadcasting services.³⁹ However, their tariffs must be approved by CA.⁴⁰ To address concerns about high prices, CA imposed a price cap on BSDs for signal distribution of KES 125,993.50 per Mbit for Nairobi and KES 93,202.75 per Mbit for the remainder of Kenya.⁴¹**
- **All licensees must provide uniform, non-preferential service on a first-come, first-served basis to all requesting such service.⁴²**
- **Type approval is required for all electronic communications equipment, including STBs.⁴³**

Kenya's approach to a regulatory framework for broadcasting services – that is, unbundling BSDs and content – is not uncommon among the African states that have prepared digital migration plans. A similar approach was employed in Malawi, Nigeria, Rwanda, South Africa, Tanzania and Uganda, and is expected in Burundi. Notably, however, the unbundled approach did not generate as much debate and litigation in these countries as in Kenya.

³⁰ ICT Policy Guidelines, Section 4.7.

³¹ ICT Policy Guidelines, Section 4.6.

³² The Kenya Information and Communications Act (KICA), 1998, Revision 2009, Amended 2013. In 2013, the Communications Commission of Kenya (CCK), as it was then known, was replaced by CA, pursuant to an amendment to the KICA.

³³ Alfred Ambani, at 2.

³⁴ KICA Act, Sections 46A to 46S.

³⁵ KICA Act, Section 46R and Fifth Schedule.

³⁶ Electronic and Postal Communications (Digital and other Broadcasting Networks) Regulations, Section 17.

³⁷ Kenya Information and Communications (Broadcasting) Regulations, 2009.

³⁸ Id. Regulation at 45.

³⁹ Id. Regulation at 3.

⁴⁰ Kenya Information and Communications (Tariff) Regulations, 2010, Regulation 6.

⁴¹ Given the demand for frequency spectrum resources and the economics of signal distribution, such services are provided by only a few licensees, as such CA considered it necessary to cap tariffs for signal distribution. FTA broadcasters argued that existing BSDs were charging exorbitant tariffs. After holding a consultation process with the BSDs and broadcasters, CA set the capped tariff plans. CCK, Determination 1/2013, "Cost-based Terrestrial Digital Broadcasting Signal Distribution Tariff," Dec. 2013, Art. 8.

⁴² Kenya Information and Communications (Fair Competition and Equality of Treatment) Regulations, 2010, Regulation 11.

⁴³ Kenya Information and Communications (Importation, Type Approval and Distribution of Communications Equipment) Regulations, 2010, Regulation 3.

The rationale for an unbundled approach generally flows from policy goals that include improving signal quality and coverage and lowering the barriers to entry for content providers, especially from local content producers. In Kenya and other countries, separating distribution from content production allowed entities to focus on a core competency and, in the process, improve broadcast coverage and competition among content providers.

In addition, Kenya’s regulations allowed for the use of market forces to determine appropriate tariffs for the distribution of broadcasters’ content, but with a safeguard of potential regulatory intervention if warranted. This approach helped to balance the efficiency of the market with oversight to guard against abuses of market power, including those that could arise from the concentration of the BSD market among a small number of players.

To the extent that other countries identify a need to improve broadcast coverage and/or to lower barriers to content provider market entry, an examination of Kenya’s model would provide one possible approach.

1.3 Digital Migration Plan

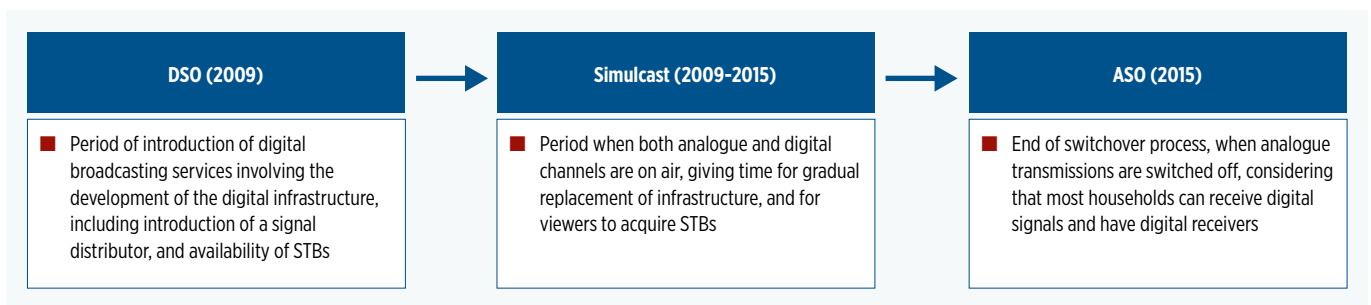
The digital migration process consisted of three phases: digital switch-on (DSO); simulcast period; and ASO,⁴⁴ as shown in Figure 7.

1.3.1 Planning

With regard to the digital migration plan, the Migration Task Force recommended adoption of either: (i) a policy-driven approach to digital migration, with a firm nationwide switch-off date or (ii) a phased switch-off of analogue services within a period of three years. The government originally opted for a nationwide ASO date of June 2012, but later followed a phased ASO approach taking into account the different levels of infrastructure deployment in different parts of the country. This change in approach was due to a combination of factors, including KBC’s initial difficulties in deploying its network, litigation that delayed the migration process, consultations with stakeholders and improvements to later phases based on lessons learned during the earlier phases.⁴⁵ In addition, frequencies would no longer be assigned to broadcasters once signal distributors were in place.⁴⁶

Most countries around the world have employed a phased ASO approach because it allows for an iterative deployment, applying lessons from early phases to later phases. Choosing which areas are included in each phase depends on the government and stakeholders’ view of whether it is best to progress regionally, from most-populated to least-populated (or vice versa), or through another approach. Other considerations may include the speed at which new infrastructure can be deployed in a particular region and the availability of spectrum resources. Some

FIGURE 7: DIGITAL MIGRATION PHASES



Source: TMG research.

⁴⁴ Report of the Task Force, Section 6.4.

⁴⁵ Ministry of Information, Communications and Technology, "Analogue Switch off dates," available at <http://www.information.go.ke/?p=1470>.

⁴⁶ Id. Section 6.5.

countries have employed national ASO approaches, which are likely more manageable in cases where the number of television viewers is relatively low, the deployment of new infrastructure can be completed uniformly nationwide, or when the government prioritises equal treatment of all subscribers and regions. In Kenya, the BSDs were tasked with promoting the take-up of digital terrestrial television so that the frequency spectrum used for analogue broadcasting could be released as soon as possible. During the transition period, each existing broadcaster was allotted one digital programme, allowing them to continue offering digital services.⁴⁷

When the simulcast period began, less than 55% of the population had analogue TV coverage. There were 14 analogue TV broadcasters, with only five having signals in multiple cities.⁴⁸ The migration simplified the process, meaning that each broadcaster needs only a single licence for content, while the BSDs provide the infrastructure. Each BSD was assigned a minimum of two multiplex frequencies for each broadcast area, countrywide.

In its Report, the Migration Task Force considered that existing analogue terrestrial broadcasting services should migrate to digital transmission networks based on their own commercial strategy and economic considerations.⁴⁹ Accordingly, the availability of content in the digital platform would depend on their interests, and would only be subject to the ASO deadline. This is in line with the approach taken by governments in most countries with respect to commercial broadcasters.

1.3.2 Implementation

On 9 December 2009, the digital migration process in Kenya began with the launch of digital broadcasting in Nairobi. As noted above, the ASO deadline was initially set for June 2012, but was moved several times by the DTC. Ultimately, in November 2014, the government decided to shift to a three-phase ASO approach:⁵⁰

- **Phase 1: 31 December 2014 – Nairobi and its surroundings;**
- **Phase 2: 2 February 2015 – 14 major towns;**
- **Phase 3: 30 March 2015 – remaining remote analogue sites.**

Phase 1 was completed on time. Phase 2 was completed 12 days late on 14 February 2015. Phase 3 was also delayed, but completed before the GE06 deadline of 17 June 2015 (the remaining sites were divided into two groups and switched off in two stages).⁵¹

According to the broadcasters, a significant decline in viewership occurred in the first months after the ASO.⁵² However, the current digital television coverage is 66% of the Kenyan population, exceeding that of the analogue channels when the migration started. Two BSDs have deployed infrastructure in 23 towns, with ongoing rollout in remote sites. ADN has a self-provisioning licence. In addition, there are two digital terrestrial television (DTT) pay television providers – GoTV and StarTimes – and 65 FTA channels on digital terrestrial television broadcasting (DTTB). Furthermore, Kenya has approximately 90 STB models, and 30 digital television (DTV) models with integrated digital receivers with type approval from CA. The regulator estimates that more than four million STBs have been sold.⁵³

Although Kenya's digital migration process took longer than originally planned, it resulted in increases in both population coverage and the number of channels offered to viewers. This outcome took nearly seven years from the date that the first digital broadcast began, and two years after the ASO in Nairobi. Switching to a three-phase ASO process allowed Kenya to learn from the transition in Nairobi and apply those lessons to the Phase 2 and Phase 3 regions. For example, the delays to the migration timeline, mainly due to litigation, slowed the migration process and infrastructure deployment, and almost certainly caused consumer confusion and reticence to embrace the new technology. A key lesson in these delays is that a migration process with buy-in from all stakeholders may take time and resources, but it may assist in preventing challenges to the process.

⁴⁷ Id.

⁴⁸ Alfred Ambani, at 3.

⁴⁹ Report of the Task Force, Section 6.2.

⁵⁰ A. M. Ambani, CTO Digital Broadcasting Africa Forum 2016, Status of Digital Switchover in Kenya, <http://www.cto.int/media/events/pst-ev/2016/dbaf2016/Presentations/Alfred%20Ambani%20Communications%20Authority%20of%20Kenya.pdf>

⁵¹ Ibid.

⁵² Media Owners Association (2016, September 13). Phone interview with Lynette Mwangi.

⁵³ Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani, Assistant Director.

1.4 Digital Broadcasting Channel Plan

The Migration Task Force anticipated some initial challenges during the transition period, including constraints to the implementation of the digital broadcasting plan. The reasons for these challenges include the following:⁵⁴

- **most of the proposed digital channels would only be available after the existing analogue channels had been converted to digital or switched-off. In addition, most of the channels in the digital plan were incompatible with the existing analogue assignments;**
- **the GE06 required obtaining agreement from neighbouring countries before a number of Kenya's digital channels could be utilised; and**
- **there was a need to upgrade the analogue receivers for the reception of digital broadcasting (i.e., STBs or integrated DTVs).**

In preparing for this digital migration process, CA found the ITU's general guidance to countries in the GE06 planning areas on all aspects of the digital migration to be quite helpful. Kenya participated in the various ITU meetings, as well as in the region to assist countries with migration strategies, including frequency planning and coordination.⁵⁵ In particular, it attended the Regional Radiocommunication Conferences held in 2004 and 2006, inter-sessional Activities (e.g., Regional information meetings and workshops related to the RRC-06 for the African countries), and the World Radiocommunication Seminars. These meetings, as

well as the ITU's Guidelines for the Transition from Analogue to Digital Broadcasting, were useful for Kenya and other African countries to address digital migration issues.⁵⁶

Additional details on the channel plans and technical considerations of Kenya's digital migration are presented in Appendix C.

