

---

## GENERAL NOTICES • ALGEMENE KENNISGEWINGS

---

### INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

#### NOTICE 2385 OF 2024



---

#### **NOTICE OF INTENTION TO CONDUCT AN INQUIRY ON THE REVIEW OF THE DIGITAL MIGRATIONS REGULATIONS, 2012.**

---

1. The Independent Communications Authority of South Africa ("the Authority"), hereby in terms of section 4B of the Independent Communications Authority of South Africa Act, 2000 (Act No. 13 of 2000) ("ICASA Act"), read with section 30(1) and 30(2) (d) of the Electronic Communications Act, 2005 (Act No. 36 of 2005), publishes the Discussion Document on the review of Digital Migration Regulations, (2012) ("the Discussion Document")
2. The purpose of this Inquiry is to solicit views and input from relevant stakeholders on the review of the Digital Migration Regulations, 2012 ("the Regulations"). The Regulations provided a framework for the migration of television broadcasting services from analogue to digital services. The Inquiry will consider factors to be considered post-ASO.
3. The findings from the Discussion Document will determine what regulatory framework the Authority should formulate for digital television broadcasting.
4. The Authority publishes this Notice of Inquiry together with the Discussion Document attached. The Authority invites all relevant and interested stakeholders in the ICT sector, to contribute their expertise, insights, and recommendations and make written representations to the Discussion Document. The stakeholders' feedback will be instrumental in shaping the regulatory framework necessary for the successful execution of Digital Terrestrial Television post the migration.

5. A copy of this Notice of Inquiry and the Discussion Document will be made available on the Authority's website and in the Authority's Library at 350 Witch-Hazel Road, Eco-park; Centurion between 09h00 and 16h00, Monday to Friday.
6. Written representations regarding this Notice of the Inquiry and the Discussion Document must be submitted to the Authority by no later than 16h00 forty-five (45) working days after publication of this Notice. The representations must be submitted by email (in Microsoft Word and PDF) or hand delivery and marked specifically for attention:

**Ms. Pumela Cokie**

**Delivery Address: 350 Witch-Hazel Road, Eco- Park; Centurion**

**Email: [PCokie@icasa.org.za](mailto:PCokie@icasa.org.za)**

7. The Authority requires stakeholders to respond to a series of questions in this Discussion Document. **When responding to the questions, stakeholders are requested to explain their answers and support them with any relevant evidence and documentation where applicable.**
8. Enquiries should be directed to Ms. Honey Makola at 012 568 3665 or [HMakola@icasa.org.za](mailto:HMakola@icasa.org.za) between 10h00 and 16h00, Monday to Friday.
9. In terms of section 4D of the ICASA Act, any person may request that any part of the written submission be treated as confidential. Requests for Confidentiality must be submitted in line with the Guidelines for Confidentiality Request in terms of section 4D of the ICASA Act published in Government Gazette No. 41839 of 17 August 2018.
10. Where an interested party has requested confidentiality on sections of its written submission, the written submission must be accompanied by one (1) non-confidential copy with sections that are redacted. The non-confidential version of the written submission will be published for public comment if the request for confidentiality is granted.

11. Requests for confidentiality will be considered within fourteen (14) working days of receiving the request. The Authority will communicate its decision to the respective Applicant.
12. Where the request for confidentiality is refused, the person who made the request will be allowed to withdraw such representations or portion(s) thereof.
13. Written representation(s) received by the Authority pursuant to this notice, will be made available for inspection by interested persons at the Authority's library and website. Library copies will be obtainable upon payment of the prescribed fee at ICASA Library at the following address: 350 Witch-Hazel Avenue, Eco Point Office Park, Eco Park, Centurion between 09h00 and 16h00, Monday to Friday.
14. Persons submitting written representations are further invited to indicate, as part of their submissions, whether they require an opportunity to make oral representations should the Authority decide to hold public hearings.
15. The Authority may hold public hearings on the issues raised in the context of this Inquiry if deemed necessary. The Authority will notify stakeholders of the date, time and venue in this regard.
16. The Inquiry will conclude with a Findings Document. The Authority will publish a Findings Document in the Government Gazette within 90 days from the date of conclusion of the Inquiry as prescribed in section 4C (6) of the ICASA Act.