1.4.1 Training for Digital Broadcasting Systems

The Migration Task Force also identified content production as an important industry for Kenya. The broadcasting industry was encouraged to establish training programmes that incorporated digital broadcasting techniques. It also tasked the government with streamlining the development and supervision of curriculum used in the media training institutions.⁵⁷ While the government did not arrange any formal training, broadcasters worked with their vendor partners to arrange training for appropriate personnel.

The BSDs, when acquiring the technical facilities and equipment to provide service, were able to send their personnel to perform factory acceptance tests, which also gave them the opportunity to receive technical training. The STB vendors also sent experts to train some selected sales staff. Internally, DTC members trained staff from the companies engaged to develop and carry out consumer awareness campaigns.⁵⁸

Kenya's emphasis on local content production and training can provide a representative list of training targets related to the digital television migration, as in Table 2.

TABLE 2: TRAINING TARGETS RELATED TO DIGITAL MIGRATION

Entity	Technical training on digital broadcasting equipment	Digital content production techniques	Consumer awareness techniques	Sales/promotion-related techniques
Content producers		■	■	■
BSDs or equivalent	■		■	
Consumer equipment manufacturers			■	■
Regulator	■		■	

⁵⁴ Report of the Task Force, Section 2.4.

⁵⁵ Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani, Assistant Director.

⁵⁶ Available at <http://www.itu.int/en/ITU-D/Spectrum-Broadcasting/Documents/Guidelines%20final.pdf>.

⁵⁷ Report of the Task Force, Section 5.1.

⁵⁸ Obam, D. (2016, September 23). Email interview.

1.5 Consumer Awareness

The Migration Task Force raised several points related to consumer uptake of the digital technology. Broadcasters were encouraged to migrate from analogue to digital technology in studio facilities in order for the public to fully appreciate the difference in quality between analogue and digital transmission. In addition, availability of relevant content is an important determinant in the uptake of digital broadcasting services.⁵⁹ Statistics indicated that 90% of viewers were watching local content; therefore, broadcasters would need to work on offering more relevant local content.⁶⁰ The Task Force recommended that appropriate policies be put in place to promote access to, use of, and distribution of content in the diverse digital service environment. It also considered that adequate funds should be allocated for marketing to create awareness of the migration and its implications.

The Migration Task Force also identified the availability of digital receiving apparatus at affordable prices as crucial to early mass market uptake of digital broadcasting technology. Pricing of such receiver equipment could be the biggest single obstacle to or enabler of the introduction of digital broadcasting in Kenya. The Task Force noted that there should be an effective consumer education strategy covering all areas of concern, including the migration process and switch-off dates. The strategy would need

to integrate all the market players in the broadcasting value chain in order to yield the expected benefits. They also recommended that the government provide incentives to the industry to promote and explain the services to customers; monitor and evaluate the awareness, take-up and use of the new services; and adjust the campaign accordingly. Broadcasters were required to assist the DTC with migrating Kenyans to the digital platform by donating space and airtime to promote the digital migration process and its benefits, which was done mainly by KBC.⁶¹ Unfortunately, some media owners ran negative campaigns against the migration, hoping to prevent the migration and discourage consumers from buying STBs.

In June 2012, CA also created the “Digital Kenya” brand associated with consumer awareness campaigns through different media channels. It included a dedicated website (<http://www.digitalkenya.go.ke/>) and the use of social media (See Figure 8). The first large scale campaign was launched under the slogan “Join the great digital migration,” using print, radio/television media and roadshows. Later, the slogan “Tunatoka analogue, Tunaenda digital” was added (“We are from analogue, We are going digital”).⁶²

Overall, the consumer awareness efforts were estimated to have reached 88% of Kenyans over a five-year period.⁶³

FIGURE 8: ROADSHOWS TO EXPLAIN DIGITAL TV



Source: Digital Kenya Facebook Page⁶⁴

⁵⁹ Report of the Task Force, Section 5.3.

⁶⁰ Report of the Broadcasters Forum, Section 4.

⁶¹ Report of the Task Force, Section 6.6.

⁶² Alfred Ambani, at 14.

⁶³ Obam, D. (2016, October 12). Email interview.

⁶⁴ <https://www.facebook.com/DigitalTVKenya/>

1.6 Use of the Digital Dividend for Mobile Broadband

The digital television channels were originally planned in Bands IV/V (470-806 MHz). After the decision of the ITU World Radiocommunication Conference 2012 (WRC-12) to identify the 700 MHz band for mobile broadband, re-planning of those digital television channels was carried out through collaboration with the African Telecommunication Union (ATU) and the ITU, covering only channels 21-48 (470-694 MHz).⁶⁵ Kenya identified both digital dividends – DD1 (800 MHz) and DD2 (700 MHz) – for wireless broadband and, after the decisions of WRC-15, finalised its actual channel arrangements.

One 2 x 15 MHz block in the 800 MHz band was originally licensed for trials to Safaricom, the largest mobile provider in Kenya. As part of a tender to deploy a network for national security purposes, Safaricom negotiated the award of a licence in this band. The other two operators, Airtel and Telkom Kenya, questioned this decision, asking for fair treatment in the use of the band. In November 2015, CA asked Safaricom to return 2 x 5 MHz of its block. With that, the band was divided into three blocks of 2 x 10 MHz, one for each operator. In June 2016, CA approved the issuance of licences for each operator in the 800 MHz band, subject to a licence fee of KES 2.5 billion (USD 25 million) each.

Safaricom has completed deployment of its network in the 800 MHz band on a trial basis, and applied for its licence, which should be issued in November 2016. Airtel and Telkom Kenya are currently rolling out their networks and their licences should be issued in March 2017.⁶⁶

The process of making the second digital dividend – the 700 MHz band – available began prior to WRC-15, with the ASO, and with no digital television assignments being made above channel 48. Kenya followed the ITU regional recommendations and adopted a 2 x 30 MHz channel arrangement for the 700 MHz band (703-733 MHz/758-788 MHz).⁶⁷ In September 2016, CA was in the process of (i) allowing public and private entities to launch trial networks in the 700 MHz frequency band and (ii) determining the most appropriate method of allocating DD2.⁶⁸ The 700 MHz

band is expected to be awarded to Tier 1 and Tier 2 operators.⁶⁹ Indications are that the first block of 2 x 10 MHz in this band could be awarded to a consortium of small operators, followed by further direct awards or a competitive process, but no final decisions have been made yet. Expectations are that each of those blocks could have a minimum price of KES 2.5 billion (USD 25 million).⁷⁰

The mobile operators were expecting to pay a fee for the 800 MHz blocks, but the KES 2.5 billion price was significantly higher than expected.⁷¹ Despite this, Safaricom and Airtel Kenya are rolling out new LTE services in this band. But caution should be used in setting licence fees as experiences in other countries have shown that when the spectrum licence fees are too high, operators may choose not to apply for a licence; or in doing so, may have difficulties with the deployment of the new mobile broadband networks.

Although all three operators eventually received equal size blocks in the 800 MHz band, Airtel felt as though it had to push the government to take back the 2 x 5 MHz segment from Safaricom and distribute it equally.⁷² Both Safaricom and Airtel Kenya noted that greater care should have been taken during the planning process to assess distribution needs beforehand and determine how the spectrum would be utilised well before the migration began. This example highlights the importance of early planning for the repurpose of the spectrum and establishing long-term goals with clear indications of its new planned use, so as to avoid disputes or impediments at a later stage.

In addition, the full benefit of the digital dividend cannot be realised until the freed-up spectrum is actually put into use. Careful coordination of the migration of broadcasting out of the digital dividend, planning for future use, and a clear schedule for granting new assignments are necessary to enable the utilisation of the digital dividend with minimal downtime, disagreement, or confusion. Thus, it is important to consider the future repurpose of the digital dividend in the initial stages of planning the digital migration and address any potential obstacles or concerns at the earliest opportunity.

65 Obam, D. (2016, September 23). Email interview.

66 The Star, http://www.the-star.co.ke/news/2016/10/28/giant-safaricom-to-get-sh25-billion-4g-licence_c1445244.

67 Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani.

68 Daily Nation, <http://www.nation.co.ke/business/CA-allows-frequency-pilot-for-faster-internet-speeds/996-3387164-rq0kh/index.html>

69 Ministry of Information, Communications and Technology (2016, September 27). Phone interview with Sammy Itemere, Principal Secretary.

70 Obam, D. (2016, September 23). Email interview.

71 Cheburet, Emmanuel et al. (2016, October 6). Phone interview.

72 Lewela, Ganson (2016, October 10). Phone interview.



2 Main Challenges and Solutions

2.1 Availability and Affordability of Set-top Boxes

The lack of availability and affordability of STBs for consumers to receive digital broadcasts hampered the digital migration process. This was confirmed by a survey conducted of Nairobi's residents.⁷³ Nairobi was the first city in Kenya where the ASO was completed. Although the majority of the survey respondents (88%) were aware of the ASO, many had not purchased the STBs to receive the digital channels. The most-cited reason among respondents for not making the digital switchover was because it was too expensive (43%), followed by "don't know how" (15%).

2.1.1 Availability of Set-Top Boxes and Standard Change

In 2007, as recommended by the Migration Task Force, Kenya adopted the Digital Video Broadcasting Terrestrial (DVB-T) standard for DTTB, using MPEG-4 compression. This was the same standard adopted by the GE06.

The pilot phase of the DTTB service, using the DVB-T standard, was launched in Nairobi and its surrounding areas in December 2009. However, in 2010, the second-generation DVB-T2 standard was launched. In order to bring greater spectrum efficiency and other benefits, the DTC decided that it would be more beneficial for Kenya to adopt the DVB-T2 standard. It did not anticipate that this change would be very disruptive to the process, since the DVB-T deployment at that time was still limited, with only one transmitter in operation, and about 10,000 DVB-T STBs sold. Although the change would require consumers to obtain DVB-T2 STBs, the DTC determined that going forward with DVB-T and then changing to DVB-T2 at a future date would impose a greater burden, as there would be a larger installed base of DVB-T STBs to replace at the time of the change.

In December 2010, the government adopted the DVB-T2 standard for further infrastructure rollout to fully benefit from the spectrum efficiency gain and service flexibility.⁷⁴ Equipment vendors had been advised in November 2010 to cease any further importation of DVB-T STBs, with all future STB imports required to comply with the government-approved DVB-T2 system specifications.⁷⁵ Consumers were encouraged to note the new DVB-T2 standard and purchase STBs that were compatible with the new platform. The government opted not to reimburse those

consumers that had already bought DVB-T STBs that would soon become obsolete.

As a transitional measure, SIGNET deployed a DVB-T2 transmitter in Nairobi to simulcast the same content as that on its DVB-T transmitter. Transmissions using the DVB-T transmitter were terminated in September 2012, leaving only the DVB-T2 transmitter operational.⁷⁶

2.1.2 Affordability of Set-Top Boxes

In addition to the issues surrounding the availability of appropriate STBs, the penetration of digital television services was also hampered by prohibitive STB costs. Digital receivers, mainly imported from Europe and Asia, were unaffordable for average users. A considerable proportion of the cost was attributed to the required import duty. In addition, the uncertainty created by the various delays in the ASO, due to the inability of SIGNET to deploy its network as well as the litigation, discouraged STB vendors from investing in large quantities of STBs.⁷⁷ This also contributed to the STB shortage and the resulting prohibitively high cost to end users.

In an effort to eliminate device cost as a barrier to consumer uptake, the government took several steps to improve affordability:

- **the import duty, which accounts for 25% of the device cost, was eliminated;**
- **CA waived vendor registration fees and reduced type approval fees for digital receiving devices by 80%, from KES 20,000 to KES 4,000;**
- **CA relaxed the minimum device specifications by making the conditional access feature optional for FTA STBs, reducing the price by an additional 25%;**
- **the importation, distribution and supply of set-top boxes was fully liberalised and opened to any registered vendor who obtained type approval from the regulator.⁷⁸ This approach effectively left the supply of set top boxes in the hands of the private sector with competition driving down prices.⁷⁹**

⁷³ GeoPoll, "Analogue to Digital Study Survey," Jan. 2015.

⁷⁴ MICT, Public Announcement on the Switch from DVB-T to DVB-T2, Dec. 2010.

⁷⁵ Public Notice, "Minimum Specifications for DVB-T2 Digital Set Top Boxes for the Kenyan Market," 2011.

⁷⁶ Obam, D. (2016, September 25). Email interview. Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani.

⁷⁷ CA, Understanding Migration from Analogue to Digital TV Broadcasting in Kenya, at 15, available at <http://oncu.digital.com/digitalmigration/wp-content/uploads/2016/08/UNDERSTANDING-MIGRATION-FROM-ANALOGUE-TO-DIGITAL.pdf>.

⁷⁸ Alfred Ambani, at 13. Obam, D. (2016, September 25). Email interview.

⁷⁹ Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani, Assistant Director.

Two types of STBs are in use in Kenya – FTA-only and combination pay TV/FTA – with consumers able to decide on the receiver that best suits their needs. According to the broadcasters, most of the STBs currently in use are from the pay TV operators, with high saturation among those consumers that can afford them.

The above-outlined measures, which liberalised the STB market supply, worked. In October 2013, per CA, the total number of STBs distributed to end-users was just 550,538, with an additional 532,335 in STB vendors' inventories.⁸⁰ By June 2016, the number of end-user STBs had increased to approximately 3 million, with an added 3.12 million STBs having been imported to Kenya.⁸¹ In addition, the number of STB vendors rose from 20 in December 2012, to more than 79 in June 2015, with over 100 STB models approved by CA.⁸² The increased supply of STBs caused a reduction in price to end users from between KES 10,000-15,000 in 2010 to KES 3,300 for a FTA STB and KES 1,500 for a subsidised pay TV STB, using a conservative example from September 2015.⁸³

The Kenya case shows that reducing taxes and fees and allowing market forces to drive the supply of STBs stimulates the production and import of STBs and significantly reduces the cost of STBs to end users. In less than three years, the number of STBs in Kenya increased by approximately 465%, causing the price of STBs to decrease by 80% or even more in other cases.⁸⁴

As an alternative to relying on market forces to lower the prices of STBs, the government could have purchased STBs in bulk to distribute them to users at a price of cost plus handling. This alternative was less appealing because of the funding challenges facing the government.

2.2 Funding Challenges

In Kenya, as in all countries, government funds must be divided among competing interests. The DTT infrastructure rollout and the consumer awareness campaigns required significant government funding, as well as modifications to the initial migration plan in order to meet coverage targets and raise the necessary capital. By one estimate, in total, the government spent approximately KES 5.1 billion on the entire migration process, including loss of revenue from waived STB customs duties (KES 1.5 billion), advertising and consumer awareness efforts (KES 1.0 billion), digital head-end construction (KES 2.5 billion) and DTC operating costs (KES 29.9 million).⁸⁵

2.2.1 Network Infrastructure

The report from the Migration Task Force foresaw some potential challenges for the implementation of BSDs, as the functions of a signal distributor were previously carried out by the broadcasters that had already made significant investments in infrastructure. The nationwide BSD licences require licensees to deploy the network in low-density areas as well as the more-profitable urban areas. Where the existing infrastructure was not adequate, the migration proposal required upgrades to accommodate digital transmission both during the simulcast period and after. The high setup costs were expected to limit the number of signal distributors. In order to reduce the cost of migration, the report recommended using the existing designated analogue transmitting sites and infrastructure for digital transmission.⁸⁶

The initial strategy was for SIGNET to be fully funded by the government to provide signal distribution services during the simulcast period, carrying the analogue broadcasters on its digital platform for free. However, in 2011, following the slow pace of digital infrastructure deployment due to constrained and inadequate funding from the government, the DTC recommended the licensing of a private signal distributor, resulting in the contested licence tender described previously and, ultimately, the award of a BSD licence to PANG. The licensing of PANG resulted in the commencement of deployment of DTT infrastructure in cities outside Nairobi.

⁸⁰ Media Owners Association of Kenya, Letter, Concern over digital migration date and the need for affirmative action for Kenyans and for the Kenyan Media, at 1, Oct. 23, 2013. The MOA disagreed with the estimate, stating that there were no more than 60,000 FTA-only STBs in the country.

⁸¹ CA, Quarterly sector statistics report, Fourth quarter for the financial year 2015-2016, Obam, D. (2016, October 12). Email interview.

⁸² allAfrica, Kenya Meets Global Digital Migration Deadline, June 25, 2015, available at <http://allafrica.com/stories/201506251602.html>; All Africa, Kenya: CCK has licensed 20 set top box vendors, Dec. 1, 2012, available at <http://allafrica.com/stories/201212030282.html>.

⁸³ CA, Understanding Migration from Analogue to Digital TV Broadcasting in Kenya, at 15, available at <http://oncu.digital.com/digitalmigration/wp-content/uploads/2016/08/UNDERSTANDING-MIGRATION-FROM-ANALOGUE-TO-DIGITAL.pdf>. See also TechMagKE, Top 7 Free to Air Decoders in Kenya Right now, Sept. 17, 2015, available at <http://techmag.co.ke/top-7-free-to-air-decoders-in-kenya-right-now/>. Other examples indicate the price of a FTA STB to be between KES 2,000 -2,500 and a pay TV STB to be between KES 1,200-1,800.

⁸⁴ In addition to various pay TV providers using promotions to sell STBs, STBs are being bundled with non-TV services. For example, the Big Box sold by Safaricom is KES 4,999 and includes 3 GB of data services, available at <http://www.safaricom.co.ke/TheBigBox/>.

⁸⁵ Obam, D. (2016, October 12). Email interview.

⁸⁶ Report of the Task Force, Section 4.5.

Under the framework established by CA, the broadcasters must pay a cost-based, CA-determined utilisation fee per site to SIGNET and PANG. In addition, SIGNET is still receiving funding from the government after the completion of the migration in order to expand digital television coverage to areas that previously lacked even analogue coverage.⁸⁷ Broadcasters do not receive any subsidies under the migration for the development of content delivered over the digital platform because they are not required to provide distribution services and expand distribution coverage.⁸⁸ This is consistent with the practices of other countries that elected to employ public BSDs (e.g., Tanzania, which established a PPP to fund a public BSD).⁸⁹ CA, however, plans to use the Universal Service Fund (USF) to provide funding to broadcasters to rollout community television stations and local content to marginalised communities.⁹⁰ Other countries have used part of the licence fees with the auction of the repurposed digital dividend to help fund the digital migration, including network deployment and subsidies for the acquisition of STBs. This approach should be considered carefully, as it may negatively impact the final price of those licence fees.

2.2.2 Additional Expenses

CA's expenses also included funding the Digital Kenya secretariat, paying sitting allowances for members of the Migration Task Force and the DTC, and sponsoring capacity building workshops for creative artists.⁹¹ The government recognised that CA funding was not sufficient for all of the activities.⁹² In terms of funding from non-government sources, the migration plan also expected that other stakeholders, such as the media companies, would provide support for initiatives such as awareness campaigns. This support came as some broadcasters, including the KBC, provided free airtime for ads regarding the migration and conducted interviews to members of the DTC.⁹³

At the beginning of the process, the lack of infrastructure funding caused more delays, especially in the initial deployments by SIGNET. As the migration progressed, STB availability and affordability were more significant. It was solved by market forces, and a reduction of taxes and fees, as outlined above.

2.3 Legal Challenges

After the government's award of the BSD licence to PANG, the digital migration process was subject to three legal challenges: (i) an administrative appeal by certain broadcasters; (ii) a lawsuit brought by a consumer association; and (iii) a lawsuit filed by three broadcasters before the High Court, which was subsequently appealed to the Court of Appeal and the Supreme Court. The legal challenges surrounding the BSD licensing process delayed the digital migration process for almost three years. Additionally, the court cases generated significant legal uncertainty until they were resolved. In particular, PANG's licence was cancelled by the Court of Appeal and then reinstated by the Supreme Court, and CA's authority to issue BSD licences or for the Companies to receive such licences was unclear until the Supreme Court ruling.

2.3.1 Challenge before the PPARB

The first legal challenge was filed in June 2011, by the National Signals Network Ltd. Consortium (comprised of broadcasters Royal Media Services Ltd. (RMS) and Nation Media Group Limited (NMG)) with the Public Procurement Administrative Review Board (PPARB). The parties were challenging the manner in which the regulator had administered the tender process and awarded the licence to PANG.⁹⁴ They alleged that CA's decision was based on contradictory and ambiguous tender documents and that the documents did not specify the period for which the security bond needed to be valid.⁹⁵ The PPARB rejected this argument, noting that the presentation of a faulty security bond (it was valid for 59 days rather than the specified 120 day period) by RMS and NMG was a legitimate basis for disqualifying them from the tender.⁹⁶ Ultimately, PPARB dismissed the complaint, and CA awarded PANG its licence in October 2011.⁹⁷

⁸⁷ Obam, D. (2016, September 23). Email interview.

⁸⁸ Media Owners Association (2016, September 13). Phone interview with Lynette Mwangi: see also Uganda, Ministry of Information and Communications Technology, Digital Migration Policy, at section 5.1.2, July 2011, available at http://www.ucc.co.ug/files/downloads/Digital_Migration_policy.pdf.

⁸⁹ ITU, Digital Migration-Lessons from Tanzania, at 18, June, 16, 2015, available at <https://www.itu.int/en/ITU-R/GE06-Symposium-2015/Session2/209%20Digital%20Migration%20-%20GENEVA.pdf>.

⁹⁰ Standard Media, Kenya to fund community broadcasters, Sept. 30, 2015, available at <http://www.standardmedia.co.ke/business/article/2000178029/kenya-to-fund-community-broadcasters>.