**Yolisa Kedama**

**Acting Chairperson**

**Date: 18/03/2024**

# **DISCUSSION DOCUMENT ON THE REVIEW OF THE DIGITAL MIGRATION REGULATIONS, 2012**

**TABLE OF CONTENTS**

TABLES AND FIGURES.....	5
LIST OF ACRONYMS.....	6
1. <b>INTRODUCTION</b> .....	7
2. <b>METHODOLOGY</b> .....	8
3. <b>BACKGROUND</b> .....	9
4. <b>LEGISLATIVE FRAMEWORK</b> .....	13
5. <b>LICENSING AND COMPLIANCE CONSIDERATIONS POST THE MIGRATION</b> .....	14
5.1. Current Licensing Framework .....	14
5.2. Broadcasting Licensing Framework.....	15
5.4. Licence Terms.....	21
5.5. Digital Incentive Channel and Channel Authorisation .....	23
6. <b>TECHNICAL CONSIDERATIONS POST MIGRATION</b> .....	23
6.1. Roll-Out Targets /Coverage and Access .....	23
6.2. Signal Distribution .....	24
6.3. Data Services .....	25
6.4. Engineering Channel.....	27
6.5. Technical Bodies Supporting the Migration .....	29
6.6. Technologies for DTT.....	31
6.7. Broadcasting Beyond DTT (5G and 6G Technologies) .....	33
7. <b>CONSUMER CONSIDERATIONS POST MIGRATION</b> .....	37
7.1. Consumer Considerations .....	37
7.2. Harnessing the Digital Dividend .....	39
7.3. Set-Top Box.....	43
7.4. Internet connectivity and consumption .....	45
8. <b>TRANSITION FROM ANALOGUE TO DIGITAL</b> .....	47

8.1. Analogue Switch Off/Shut Down ..... 47

8.2. ASO Timelines ..... 47

9. **CONCLUSION** ..... 49

**TABLES AND FIGURES**

**Table**

Table 1: Analogue switch off dates ..... 47

**Figures**

Figure 1: DStv/Pay TV, OpenView, DTT ..... 44

Figure 2: Costs of transition to digital broadcasting ..... 46

**LIST OF ACRONYMS**

ASO	Analogue Switch Off
AAVCS	Audio and Audio-Visual Content Services
DTT	Digital Terrestrial Television
DVB-T2	Digital Video Broadcasting – Second Generation Terrestrial
ECA	Electronic Communications Act, 2005 (Act No. 36 of 2005)
HD	High Definition
GE06 Plan	Final Acts of the Administrative for the Planning of VHF sound broadcasting (Region 1 and part of Region 3), Geneva 2006
ICASA	Independent Communications Authority of South Africa
ICT	Information Communication and Technology
ITU	International Telecommunication Union
JSAG	Joint Spectrum Advisory Group
MHz	Mega Hertz
Mux	Multiplex
SABC	South African Broadcasting Cooperation
SD	Standard Definition
SFN	Single Frequency Network
TBFP	Terrestrial Broadcasting Frequency Plan
VHF	Very High Frequency

## **1. INTRODUCTION**

- 1.1. In an era marked by the relentless advancement of technology, the transition from analogue to digital television broadcasting has been a pivotal point in the evolution of the television broadcasting landscape. The shift has prompted regulators and stakeholders to re-evaluate their strategies, ensuring that regulations keep pace with the changing dynamics.
- 1.2. The Independent Communications Authority of South Africa ("the Authority") is entrusted with overseeing the dynamic landscape of the Information and Communication Technology ("ICT") sector and it recognises the important role that Digital Terrestrial Television ("DTT") plays in shaping the future of broadcasting. The transition from analogue to digital broadcasting represents a significant milestone, one that carries far-reaching implications for industry stakeholders, consumers and the broader socio-economic fabric. With the ASO underway, the Authority is conducting an inquiry to review the Regulations to determine what regulatory framework the Authority should formulate for digital television broadcasting.
- 1.3. The Discussion Document provides an overview of the current state of DTT in South Africa. It highlights key technological advancements, regulatory frameworks and international best practices with the aim of exploring the potential benefits and challenges associated with the adoption of DTT, improved quality of service and the facilitation of innovative services in television broadcasting services.
- 1.4. Particularly, the Discussion Document seeks to address important considerations such as efficient spectrum allocation, licensing frameworks and consumers' accessibility to broadcasting services. It is the Authority's view that an inclusive and collaborative approach is essential to ensure that any regulation of the post-migration era considers the diverse interests and requirements of all stakeholders.