⁹¹ Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani, Assistant Director of Multimedia Services at CA.

⁹² Ministry of Information, Communications and Technology (2016, September 27). Phone interview with Sammy Itemere, Principal Secretary.

⁹³ Obam, D. (2016, October 12). Email interview.

⁹⁴ High Court at Nairobi, Petition No. 557, of 2013, para. 35.

⁹⁵ PPARB, Consolidated Review of No. 24/2011, at 9, available at <http://www.ppoa.go.ke/images/downloads/arb-decisions/2011-decisions/DEC%20CASE%20NO.28-2011.pdf>.

⁹⁶ Id. at 10.

⁹⁷ Brief to the Senate Committee, Section 2.5.

2.3.2 Consumer Federation of Kenya injunction

The second adjudicative delay occurred when the Consumer Federation of Kenya (COFEK) obtained an injunctive order in January 2013, halting the migration due to the BSD tender process not adequately representing consumer interests.⁹⁸ COFEK argued it did not have a platform to express any concerns with the ASO because it was not included in the DTC.⁹⁹ After the MICT agreed to make COFEK a member of the DTC, COFEK withdrew its petition in June 2013.¹⁰⁰

2.3.3 Broadcasters' lawsuit

The third and most significant delay occurred when three broadcasters, RMS, NMG and Standard Group Limited (SGL) (collectively referred to as "the Companies") filed suit against the government in the High Court of Nairobi in November 2013.¹⁰¹ SGL did not participate in the earlier administrative complaint because it had not participated in the BSD tender, but it joined RMS and NMG in the litigation.¹⁰² At the time of the case, the Companies held 85% of the viewership in the geographic area of broadcasting coverage in Kenya.¹⁰³ The issues raised by the broadcasters were addressed by the High Court, appealed to the Court of Appeal, and ultimately decided by the Supreme Court of Kenya.

High Court

In the initial complaint filed before the High Court, the Companies sought to obtain a court order granting them a BSD licence.¹⁰⁴ They argued that their existence was legally protected under the Constitution and their inability to obtain a BSD licence during the digital migration proceeding was a violation of the freedom of the media and the freedom of expression.¹⁰⁵

In addition, the Companies noted that because they had collectively invested KES 40 billion in broadcasting infrastructure, they had a legitimate expectation that the government would not interfere in their broadcasting businesses.¹⁰⁶ They accused CA of conducting the tender to assign BSD licences in an

opaque and discriminatory way and ignoring their investments in broadcasting infrastructure.¹⁰⁷ Further, the Companies argued that CA lacked the legal structure, independence and autonomy from government control required to exercise authority over broadcasting under the Constitution. The Companies asserted that these legal deficiencies invalidated CA's ability to grant BSD licences.¹⁰⁸

Government position

The government dismissed the argument that its involvement in BSD services diminishes media freedom under the Constitution by arguing that such freedom is not absolute and that the Constitution enables the licensing necessary to regulate the airwaves and other forms of signal distribution areas, provided such licensing is carried out independent of government control, political interest, or commercial interest.¹⁰⁹ It argued that the Migration Task Force and the DTC independently performed careful policy analysis of the implementation of the BSD licence scheme to ensure increased competition and consumer choice in programming while reducing the Companies' transmission costs.¹¹⁰

Further, the government attempted to dissuade the court from issuing a BSD licence to the Companies, noting that the court is ill-suited to make policy decisions.¹¹¹

Decision and Companies response

On 23 December 2013, the High Court dismissed the Companies' complaint, upholding CA's authority to carry out the tender process and award PANG a BSD licence. It concluded that the Companies were not entitled to a BSD licence based on legal precedent or any other legitimate expectation, such as their prior network investments in broadcasting infrastructure.¹¹² The High Court also held that the digital migration did not violate the Companies' fundamental rights and freedoms, nor did the Companies provide any valid basis for the migration process to be varied, delayed or stopped (See Box 2).¹¹³

98 COFEK, Letter from CA to Secretary General of COFEK, para. 5, available at <http://www.cofek.co.ke/CCK%20Advocates%20letter%20to%20COFEK.pdf>.

99 COFEK, Letter from CA to Secretary General of COFEK, para. 2, available at <http://www.cofek.co.ke/CCK%20Advocates%20letter%20to%20COFEK.pdf>.

100 COFEK letter, *Id.*, para. 4; High Court at Nairobi, Petition No. 557, of 2013, 39. COFEK was added to the DTC but later resigned. Four additional consumer organisations were subsequently authorised to participate in the DTC.

101 High Court at Nairobi, Petition No. 557.

102 Court of Appeal, Judgment of Nambuye, JA, para. 75.

103 *Id.*, para. 2.

104 High Court at Nairobi, Petition No. 557, para. 7.

105 *Id.*, para. 44.

106 *Id.*, para. 43.

107 *Id.*, para. 43, 86.

108 *Id.*, para. 45, citing Access to the Airwaves, Principles on Freedom of Expression and Broadcast Regulation, Section 10, available at <https://www.article19.org/data/files/pdfs/standards/accessairwaves.pdf>.

109 *Id.*, para. 53.

110 High Court at Nairobi, Petition No. 557, para. 49.

111 *Id.*, para. 57.

112 High Court at Nairobi, Petition No. 557, para 97, 136.

116 *Id.*, para. 136.

BOX 2: SUMMARY OF THE HIGH COURT DECISIONS

High Court Decision

- Ruled in favour of government
- Constitutional rights or network investments do not entitle Companies to BSD licence

To protest the decision, and what they felt was a rushed migration process, the Companies switched off their analogue transmissions for two days.¹¹⁴ A reported two million households had their signal shut off.¹¹⁵ CA successfully compelled the Companies to restore their service by sending a notice informing them that by not broadcasting, they were in breach of their licence obligations.¹¹⁶ However, the restoration of service was short-lived, as the Companies were required to terminate their analogue transmissions six days later in order to comply with the 1 January 2014 ASO deadline.¹¹⁷

Court of Appeal

On 3 January 2014, the Companies filed an appeal with the Court of Appeal in Nairobi and were granted an injunction on 4 February, preventing CA from switching off their analogue signals until the court could hear their case and issue a decision.¹¹⁸ After a 35-day period where the analogue signal was shut off, the injunction allowed a temporary restoration of transmission.

Decisions in favour of Companies

The Court of Appeal was more sympathetic to the Companies' point of view and overturned the decision of the High Court. In the decision, the court delved deeper into the issue of whether CA was independent of government control and whether the

Companies had a legitimate expectation of being granted BSD licences due to their investment in their networks.¹¹⁹

Regarding independence, the court concluded that CA was not independent and that Parliament had a duty to alter the structure of CA to align it with the Constitution.¹²⁰ The finding of a lack of structural independence was based on the fact that Kenya's president had authority to appoint CA's Chairman and permanent secretaries.¹²¹ As such, the Court of Appeal ruled that CA could not make objective decisions and therefore the BSD licence tender process was cancelled.¹²²

The Court of Appeal also determined that the Companies had a legitimate expectation of being granted a BSD licence based on their "extensive investment" in broadcasting infrastructure. The court interpreted the 2006 ICT Policy as a commitment to allow the Companies to retain the investments made in their networks.¹²³ Given its findings, the Court of Appeal ordered that the Companies be issued a BSD licence and cancelled PANG's BSD licence. In addition, pursuant to the court's decision, certain modifications were made to provide CA with greater independence and to conduct the BSD licence tender process *de novo*. Subsequently, 30 September 2014 was established as the new ASO deadline (See Box 3).¹²⁴

¹¹⁴ Brief to the Senate Committee, Section 2.7.1.

¹¹⁵ Jambonewspot.com NTV, KTN and Citizen switch off their signal to protest digital migration, Dec. 23, 2013, available at <http://www.jambonewspot.com/ntv-ktn-and-citizen-switch-off-their-signal-to-protest-digital-migration/>.

¹¹⁶ *Id.* Section 2.7.1.

¹¹⁷ *Id.* Section 2.7.1.

¹¹⁸ *Id.* Section 2.7.2.

¹¹⁹ Court of Appeal, Civil Appeal No. 4 of 2014, Judgment of Musigna, JA, para. 69; Court of Appeal, Judgment of Nambuye, JA, para. 152(6).

¹²⁰ Court of Appeal, Judgment of Maraga, JA, para. 81, 82, and 89. The regulator's existence pre-dated the latest Constitution, which was ratified in 2010.

¹²¹ Court of Appeal, Judgment of Nambuye, JA, para. 139.

¹²² Court of Appeal, Civil Appeal No. 4 of 2014, Judgment of Maraga, JA, para. 25.

¹²³ Court of Appeal, Civil Appeal No. 4 of 2014, Judgment of Maraga, JA, para. 98.

¹²⁴ Court of Appeal, Judgment of Nambuye, JA, para. 152.

BOX 3: SUMMARY OF THE COURT OF APPEAL DECISIONS

Court of Appeal Decisions

- Ruled in favour of the Companies
- Broadcasters have a legitimate expectation to the grant of BSD licence due to their network investments
- An independent regulator must grant BSD licence to broadcasters

Supreme Court

On 28 March 2014, the government appealed the verdict of the Court of Appeal to the Supreme Court.¹²⁵

Decision in favour of Companies

The Supreme Court considered the determination of whether CA was independent of government control as the main issue under discussion. The Supreme Court concluded that CA was legally authorised to carry out the BSD licence tender despite the Constitution's mandate. The Court reasoned that although the regulator did not have the exact structure required by the Constitution, the Constitution had been drafted with CA in mind.

However, the court also concluded that the decision to exclude RMS and NMG from being granted a BSD licence was out of line with constitutional values.¹²⁶ The court reasoned that excluding

RMS and NMG on a technicality (i.e., the failure to comply with the security bond requirements) was discriminatory and against the values of democracy, transparency, accountability and equity. The Supreme Court also reversed the Court of Appeal's ruling that the Companies had a legitimate expectation to be granted BSD licences. The court reasoned that granting the Companies BSD licences based on network investments would usurp CA's authority and contravene the allocation mechanism established by the law. The Supreme Court noted that the granting of BSD licences must be performed by an entity with the statutory power to do so, i.e., CA (See Box 4).

BOX 4: SUMMARY OF THE SUPREME COURT DECISION

Supreme Court Decision

- Consider the merits of BSD licence applications from the Broadcasters
- Reinstate the BSD licence assigned to PANG that was annulled by the Court of Appeal and ensure that PANG meets the foreign ownership limit of 80%
- Set 17 June 2015 as the date for the analogue switch-off

CA was given 90 days to implement changes according to the Supreme Court's ruling by considering the merits of the Companies' BSD licence applications and reinstating PANG's licence.¹²⁷ At the conclusion of the 90 days, the Supreme Court deemed that the regulator had made "much progress" towards compliance with the Court's ruling and allowed CA to proceed with the ASO according to the regulator's timetable.¹²⁸

¹²⁵ Supreme Court of Kenya at Nairobi, Civil Application No. 9 of 2014, Apr. 11, 2014, para. 3.