- 1.5. The Discussion document is divided into the following sections:
- Section 1: Introduction
  - Section 2: Methodology
  - Section 3: Background
  - Section 4: Legislative Framework
  - Section 5: Licensing and compliance considerations post the migration
  - Section 6: Technical considerations post migration
  - Section 7: Consumer considerations post migration
  - Section 8: Transition from analogue to digital
  - Section 9: Conclusion.

## **2. METHODOLOGY**

- 2.1. In developing this Discussion Document, a structured methodology was used to ensure a thorough and informed analysis of the subject matter. The approach consisted of several key components, each serving a specific purpose in enhancing the document.
- 2.2. An international benchmark study was conducted to enhance the existing knowledge, regulatory frameworks and other studies related to DTT. This step aimed to establish a foundational understanding of the global and regional landscape, identifying best practices and lessons learnt from comparable contexts.
- 2.3. An analysis of the licensing framework of the existing regulations considering broadcasting and spectrum management, as well as compliance considerations. This step aims to identify potential regulatory gaps, laying the groundwork for regulatory adjustments to accommodate the advent of DTT.
- 2.4. The Authority also conducted a technical analysis, with internal subject matter experts, consisting of the evaluation of the current DTT infrastructure pre-ASO, spectrum efficiency and transmission

technologies. This step aimed to determine the technological landscape that must be considered post-ASO.

2.5. Finally, the Authority conducted an assessment on consumer considerations and emerging technologies. This assessment aims to consider the needs of consumers, as well as the impact of new and innovative technologies during the implementation of DTT.

2.6. This inquiry will unfold in the following three (3) phases:

- i. Phase 1: The publication of the Discussion Document. This phase involves consultations with stakeholders to gather insights and perspectives on DTT to ensure a comprehensive understanding of the subject matter, helping to align regulations with industry needs and technological advancements.
- ii. Phase 2: Public Hearings - Interested parties who have submitted written representations on the Discussion Document by the closing date prescribed by the Authority may be afforded an opportunity to make oral submissions to the Authority at the public hearings.
- iii. Phase3: Findings Document - the Authority will use the written and oral input (if any) gathered to formulate a comprehensive findings document, informing the subsequent determination of the appropriate form and structure that the regulations should take.

### **3. BACKGROUND**

3.1. In 2006, the Regional Radio Communication Conference of the International Telecommunications Union ("ITU") resolved that all countries in ITU Region 1 (Europe, Africa, the Commonwealth of Independent States, Mongolia and the Middle East west of the Persian Gulf, including Iraq) should migrate from analogue to digital broadcasting services by 2015. As part of the ITU, the Department of Communications and Digital Technologies ("the Department") is obligated by the international treaties on telecommunications to abide by the 2006 ITU Resolution.

- 3.2. On 08 September 2008, the then Department of Communications ("DoC") published the Broadcasting Digital Migration Policy ("the BDM policy") in Government Gazette No. 31408. The policy outlined that the commencement of the digital terrestrial television signal was scheduled for 1 November 2008, with the Analogue Switch Off ("ASO") date determined for 1 November 2011.
- 3.3. The BDM policy was amended several times to take into consideration changes in the ICT sector which affected broadcasting services. On 17 February 2012, the BDM policy was amended with the government committing to meet the ITU's deadline of 17 June 2015 for analogue switch-off.
- 3.4. On 14 December 2012, the Authority published the Digital Migration Regulations ("the Regulations") in Government Gazette No. 36000 which aimed to facilitate the transition from analogue to digital broadcasting. These Regulations remain in force and their purpose is to: -
- (a) regulate the digital migration of the existing television channels;
  - (b) prescribe the conditions for the assignment of channel capacity in Multiplex 1 and Multiplex 2 for digital migration and the creation of a platform for DTT;
  - (c) prescribe the procedure for the authorisation of digital incentive channels; and
  - (d) set the time frames within which the terrestrial television broadcasting service licensees must provide for dual illumination.
- 3.5. On 18 March 2015, the Department published the amendment of the BDM Policy in Government Gazette No. 38583. This amendment sought to offer clarification concerning the integration of a control system in the Set-Top-Box (STB), facilitating households in transitioning from analogue to digital broadcasting signals. Additionally, the Department specified that the Minister of Department of Communications and Digital Technologies ("Minister"), in consultation with Cabinet, would determine the dates for digital switch-on and analogue switch-off instead of explicitly stating them in the BDM Policy.