¹²⁶ SGL did not participate in the original tender for a BSD licence, and as such were not included in the Supreme Court's decision regarding CA's exclusion of RMS and NMG from the tender process.

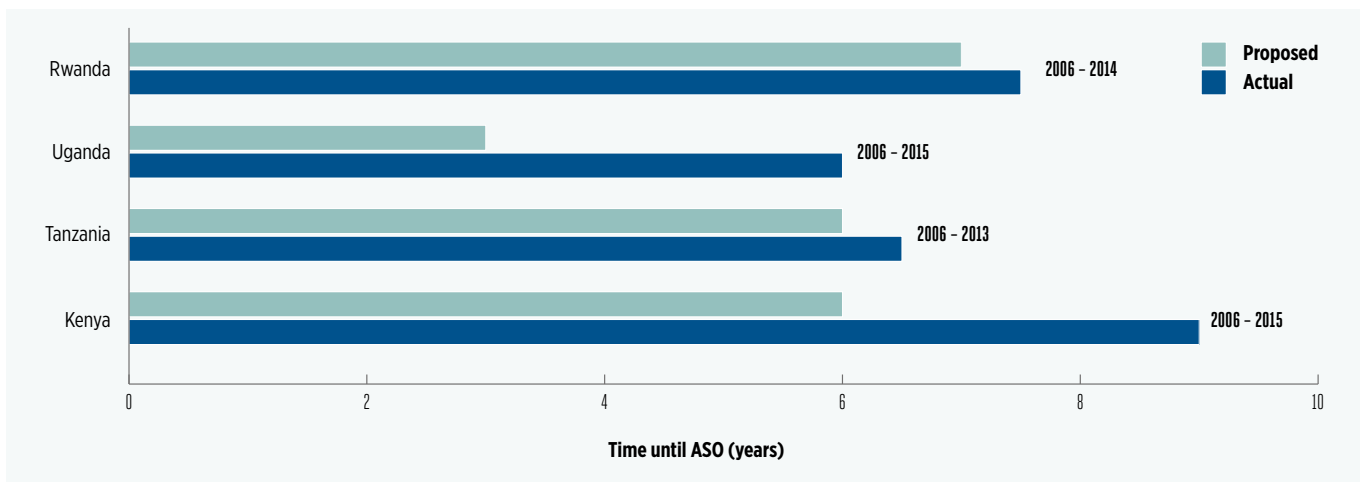
¹²⁷ Supreme Court of Kenya, Petition No. 14 of 2014, Feb. 13, 2015.

¹²⁸ Supreme Court of Kenya, Petition No. 14C of 2014, at 4, Jan. 5, 2015.

3 Kenya in the Regional Context

Kenya’s digital migration process can be viewed within a regional context, as other countries in East Africa were also planning and implementing the digital television transition during the same period, including Rwanda, Tanzania and Uganda.¹²⁹ The simultaneous migration processes across countries is useful for comparison and benchmarking purposes, and enables analysis of key issues. For example, as shown in Figure 9, we can see the differences between proposed and actual timelines for the migration process in the region. Notably, each country missed the initial proposed deadline for full transition. In Rwanda and Tanzania, the delay was approximately six months compared to three years’ delay in Uganda and Kenya.

FIGURE 9: PROPOSED AND ACTUAL TIMELINES FOR THE MIGRATION PROCESS IN DIFFERENT COUNTRIES



Source: TMG research.

3.1 Action Committees

Another point of regional comparison relates to action committees. Each of the above-referenced countries established multi-stakeholder committees to assist with the digital migration process (“action committees”). However, the success of these action committees hinged on how involved stakeholders were and how the entire process was carried out.

Kenya, Rwanda and Tanzania found splitting up their committee into sub-groups to be helpful in terms of establishing successful

planning processes. For example, similar to Kenya, Rwanda split up its task force into four sub-committees. These sub-committees focused on: (i) technical standards and spectrum management; (ii) policies and regulation; (iii) business development and public awareness, and (iv) content development and capacity building.¹³⁰

While Tanzania created sub-committees as well, the government further: (i) delineated multiple teams within the sub-committees and (ii) divided the timeline into multiple stages in order to isolate and fully meet the project’s goals.¹³¹

129 Uganda had its ASO in two phases, the first phase occurred before GE06 deadline, and the remaining sites ASO was in November 2015. The Observer, <http://www.observer.ug/business/38-business/40814-uganda-digital-ready-ucc>.

130 J. B. Mutabazi, RURA, Commonwealth Digital Broadcasting Switchover Forum 2015, Digital Broadcasting Case Study: Rwanda, <http://www.cto.int/media/events/pst-ev/2015/DBSF%202015/Presentations/5.6%20Jean%20Baptiste%20Mutabazi.pdf>

131 Tanzania Case Study: Creating A Regulatory and Licensing Environment for the Digital Switch over, Habbi Gunze, Feb. 2014, available here.

For example, rather than issue a regulatory framework immediately, the first document that the Tanzanian government released introduced the concept of DTTB and explained its advantages. This allowed stakeholders to understand the government's perspective and provide their own inputs, which fed into the subsequent framework documents. This approach allowed for recommendations to be based on mutual understanding. Additionally, the government held monthly stakeholder meetings and delegated the various planning efforts to groups including the National Steering Committee and National Technical Committee for Digital Broadcasting. Comment periods were woven into each stage with sufficient time provided to allow stakeholders to offer inputs.

In comparison, while the overall action committee process proved effective in Kenya, the consultation process was hampered by a lack of mutual agreement in which all viewpoints were not fully considered and incorporated into the framework. This is perhaps best illustrated by the litigation surrounding the BSD licensing process.

3.2 Public Awareness Campaigns

Public involvement and awareness are key components of digital migration processes. In Kenya, roles for the government, STB vendors, broadcasters and the public were explicitly defined, which were intended to create effective educational campaigns.¹³² In particular, announcements on STBs and the digital migration were carried out through media such as traditional newspapers, television broadcasters and through the STB vendors that were instructed to provide consumers with detailed information about their products.¹³³

Many of these same outreach strategies were employed by both Tanzania and Uganda. Tanzania began its outreach strategy in 2010, providing information through print and electronic media outlets, as well as seminars and outdoor advertising. Tanzania's outreach strategy focused on tailor-made material based on age and social groups, including custom audio and visual advertisements. Tanzania even differentiated between advertisements made for the nation as a whole and specific villages.¹³⁴ To create brand recognition, Tanzania designed a simple yet understandable digital logo and used it in many of its campaigns.

Uganda also emphasised the need for all-encompassing outreach campaigns, noting its own failures with outreach.¹³⁵ This demonstrates the importance of traditional media in digital migration outreach campaigns.

3.3 Set-Top Boxes

The high cost of STBs was an issue not only in the East African region, but also in many Western digital TV migrations, including in the United States. The problem is more pronounced in the East African region because funding constraints did not allow for nearly as many customer subsidies. Instead, governments – including Kenya – sought to make STBs more affordable by reducing import taxes and liberalising the broadcasting markets to facilitate lower prices and more competition, as witnessed in Kenya.¹³⁶ The private sector also worked to boost adoption by offering STBs at the lowest possible price.

STB affordability in the region was also boosted by the Broadcasting Technical Task Force (BTTF) under the East Africa Communications Organisation (EACO). The BTTF developed harmonised recommendations for the region on various technical aspects related to digital migration, including minimum specifications for STBs, which needed to be validated by each individual country.¹³⁷ These minimum specifications were followed by Kenya, as well as by Rwanda, Uganda and Tanzania. Although such initiatives require additional time and resources, harmonisation proved to have net benefits by facilitating coordination among neighbouring countries, and allowing the region to take advantage of economies of scale through a common set of STB specifications that drove down costs. With respect to technology choices, Kenya, Rwanda, Uganda and Tanzania all chose to switch to the DVB-T2 technology to take advantage of economies of scale and to help ensure a more future-proof deployment.

¹³² Digital Kenya, Digital Migration Stakeholders, <http://digitalkenya.go.ke/digital-migration-stakeholders>

¹³³ Kenyan Ministry of Information, Communication and Technology, Communication Strategy for Migration of Kenyans from the Analogue to the Digital Broadcasting Platforms, <http://www.information.go.ke/?p=528>

¹³⁴ Andrew Kisaka, Digital Migration – Lessons from Tanzania by Andrew Kisaka, Jun. 2015, available here.

¹³⁵ AllAfrica, Uganda: Steering the Digital Migration Journey by Julius Businge, January 18, 2015, <http://allafrica.com/stories/201501190072.html>

¹³⁶ Digital Migration the Kenyan Experience, Leo K. Boruett, <https://www.itu.int/en/ITU-R/GE06-Symposium-2015/Session2/206%20%20DIGITAL%20MIGRATION%20-%20KENYA%20EXPERIENCE%2017-06-2015.pdf>

¹³⁷ Communications Authority of Kenya (2016, September 9). Phone interview with Alfred Ambani, Assistant Director.

In Rwanda, Uganda and Tanzania, the private sector also sought to boost sales by offering discounted STBs, and recouping losses through monthly subscription rates. For example, StarTimes (a subsidiary of PANG) in Uganda, currently offers STBs for an advertised price of UGX 8,000 (USD 2.38) with a monthly subscription fee of UGX 41,500 (USD 12.25).¹³⁸ As of July 2015, StarTimes had sold approximately 700,000 STBs in Uganda.

In Kenya, FTA STBs retail for between KES 2000-3500 (USD 20-35) with no monthly subscription cost. As of June 2015, between 2.2 million and 2.3 million STBs had been sold in Kenya (where there are 4.5 million television sets).¹³⁹ Although the STBs can be considered low-cost devices (compared to, say, mobile phones), low wages can still place them out of reach for many consumers. For example, the average monthly wage in Kenya in 2013 was USD 76, which means that STBs would cost one-third to half of the average monthly salary.

3.4 Litigation

Another key area that can be benchmarked in the region relates to litigation arising from the digital migration process. Examining both completed and ongoing cases across Africa, legal troubles often tend to arise from a lack of effective communication between regulators and the private sector. In Tanzania, the government designed detailed and methodical planning stages, and implemented these phases with buy-in from all stakeholders. This helped avoid lawsuits from stakeholders that would have slowed down the migration process. Rwanda had a similar outcome. In contrast, the migration processes in both Kenya and Uganda were delayed due to litigation by multiple private stakeholders.

In Uganda's case, a private citizen sued the Uganda Communication Commission (UCC) in court over the legality of forcing citizens to pay for STBs in order to get services they previously received for free via an analogue signal.¹⁴⁰ Two weeks later, the court, after briefly ordering the UCC to cease the ASO, ruled in favour of the government because the court lacked the proper jurisdiction to issue such an order. While the case stalled the process for only one month, it highlights the importance of public awareness campaigns, which could potentially have mitigated concerns over the requirement to obtain an STB in order to view programming broadcast digitally.

Kenya's legal battle started in earnest in November 2013, when, as previously discussed, several broadcasters filed suit in the High Court to contest the BSD licensing process. The broadcasters successfully argued that the government awarded the BSD licences improperly and CA was required to concede to the broadcasters' demand that a third licence be awarded.