- 3.6. On 1 February 2016, the Minister officially published the performance period and initiated the dual illumination phase, with the specific analogue switch-off date to be disclosed by the Minister following consultations with the Cabinet. Despite the announcement of multiple ASO dates between 2018 and 2020, there was minimal advancement in the digital migration process.
- 3.7. On 05 October 2021, the Minister announced a deadline for the Set Top Box (STB) registration of 31 October 2021 declaring that consumers who failed to register for STBs after 31 October 2021 would only be installed three to six months after the analogue switch-off; meaning that these consumers would not be able to access terrestrial broadcasting services. On 12 October 2021 e-TV launched an urgent application in the High Court against the Minister's determination and seeking, among others, a declarator that the Minister may not complete the digital migration process until the Minister provides STB to persons in need and consults those affected before completing the digital migration process. The High Court dismissed e-TV's application but extended the date for switch-off to 30 June 2022.
- 3.8. The Department, in a media statement on February 28, 2022, declared the final Analogue Switch Off (ASO) date, indicating the conclusion of the dual illumination period, scheduled for March 31, 2022. e.tv proceeded to appeal the High Court's decision at the Constitutional Court which ordered that the announcement of the final switch-off date and the end of dual illumination be set for 31 March 2022, be set aside. The Constitutional Court, however, outlined that once adequate notice has been given to the public to make an informed decision on whether to register for an STB, digital migration should proceed without delay.
- 3.9. On 09 December 2022, the Minister published a notice outlining her intention to determine the date for the final switch-off of the analogue signal and the end of dual illumination to be 31 March 2023 and inviting interested parties to provide written comments. Following this, the Cabinet granted concurrence for the Minister to gazette the ASO date. This

provision was to allow the Department an opportunity to assess the extent of the uptake of the necessary equipment to facilitate universal access to broadcasting services. On 15 June 2023, the Minister published a notice in Government Gazette No. 48793 which determined that the ASO date will be 31 July 2023. All remaining analogue broadcasting services should temporarily be accommodated below the 694 MHz frequency. All digital broadcasting services operating above 694 MHz frequency must also be returned to operate on frequencies below 694 MHz in order to clear broadcasting services from the 694 to 862 MHz frequency band. Moreover, the conclusion of the dual illumination period and the shutdown date for all remaining analogue broadcasting services below the 694 MHz frequency is established as 31 December 2024.

- 3.10. As the digital migration process is anticipated to conclude in December 2024, the regulatory focus must now shift towards aligning with the post-migration broadcasting environment. The Authority is committed to assessing any regulatory opportunities and challenges that may have surfaced during the DTT transition.
- 3.11. The primary aim of this review is to ensure the seamless operation of DTT broadcasting. Consequently, the Authority aims to redefine the purpose of the existing regulations, aligning them with the post-digital migration landscape based on inputs from stakeholders.
- 3.12. Against the backdrop of the historical delays to the implementation of the BDM Policy discussed above, the Authority is embarking on a process to conduct a comprehensive assessment of the continued relevance and effectiveness of the Regulations post-ASO. Based on the research conducted, the Authority is convinced of the need for amendments to the Digital Migration Regulations, 2012 ("the Regulations") within the subject of DTT.
- 3.13. The specific form and structure of these regulations, however, will be determined by the Authority after consultation with all interested parties.

This Discussion document marks the first phase of the Authority's consultation process to review the Regulations.

#### 4. LEGISLATIVE FRAMEWORK

4.1. The Authority is the sector regulator for broadcasting, electronic communications and postal services established in terms of the Independent Communications Authority of South Africa Act, 2000 (Act No. 13 of 2000) ("the ICASA Act"). In terms of section 4B of the ICASA Act, the Authority is empowered to, amongst others, conduct an inquiry into any matter with regard to:

- *the achievement of the objects of the ICASA Act or underlying statutes [Section 4B (a) of the ICASA Act]; the exercise and*
- *performance of the Authority's powers, functions and duties in terms of the ICASA Act or the underlying statutes [Section 4B (e) of the ICASA Act].*

4.2. Section 4 of the Electronic Communications Act, 2005 (Act No. 36 of 2005) empowers the Authority to make regulations regarding:

- *any technical matter necessary or expedient for the regulation of the services identified in Chapter 3 [Section 4 (a)];*
- *any matter of procedure or form which may be necessary or expedient to prescribe for the purposes of this Act or the related legislation [Section 4 (b)];*
- *the uses of radio frequency spectrum [Section 4 (2)(b)]*

4.3. Section 5(1) of the ECA empowers the Authority to grant individual and class licences.

4.4. Furthermore, Section 30(1) of the ECA empowers the Authority to control, plan, administer, manage, licence and assign the use of the radio frequency spectrum.

4.5. Section 30 (2) (b) of the ECA provides that the Authority must take into account the modes of transmission and efficient utilisation of radio frequency spectrum including allowing shared use of radio frequency spectrum when interference can be eliminated or reduced to acceptable

levels as determined by the Authority when exercising its powers in terms of Section 30 (1).

- 4.6. In terms of Section 30 (3), the Authority when exercising its powers in terms of Section 30 (1) must ensure that in the use of the radio frequency spectrum harmful interference to authorised or licensed users of the radio frequency spectrum is eliminated or reduced to the extent reasonably necessary.
- 4.7. Section 31 (4) provides that the Authority may amend a radio frequency spectrum licence to, amongst others, affect the migration of licensees in accordance with a revised radio frequency plan or the transition from analogue to digital broadcasting.
- 4.8. The above serves as the legislative context upon which the Discussion document relies.

## **5. LICENSING AND COMPLIANCE CONSIDERATIONS POST THE MIGRATION**

### **5.1. Current Licensing Framework**

- 5.1.1. South Africa's existing licensing framework is outlined in Chapter 3 of the Electronic Communications Act, 2005 'ECA' (Act No. 36 of 2005), as amended, in which it defines what constitutes electronic communications and an electronic communications network. Specifically, Section 5 (2) and (4) of the ECA sets out the three types of services that use electronic communications networks and which require licensing by the Authority. These service license categories are:

- (a) Electronic Communications Network Services;
- (b) Broadcasting Services; and
- (c) Electronic Communication Services.

### **Electronic Communications Services and Electronic Communications Networks Services.**

- 5.1.2. The licensing framework further categorises these licenses into Individual and Class licenses. Individual licenses encompass those of national scope,

those competing for limited frequency resources<sup>1</sup>. In contrast, Class licences may be regional or local in scope or use frequencies which are not scarce or hold less significance in socio-economic impact and do not require prominent level of attention or regulation<sup>2</sup>.

- 5.1.3. Section 31 (1) of the ECA also introduces a distinct category of licences known as the radio frequency spectrum licence. The regulatory distinction between high and low regulation is determined by the scarcity or demand of the spectrum. If the spectrum is in high demand or considered scarce, a competitive process is mandated for licensing. Conversely, for radio frequency spectrum that is not in high demand or scarce, the licensing process occurs on an administrative basis<sup>3</sup>.