3.5 Funding

Mechanisms for funding the digital migration offer another means for benchmarking in the region. The transition of an entire nation's broadcast infrastructure from analogue to digital is an expensive undertaking requiring considerable funding from both the public and private sectors. Similarly, lack of adequate funding has the potential to create or exacerbate problems. In general, private sector funding has allowed for infrastructure development while government funds paid for public outreach and STB price reductions. Full, or even partial, STB subsidisation was not an option in this region because subsidisation is extremely expensive.¹⁴¹

¹³⁸ East African Business Week, Uganda Pay-TVs Jockey for Digital Switch, February 22, 2015, <http://www.busiweek.com/index1.php%3Fctp%3D2%26pl%3D2802%26plv%3D3%26sr%3D69%26spl%3D221%26c%3D11>

¹³⁹ TechWeez, AND Set Top Boxes, What are Their Options in the Market? By Eric Wainaina, June 10, 2015, <http://www.techweez.com/2015/06/10/adn-set-top-boxes-market-options/>

¹⁴⁰ Biztech Africa, Ugandans forced to Embrace Digital Migration, July 9, 2015, <http://www.biztechfrica.com/article/ugandans-forced-embrace-digital-migration/10321/#.V7tQ2E0rdU>

¹⁴¹ Daily Monitor, Hurdles Remain on Path of Uganda's Digital Migration Journey, March 13, 2012, <http://www.monitor.co.ug/Business/Prosper/-/688616/1364820/-/item/02/-/g8m5cbz/-/index.html>

In Kenya, the government's decision to solely license one state-funded BSD presented a problem. SIGNET lacked KES 4 billion in funds for infrastructure deployment. In addition, it needed to fund the mid-stream change to from DVB-T to DVB-T2 technology. Therefore, it turned to the private sector and initiated a tender process for a second BSD licensee. The licence fee of KES 40,500,000 (roughly USD 450,000) paid by the new BSD licensee, PANG, provided the government with additional funds. PANG, which offers service in nine African countries, has leveraged its footprint to adopt a variety of funding mechanisms in the region, primarily related to STBs, including in Rwanda, Uganda and Tanzania. In Uganda, PANG subsidiary, StarTimes, promoted STB adoption by offering low-cost decoders and

low monthly subscription rates, as mentioned in Section 3.3.¹⁴² StarTimes adopted a similar approach in Rwanda.¹⁴³ In Tanzania, StarTimes prompted STB uptake by supporting public awareness campaigns. In all four countries, the exact values of PANG's infrastructure contributions were not divulged, but those contributions helped the countries with the dissemination of STBs.

3.6 Summary

Table 3 shows a regional benchmarking of Kenya's actions, in comparison to other countries in the East African region. Table 3: Comparison of Kenya and East African Countries

TABLE 3: COMPARISON OF KENYA AND EAST AFRICAN COUNTRIES

Country	Aspects of Digital Migration				
	Digital Switch-On	Status	Set-Top Boxes	Litigation	Action Committees
Tanzania	Primarily from government, but PANG contributed a modest amount to infrastructure.	Tanzania had the best public outreach, utilising various mediums and marketing tools.	STB distributors lowered the price by offering low upfront costs and making up the difference through the TV packages purchased. Requires DVB-T2 technology.	No major or notable cases.	Most thorough and engaged planning committee. Stakeholders were fully engaged.
Kenya	The majority of infrastructure funding came from PANG, with very little coming from the government.	Primarily used TV commercials and physical outreach, as well as social media. Rarely used radio ads.	The government lowered import taxes and promoted competition by allowing more distributors to enter the market. Requires DVB-T2 technology.	Three media groups sued the government because they did not receive a broadcast licence. In the end, they received a self-provisioning licence.	Established an action committee, but not all input was treated equally.
Uganda	Funding was primarily internal, but PANG's involvement is evident although unclear.	Similar public outreach method to Kenya.	STB distributors lowered the price by offering low upfront costs and making up the difference through the TV packages purchased. Requires DVB-T2 technology.	The UCC was taken to court over the legality of the analogue switch-off. The court ruled in favour of the UCC.	Established a multi-stakeholder task force without any notable issues.
Rwanda	Funding was primarily internal, but PANG's involvement is evident although unclear.	Similar public outreach method to Kenya.	STB distributors lowered the price by offering low upfront costs and making up the difference through the TV packages purchased. Requires DVB-T2 technology.	No major or notable cases.	Established a Migration Task Force with four sub-committees.

¹⁴² Vanguard, Nigeria's Digital Migration Failure: Lessons from Tanzania by Prince Osuagwu, June 24, 2015, <http://www.vanguardngr.com/2015/06/nigerias-digital-migration-failure-lessons-from-tanzania/>

¹⁴³ New Times, With Technology, StarTimes has Made Digital Migration Affordable, <http://www.newtimes.co.rw/files/promo/142608825STARTIMES%20Digital%20Migration.pdf>

4 Conclusions

4.1 Lessons Learned and Results Achieved

Kenya's experience, viewed independently or in relation to other East African countries, shows that governments must play a critical role in facilitating the entire digital migration process.

The transition requires political commitment from the highest levels of the government, while the policy framework should be flexible enough to allow regulators to define – and adjust – the regulatory framework as needed to address market, consumer and technological realities.

Furthermore, the buy-in of stakeholders involved in the digital migration is key to avoiding litigation. Experiences in Kenya and Tanzania show that a consultative approach with all involved stakeholders helps to define and adjust the actions and priorities. However, the stakeholders' concerns must be acknowledged and given proper consideration. If parties are made to feel that decisions are already made and their input is meaningless, then the consultative process is not likely to yield the positive benefits envisioned. Thus, meaningful consultation processes that give fair and transparent consideration to stakeholders' views are critical to avoid or limit litigation or disruption of the planned migration timeline. However, despite the difficulties in its consultative process, Kenya reacted promptly and made the necessary adjustments to meet its final ASO deadline.

The development of a clear and detailed ASO roadmap for the digital migration process is essential, taking particular care to make sure it covers the entire migration process. The migration process should also be well-advertised with a comprehensive consumer awareness campaign that explains the benefits of digital television in order to incentivise consumers to invest in new receivers. Kenya's mid-stream change from DVB-T to the DVB-T2 standard, although technically preferable, led to misinformation and consumer confusion. Consumers should be aware of the process and its timelines. The best outreach varies from country to country, but in general, it should include the use of diverse media with the widest reach possible.

The migration is a costly process, requiring investments from both broadcasters and consumers, but it also has significant benefits. In Kenya, there have been positive changes in the broadcasters' business models because, as a result of the creation of BSDs, they no longer need to focus on infrastructure investment. Instead, broadcasters can focus on content production. This opens the broadcasting market, as new entities, such as the BSDs, are allowed to invest in digital network

deployment. That said, this approach may not be valid for all countries, and it is dependent on the size and composition of the broadcasting market.

Special attention should be paid to the impact on consumers, notably the affordability of STBs. Although it is beneficial, subsidising digital TV receivers for consumers is not always viable. Kenya sought to address the funding problem by opening the STB market, facilitating imported devices, engaging in regional harmonisation to leverage economies of scale, and reducing taxes and regulatory fees. As is the case in several East African countries, FTA signals could also be received through pay TV STBs. Although this option helps to bring more STBs into the market, it may lead the general public to think that the digital migration means also changing from a FTA to a pay TV model. Kenya has not subsidised the STBs, but it is currently considering, if the regulatory framework permits, to use the USF as a tool for reducing STB costs for those unable to afford them, as well as to support deployment solutions for remote areas, as market and regulatory measures alone did not achieve full STB coverage objectives. A less utilised option for improving STB affordability is negotiating consumer STB financing options with banks, including micro-financing options, used by the pay TV operators in Kenya.

To the Kenyan government, the digital migration has been a tremendous success as the media sector has been opened up to many more players, creating more businesses and jobs in the process. This has also increased the diversity of content and competition, resulting in lower advertising rates. In addition, valuable spectrum has been freed from broadcasting services, to be used instead for mobile services such as 4G, creating additional socio-economic benefits for Kenyan citizens.¹⁴⁴

Finally, the benefits from the digital migration go far beyond the improved quality and availability of television signals, as it also increases efficiency in the use of spectrum. Both digital dividends should be made available for mobile broadband, and appropriate considerations should be taken in terms of avoiding interference. Regional and international band plans should be used in the digital dividend bands in order to benefit from economies of scale and reduce potential for interference in border regions. A clear migration path, as well as a timeline for the assignment of this spectrum should also be under the purview of the countries going through the digital migration. Overall, the results of a successful digital migration help to reduce the digital divide in accessing both media and mobile broadband services.

4.2 Checklist for Countries Undertaking a Digital Migration Process

Table 4 is a checklist of key issues that a country should address when undertaking a digital migration process, based on Kenya’s digital migration experience. The checklist includes the steps that should be carried out by both the government and the private sector.

TABLE 4: KEY ISSUES TO ADDRESS ON A DIGITAL MIGRATION

Policy and Regulation			
Planning	DSO Deployment	Migration	ASO Finalisation
<p>Commitment from the government to spearhead the process, and definition of organisational structure.</p> <ul style="list-style-type: none"> ■ Delegate an entity to lead the process through an executive order, i.e., the regulator. ■ Establish a multi-stakeholder group to manage the implementation of the digital migration. 	<p>Review existing legal framework to allow for flexible regulation.</p> <ul style="list-style-type: none"> ■ Define broad policy guidelines, allowing for regulatory flexibility.. 	<p>Develop appropriate policies on the access to, use of, and distribution of content, including possibility of DTT pay TV provision.</p> <ul style="list-style-type: none"> ■ Consider introducing Pay TV in the digital television bands as part of the migration ■ Institute common STB specifications and use licence fees from Pay TV providers to help subsidise receivers. ■ Ensure consumers know they are not being forced to switch from FTA to pay TV. 	<p>Implement a phased analogue switch-off.</p> <ul style="list-style-type: none"> ■ Focus resources and implement any correctional actions when necessary. ■ Take digital infrastructure deployment and availability of digital TV receivers into account throughout the process.
<p>Consult and involve all key stakeholders, including government, regulator, broadcasters, equipment manufacturers and consumer associations.</p> <ul style="list-style-type: none"> ■ Establish clear guidelines and communications channels for all stakeholders, in order to prevent misunderstandings 	<p>Establish a digital TV regulatory framework.</p> <ul style="list-style-type: none"> ■ Update broadcasting regulations to include provisions for digital TV. ■ Create a clear mechanism of transitioning existing players to the digital platform as well as transparent licensing for new players. ■ Provide regulatory certainty to allow investments to flourish. 	<p>Where applicable, set the role of the public broadcasters in the transition.</p> <ul style="list-style-type: none"> ■ Allow public broadcasters to lead the deployment of digital networks, provided they have adequate funds. 	<p>Determine and enforce the analogue switch-off timelines.</p> <ul style="list-style-type: none"> ■ Make adjustments throughout the migration, as delays in the ASO deadlines lead to public confusion.
<p>Plan and set aside funds to carry out the process.</p> <ul style="list-style-type: none"> ■ Estimate the necessary funds for network deployment and acquisition of receivers, and indicate sources of funding. ■ Set aside full funds based on the estimation, preventing financial setbacks in the future. 	<p>Define clear timelines for the digital switch-on and the analogue switch-off, including the simulcast period.</p> <ul style="list-style-type: none"> ■ Consider how long many countries took to meet the GE06 deadline of 2015 and plan accordingly. ■ Account for a simulcast period, which ranges from 5 to 10 years. 	<p>Commitment from the government to spearhead the process, and definition of organisational structure.</p> <ul style="list-style-type: none"> ■ Delegate an entity to lead the process through an executive order, i.e., the regulator. ■ Establish a multi-stakeholder group to manage the implementation of the digital migration. 	<p>Commitment from the government to spearhead the process, and definition of organisational structure.</p> <ul style="list-style-type: none"> ■ Delegate an entity to lead the process through an executive order, i.e., the regulator. ■ Establish a multi-stakeholder group to manage the implementation of the digital migration.
<p>Determine adequate simulcast period.</p> <ul style="list-style-type: none"> ■ Determine how much time is needed for the broadcasters to deploy networks in different parts of the country. ■ Consider the speed at which the industry can build and sell digital TV receivers. 			