## 5.2. **Broadcasting Licensing Framework**

- 5.2.1. South Africa's broadcasting legislation provides for a three-tier licensing structure for broadcasting services: public, commercial and community. Section 4 (1) of the Broadcasting Act, 1999 (Act No. 4 of 1999), requires that any person or entity who intends to provide broadcasting service including distribution services where the satellite or terrestrial or any other form of distribution which offers programming to the public, is required to obtain a licence in accordance with the conditions which the Authority may determine from time to time<sup>4</sup>.
- 5.2.2. The Regulations outline the framework for transitioning to digital broadcasting. This framework includes the allocation of Multiplex for the three broadcasting tiers (i.e. public, commercial and community broadcasting) and digital incentives affecting channel authorisation, impacting licence terms and renewals. Since the implementation of the Regulations and the announcement of the ASO date, it is important to

<sup>1</sup> Department of Communications and Digital Technologies. (2023). The Draft White Paper on Audio and Audiovisual Media Services and Online Content Safety: A New Vision for South Africa. Government Gazette No. 49052.

<sup>2</sup> Ibid 1, page 53 of the Draft White Paper.

<sup>3</sup> Ibid 1, page 53 of the Draft White Paper.

<sup>4</sup> Section 4 (1) of the Broadcasting Act, 1999 (Act No 4 of 1999)



evaluate these provisions to chart a way forward for a framework for digital terrestrial broadcasting.

- 5.2.3. On 31 July 2023, the Department published the Draft White Paper on Audio and Audiovisual Media Services and Online Content Safety: A New Vision for South Africa 2023 ("the Draft White Paper")<sup>5</sup>. The Draft White Paper suggests upholding the three-tier broadcasting system, with a more robust public broadcaster at its core. Nevertheless, all broadcasters, regardless of their tier, are obligated to contribute to public service programming. The White Paper further suggests that the Authority must strictly maintain adherence to the three-tier system to ensure fairness, competition and sustainability within this tier system.
- 5.2.4. In the UK, Multiplex allocation is managed by the regulatory body Ofcom except for Multiplex 1, which is regulated under the BBC Charter and Agreement<sup>6</sup>. Multiplexes are typically allocated through competitive bidding processes and specific Multiplexes are dedicated to public service broadcasting, commercial broadcasting and local/community broadcasting.
- 5.2.5. The Australian Communications and Media Authority ("ACMA") uses a mix of competitive allocation and licensing processes to ensure diversity in broadcasting services. They allocate spectrum for digital television services, including Multiplexes for the public broadcaster, Australian Broadcasting Corporation, Special Broadcasting Service, commercial broadcasters and community broadcasters<sup>7</sup>.
- 5.2.6. The information reviewed indicates that the three-tier model for television broadcasting remains prevalent across many countries post-ASO. It's noteworthy that the specific approaches of allocation of Multiplexes can

---

<sup>5</sup> GG 49052, 31 July 2023

<sup>6</sup> Consultation on the renewal of Digital Terrestrial Television (DTT) multiplex licences expiring in 2022 and 2026, 18 December 2020. Page 2

<sup>7</sup> <https://www.itu.int/en/ITU-R/GE06-Symposium-2015/Session2/201%20%20Digital%20Terrestrial%20Television%20in%20Australia%20-%20ITU%20Symposium%20-%2017%20June%202015.pdf>

differ significantly due to variations in regulatory structures, cultural factors and the unique characteristics of each country's broadcasting environment. The overarching objective is typically to find a harmonious balance that fosters diverse content, sustains public service broadcasting and facilitates commercial viability.

- 5.2.7. With that objective in mind, it is important to thoroughly assess whether the assignment of Multiplexes maintains a commitment to preserving the three broadcasting tiers, regardless of the methodology used for allocation.

### **Question 1**

**In considering international practices such as the UK's competitive bidding for Multiplex allocation and Australia's mix of competitive allocation and licensing processes, what insights and recommendations do stakeholders offer for the assignment of Multiplexes in South Africa's DTT framework, aiming to ensure fairness, competition and sustainability within the three-tier system?**

### **5.3. Digital Migration Licensing Framework**

- 5.3.1. South Africa's current DTT frequency plan was registered in 2014 with the ITU Master International Register having met the conformance requirements of the Geneva 06 Plan and having been coordinated with South Africa's six (6) neighbouring countries.<sup>8</sup>
- 5.3.2. The DTT frequency plan contains 1257 frequencies for DTT implementation in the band 470 MHz to 694 MHz. This plan is colloquially known as the seven (7) MUX plan since it provides for the deployment of seven Multiplexes per transmission point in 8 MHz channels per province.<sup>9</sup>
- 5.3.3. Currently, there are 7 National DTT Multiplexes. Mux 1, 2, and 3 are currently utilised whilst Mux 4-7 are not yet planned for. The following details the capacity allocations per MUX.