TABLE 4: KEY ISSUES TO ADDRESS ON A DIGITAL MIGRATION (CONTINUED)

Technical			
Planning	DSO Deployment	Migration	ASO Finalisation
<p>Obtain commitment from broadcasters to invest in and deploy the new networks.</p> <ul style="list-style-type: none"> Decide if BSDs should be separate entities from content creators If so, determine how many licences should be awarded 	<p>Define the minimum specifications for digital TV receivers, including STBs and integrated receivers.</p> <ul style="list-style-type: none"> Set minimum STB specifications early in the process. Adopt widely used regional or international standards and specifications, which may allow for the exploitation of economies of scale. 	<p>Streamline training of technical and content creation personnel on new digital technology.</p> <ul style="list-style-type: none"> Invest in the entire production supply chain including training, new equipment and content production. 	
<p>Plan and set aside funds to carry out the process.</p> <ul style="list-style-type: none"> Consider whether the DVB-T2 standard with MPEG 4 compression, as recommended by the ATU, is appropriate. 	<p>Plan digital TV frequency channel assignment, using Single Frequency Networks (SFN) or Multi-Frequency Networks (MFN), and optimise spectrum use.</p> <ul style="list-style-type: none"> Deploy SFN where viable and combine with MFN to guarantee maximum spectrum use. 	<p>Determine locations to carry out trials for the analogue switch-off.</p> <ul style="list-style-type: none"> Conduct trials in big and small markets to assess public reactions and possible issues. If necessary, specifically carry out trials in small markets, to determine what adjustments should be made. 	
<p>Consider international harmonisation on the use of spectrum to avoid intra- and cross-border interference.</p> <ul style="list-style-type: none"> Follow GE06 guidance on channel planning. Hold cross border frequency coordination meetings with neighbouring countries and regional organisations. 	<p>Require a minimum number of digital content channels per frequency channels, either in standard definition (SD) or high definition (HD).</p> <ul style="list-style-type: none"> When considering using SD channels, utilise a maximum of 20 content channels per one 8MHz channel. 	<p>Commitment from the government to spearhead the process, and definition of organisational structure.</p> <ul style="list-style-type: none"> Delegate an entity to lead the process through an executive order, i.e., the regulator. Establish a multi-stakeholder group to manage the implementation of the digital migration. 	<p>Commitment from the government to spearhead the process, and definition of organisational structure.</p> <ul style="list-style-type: none"> Delegate an entity to lead the process through an executive order, i.e., the regulator. Establish a multi-stakeholder group to manage the implementation of the digital migration.
	<p>Define clear funding mechanisms for infrastructure rollout.</p> <ul style="list-style-type: none"> Use a mix of private and public investments, along with other forms of financing, including USF (if available) and spectrum auctions. Provide government funding from the public broadcaster if funds are available. 		

TABLE 4: KEY ISSUES TO ADDRESS ON A DIGITAL MIGRATION (CONTINUED)

Consumer			
Planning	DSO Deployment	Migration	ASO Finalisation
<p>Plan for and allocate funds for marketing for consumer education and awareness of the migration process, its timelines and implications.</p> <ul style="list-style-type: none"> ■ Plan consumer awareness initiatives, involving all stakeholders ■ Utilise multiple types of media and initiatives, especially media advertisements ■ Acquire funding from the private sector, not just the government. 	<p>Incentivise industry to promote and explain the services to customers.</p> <ul style="list-style-type: none"> ■ Launch initiatives to promote digital television and answer consumer questions at points of sale receivers. 	<p>Finance consumer awareness campaigns to prevent transition delays.</p> <ul style="list-style-type: none"> ■ Execute campaigns on several media channels to reach the entire population. ■ Encourage broadcasters to utilise their channels in educational efforts, as it will help minimise viewership declines after the transition. 	
<p>Plan the supply of an adequate number of digital TV receivers.</p> <ul style="list-style-type: none"> ■ Open the market to several digital TV receiver providers. ■ Reduce taxes and fees on receivers. 	<p>If necessary, define the role of pay TV providers in the distribution of FTA digital TV receivers.</p> <ul style="list-style-type: none"> ■ Pay TV operators may provide both pay and FTA STBs through a minimum set of specifications. ■ Have a clear message when using this approach to avoid licence issues with broadcasters, as well as misinformation to consumers that the migration means moving from FTA to pay TV. 	<p>Provide assurances of availability, and accessibility of affordable digital receivers and STBs, as those need to be readily available in the local market.</p> <ul style="list-style-type: none"> ■ Carry out educational campaigns with STB vendors, broadcasters and network infrastructure vendors. 	
<p>Define responsibilities in terms of messaging to consumers.</p> <ul style="list-style-type: none"> ■ Coordinate efforts from a central point, ensuring a uniform message ■ Develop a website with all information about the process easily accessible. 		<p>Ensure that the population can afford the acquisition of a digital TV receiver.</p> <ul style="list-style-type: none"> ■ One option is to establish receiver subsidies when funds are available, considering that processing the subsidies may add extra time to the migration process ■ Another option is to consider market forces including opening the market to more vendors and reducing taxes and fees on digital receivers. 	

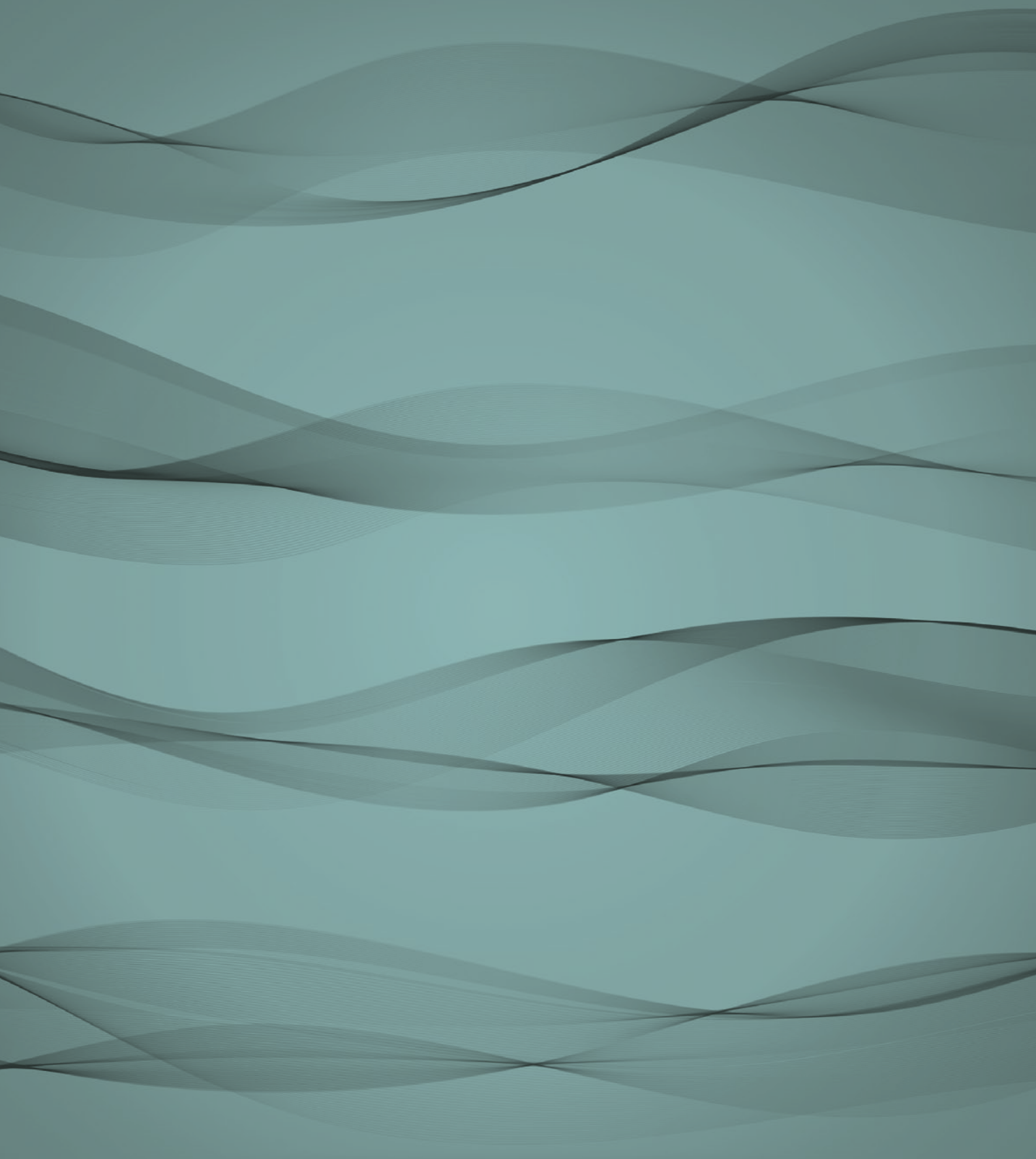
TABLE 4: KEY ISSUES TO ADDRESS ON A DIGITAL MIGRATION (CONTINUED)

Spectrum Repurpose			
Planning	DSO Deployment	Migration	ASO Finalisation
<p>Hold stakeholder forums to build consensus on the analogue switch-off process.</p> <ul style="list-style-type: none"> ■ Identify challenges and build consensus among stakeholders, avoiding future litigation. ■ Focus on long-term planning for future spectrum use. ■ Consider using spectrum licensing fees from the digital dividend as a source of funding for the migration. 	<p>Define clear timelines when implementing the framework and strategies for the use of the new services in the digital dividend.</p> <ul style="list-style-type: none"> ■ Clearly define the different phases of the migration process. ■ Indicate when licensing the repurposed spectrum will conclude. 	<p>Clear the digital dividend spectrum in the 800 MHz and 700 MHz bands.</p> <ul style="list-style-type: none"> ■ Free the 700MHz band for other services by allocating broadcasting services to frequencies below 694MHz 	<p>Define mobile services band plan in accordance with regional and international standards.</p> <ul style="list-style-type: none"> ■ Follow harmonisation plans as established by standards development organisations, in order to have economies of scale, and more accessible devices (Example: the ITU-R recommendation for channel arrangements in the 700 and 800 MHz bands).
<p>Analyse existing television broadcasting market in the country, including availability of transmitters and STBs, to define realistic goals in terms of spectrum refarming timelines.</p> <ul style="list-style-type: none"> ■ Create timelines that balance demand for digital dividend spectrum with realistic network deployment schedules and availability of digital TV receivers. 			<p>Repurpose the spectrum for new services, including mobile broadband.</p> <ul style="list-style-type: none"> ■ License new services in the Digital Dividend.



Appendix A: List of Acronyms

Term	Meaning
APA	Association of Practitioners in Advertising
ASO	Analogue Switch-Off
ATU	African Telecommunication Union
BSD	Broadcast Signal Distributor
BTTF	The Broadcasting Technical Task Force
CA	Communications Authority
CCK	Communications Commission of Kenya
COFEK	Consumer Federation of Kenya
DSO	Digital Switch-On
DTC	Digital Transition Committee
DTT	Digital Terrestrial Television
DTTB	Digital Terrestrial Television Broadcasting
DTV	Digital Television
DVB-T	Digital Video Broadcasting – Terrestrial
EACO	East Africa Communications Organization
FTA	Free-to-Air
HD	High Definition
ITU	International Telecommunications Union
KBC	Kenyan Broadcasting Corporation
KES	Kenyan Shilling
KICA	Kenya Information and Communications Act
LTE	Long-Term Evolution
MFN	Multi-Frequency Networks
MICT	Ministry for Information and Communications
MOA	Media Owners Association
NCS	National Communications Secretariat
NMG	National Media Group Limited
PANG	Pan African Network Group
PPARB	Public Procurement Administrative Review Board
PPP	Public Private Partnership
RMS	Royal Media Services Ltd.
RRC	Regional Radiocommunication Conference
SD	Standard Definition
SFN	Single Frequency Networks
SGL	Standard Group Limited
STB	Set Top Box
UCC	Uganda Communication Commission
UGH	Ugandan Shilling
UHF	Ultra High Frequency
USF	Universal Service Fund
VHF	Very High Frequency
WRC	World Radiocommunication Conference



Appendix B: Status of GE06 Countries

TABLE 5: STATUS OF GE06 COUNTRIES THAT HAD NOT COMPLETED ASO BY 2015

Country	Digital Switch-On	Status
Albania	June 6, 2015	Ongoing
Algeria	2015	Ongoing
Angola		Ongoing
Armenia	2015	Ongoing
Azerbaijan	2013	Ongoing
Bahrain	June 17, 2015	Ongoing
Belarus	2015	Ongoing
Benin	2020	Ongoing
Bosnia and Herzegovina	June 17, 2015	Ongoing
Botswana		Ongoing
Burkina Faso	December 30, 2015	Ongoing
Burundi		Ongoing
Cameroon	2015	Ongoing
Cape Verde	August 31, 2016	Ongoing
Central African Republic		Not started
Chad		Ongoing
Comoros		Not started
Congo		Ongoing
Congo (Dem. Rep.)		Ongoing
Côte d'Ivoire	2015	Ongoing
Djibouti		Not available
Egypt	June 17, 2020	Ongoing
Equatorial Guinea		Ongoing
Eritrea		Not started
Ethiopia	2017	Ongoing
Gabon		Ongoing
Gambia	September 30, 2015	Ongoing
Ghana	June 17, 2014	Ongoing
Guinea		Ongoing
Guinea-Bissau	March 31, 2016	Ongoing
Iran		Ongoing
Iraq		Not available
Jordan	2015	Not available
Kazakhstan	2015	Not available
Kuwait		Not available
Kyrgyzstan		Not started
Lebanon	2015	Not started

Lesotho	2015	Ongoing
Liberia		Not started
Libya		Not started
Liechtenstein		Not available
Madagascar	2015	Ongoing
Mali	June 30, 2016	Ongoing
Mauritania		Not available
Mauritius	July 17, 2015	Ongoing
Moldova	June 15, 2015	Ongoing
Namibia	2016	Ongoing
Niger	April 30, 2016	Ongoing
Nigeria	June 17, 2015	Ongoing
Oman	June 17, 2015	Ongoing
Qatar		Ongoing
Romania	June 17, 2015	Ongoing
Russia	2019	Ongoing
Sao Tome and Principe		Not started
Senegal	2015	Ongoing
Seychelles	December 31, 2015	Ongoing
Sierra Leone	December 31, 2017	Ongoing
Somalia		Not available
South Africa	December 31, 2013	Not started
South Sudan		Ongoing
Sudan	2015	Ongoing
Swaziland		Ongoing
Syria	2020	Not available
Tajikistan		Not available
Togo		Ongoing
Tunisia	2015	Ongoing
Turkey	2015	Not started
Turkmenistan		Not available
Uganda		Ongoing
Ukraine	2015	Ongoing
Uzbekistan	2017	Ongoing
Yemen	2020	Not available
Zambia	2014	Ongoing
Zimbabwe	2015	Ongoing

Source: ITU Status of the Transition to Digital TV.¹⁴⁵

Appendix C: Technical Considerations of Kenya’s Digital Migration

The frequency plan for Kenya, as contained in the GE06, was based on a Multiple Frequency Network (MFN) plan. Deployment of DTTB was on a mini Single Frequency Network (SFN) within the MFN plan. BSDs deploying multiple SFN transmitters in a given service area on the same frequency had to submit their configuration for approval by CA.¹⁴⁶

During the simulcast period, the BSDs were assigned frequencies that were not in use by analogue television transmitters, based on the GE06. This approach made broadcasting spectrum more organised and identification of available spectrum easier. In the beginning, it was possible to multiplex most of the existing analogue channels programmes in one digital television channel. During the transition period, many of the analogue frequencies were still in use and only a few digital channels were available. After the transition period, more channels became available and new requests for broadcasting content could be met.¹⁴⁷

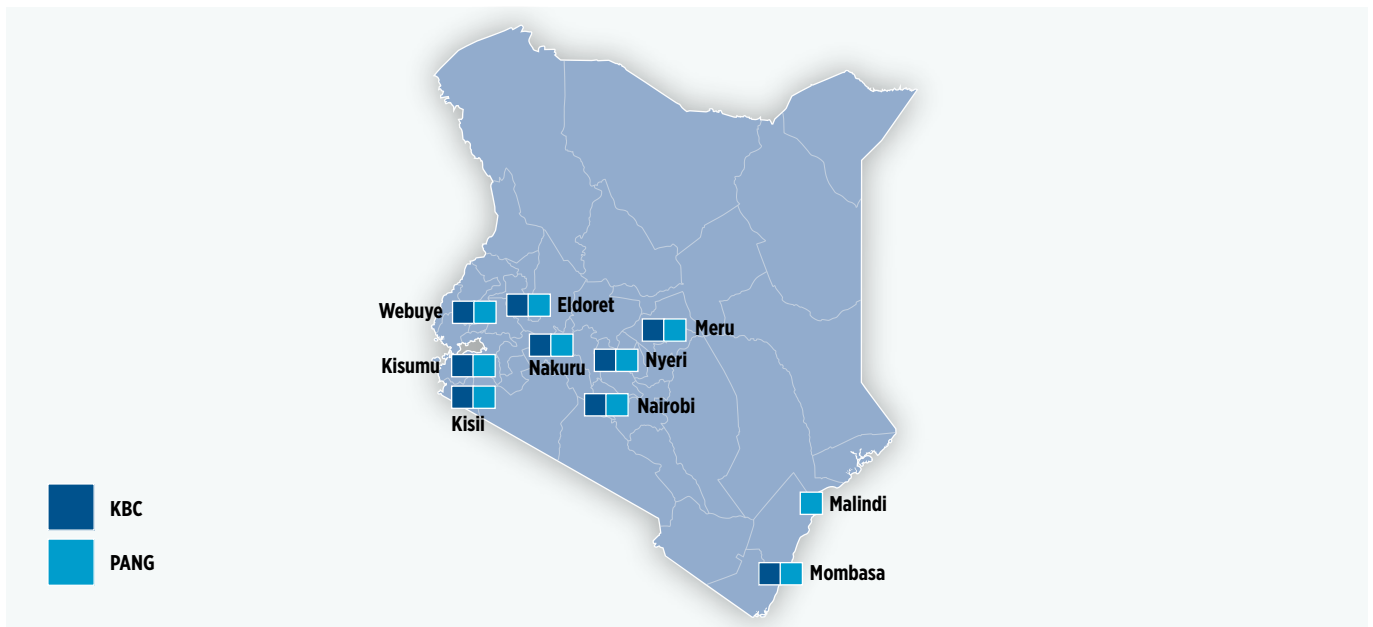
The following points were taken into consideration when planning the assignment of digital channels:

- **compliance with GE06;**
- **requirement of coordination with neighbouring countries;**
- **existing analogue frequency channels; and**
- **likelihood of interference.**

The DTC recommended that, when using MPEG-4 compression, eight digital content channels could be accommodated within one 8 MHz frequency channel.¹⁴⁸ Figure 10 shows the cities in which each of the two BSDs had deployed their networks in Kenya.

As part of the change from the DVB-T to DVB-T2 standard, STB imports were required to comply with the Government-approved DVB-T2 system specifications. Some of these minimum requirements are shown in Table 6.¹⁴⁹

FIGURE 10: DIGITAL SIGNAL AVAILABILITY



Source: Digital Kenya, November 2012¹⁵⁰

¹⁴⁶ Alfred Ambani, at 9.

¹⁴⁷ Obam, D. (2016, September 23). Email interview.

¹⁴⁸ Id.

¹⁴⁹ Public Notice.

¹⁵⁰ Digital Kenya, <http://www.digitalkenya.go.ke/what-s-digital-transition/signal-availability-in-kenya>

TABLE 6: SOME OF THE MINIMUM DVB-T2 STB SPECIFICATION FOR THE KENYAN MARKET

Standard	ETSI EN 302 755 V1.1.1 (2009-09)
Channel	VHF (174-230 MHz) – optional, UHF (470 – 806 MHz) 7 MHz (VHF), 8 MHz (UHF), 1.7 MHz (VHF) – optional
Spectrum mask	GE06 signal is under the mask of DVB-T
Interface	HDMI interface (optional)
Conditional access	Optional for FTA only STBs. STB must include at least one embedded smart card reader or a DVB-CI (Common Interface) slot to allow any type of conditional access module to be plugged into the STB



Floor 2, The Walbrook Building
25 Walbrook, London EC4N 8AF UK
Tel: +44 (0)207 356 0600

spectrum@gsma.com
www.gsma.com

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