<sup>8</sup> Radio Frequency Spectrum Assignment Plan for the frequency band 470 to 694 MHz, published on 22 May 2020, Government Gazette 43341.

<sup>9</sup> Ibid 8, Radio Frequency Spectrum Assignment Plan.

**5.3.4. Multiplex 1**

5.3.5. According to section 4 (1) (3) of the Regulations, the SABC was allocated eighty-five percent (85%) of the capacity in Multiplex 1 and community broadcasting services were allocated the remaining fifteen percent (15%) of the available capacity on Multiplex 1.<sup>10</sup>

5.3.6. On 30 June 2022, ICASA published an Invitation to Pre-Register for Community Television Broadcasting Service and Radio Frequency Spectrum Licences for Multiplex 1 frequencies<sup>11</sup>. This licensing process aims to culminate in the issuing of the fifteen percent (15%) maximum capacity on DTT Multiplex 1. The Invitation to Pre-Register closed on the 30<sup>th</sup> of January 2023 and the licensing process is currently underway.<sup>12</sup>

**5.3.7. Multiplex 2**

5.3.8. e.tv was initially allocated fifty percent (50%) and M-Net was allocated forty percent (40%) of the available capacity for their digital broadcasting on Multiplex 2. Ten percent (10%) of the available capacity on Multiplex 2 was utilised by existing holders of temporary licences issued by the Authority to provide services on a test or trial basis on the frequencies included in Multiplex 2 at the commencement of Digital Terrestrial Television Regulations<sup>13</sup>. Upon the expiry of the temporary licences referred to in sub-regulation (5) of the Regulations, the 10% capacity in Multiplex 2 was shared in equal proportion between e.tv and M-Net. Ultimately, e.tv is allocated fifty-five percent (55%) and M-Net forty-five percent (45%) of the capacity.

---

<sup>10</sup> ICASA. (2012). Digital Migration Regulations. Government Gazette No. 3600. Notice Number: 1070 of 14 December 2012.

<sup>11</sup> ICASA. (2022). Invitation to pre-register for community television broadcasting service and radio frequency spectrum licences for multiplex 1 frequencies, published in Government Gazette 46629 of 30 June 2022

<sup>12</sup> ICASA. (2022). Notice to extend the closing date in respect of the invitation to pre-register for digital community television broadcasting service and radio frequency spectrum licences on multiplex 1 (mux1) frequencies, published in Government Gazette 47832 of 6 January 2023

<sup>13</sup> Ibid 10, page 9 of the Digital Migration Regulations.

**5.3.9. Multiplex 3**

5.3.10. In Multiplex 3, fifty-five percent (55%) was assigned to commercial free-to-air television broadcasting services and forty-five percent (45%)<sup>14</sup> was assigned to commercial subscription broadcasting services. In March 2019, the Authority awarded Kwese Tv an individual commercial free-to-air television broadcasting service licence and a radio frequency spectrum licence for 55% of the MUX 3 capacity.<sup>15</sup>

**Question 2**

**How do stakeholders perceive the current capacity allocations within the DTT Multiplexes, especially in Multiplex 1 where the SABC holds 85% and community broadcasting services have been allocated 15%?**

**Question 2.1**

**Considering the ongoing licensing process for the remaining 15% in Multiplex 1, what recommendations or insights do stakeholders have regarding the equitable distribution of this capacity?**

**Question 3**

**Similarly, in Multiplex 2, where e.tv initially had 50% and M-Net had 40%, with the remaining 10% used by temporary licence holders and later divided equally between e.tv and M-Net, are there suggestions for improving the allocation in Multiplex 2?**

<sup>14</sup> ICASA, 2017, Individual Commercial Free to Air Television Broadcasting Service and Radio Frequency Spectrum Licence for Mux 3, Government Gazette no. 40652 of 28 February 2017.

<sup>15</sup> ICASA, 2017, Kwese Free Tv is the successful applicant to provide free-to-air television services in South Africa. <https://www.icasa.org.za/news/2019/kwese-free-tv-is-the-successful-applicant-to-provide-free-to-air-television-services-in-South-Africa>.

#### **Question 4**

**For Multiplex 3, where 55% is assigned to commercial free-to-air television broadcasting services and 45% to commercial subscription broadcasting services, and considering the specific licence awarded to Kwese Tv for 55% of MUX 3 capacity, what are stakeholders' perspectives on the balance between free-to-air and subscription services?**

#### **Question 4.1**

**Are there recommendations for ensuring diversity and competition within this multiplex?**

#### **Question 5**

**Overall, what considerations and recommendations do stakeholders propose to enhance the effectiveness and fairness of the DTT Multiplex capacity allocations?**

#### **5.3.11. Multiplex 4-7**

5.3.12. Currently, multiplexes 4-7 are not licensed and certain frequencies will remain unused even after the implementation of Annexure J of the Terrestrial Broadcasting Frequency Plan, 2013.<sup>16</sup>

5.3.13. As part of the consultation process, the Authority is engaging relevant stakeholders on a suitable way of allocating the Multiplexes 4-7 capacity for digital broadcasting to take into account efficient spectrum use to minimise signal congestion.

#### **Question 6**

<sup>16</sup> ICASA. (2013). Terrestrial Broadcasting Frequency Plan. Government Gazette No. 36321 of 02 April 2013.

**Stakeholders are requested to provide insights and recommendations on ensuring efficient spectrum use, including considerations for frequency reuse where appropriate.**

#### **Question 7**

**How should the Authority allocate the remaining MUXes?**

#### **5.3.14. Policy Concerns in Multiplex Allocation**

5.3.15. The Draft White Paper has brought attention to a policy concern regarding the unintended impact of allocating 15% capacity to community TV broadcasters on DTT MUX 1 during the dual illumination period<sup>17</sup>. This allocation has inadvertently transformed community television broadcasters from local to provincial/regional broadcasters, primarily due to the handling of national Single Frequency Networks (SFNs) in radio frequency planning.

5.3.16. In response to this concern, the Draft White Paper proposes that community broadcasters should maintain their accessibility at the local level exclusively. Looking forward, the DTT licensing framework post-ASO, the recommendation is to explore the possibility of introducing provincial/regional public, commercial, or non-profit free-to-air audio-visual content services<sup>18</sup>.

#### **Question 8**

**How can the lessons learnt from Multiplex sharing during the transition from analogue to digital be applied in the future?**

#### **5.4. Licence Terms**

<sup>17</sup> Ibid 1, page 81 of the Draft White Paper.

<sup>18</sup> Ibid 1, page 81 of the Draft White Paper.

- 5.4.1. In its Position Paper on the Regulations<sup>19</sup>, the Authority acknowledged the necessity of modifying the broadcasting service licence for broadcasters as they transitioned from a single channel to a multichannel environment. Furthermore, the Authority recognised the imperative need for amendments to the radio frequency spectrum licence.
- 5.4.2. Presently, the Authority has not made amendments to the service and Radio Frequency Spectrum licences as outlined in section 10 of the ECA. It's important to note that the completion of digital migration is anticipated to occur in 2024. According to section 10 of the ECA, commercial licences have a validity period of 15 years, while Community licenses are valid for a period of 7 years. Currently, licensees are conducting operations under their original licenses, pending any updates or amendments in accordance with regulatory procedures.
- 5.4.3. The Authority is committed to exploring a discussion on its licensing regime for both service licenses and frequency licenses post-ASO. Key considerations for the Authority include the accommodation of the transition from single channel to multichannel environments for broadcasters, ensuring flexibility and adaptability to emerging technologies and addressing any amendments required for radio frequency spectrum licenses. The licensing framework should align with the evolving broadcasting landscape and support the efficient use of spectrum resources in the digital era. Additionally, the Authority is of the view that mechanisms for compliance, enforcement and stakeholder engagement should form integral parts of the regulatory approach.

**Question 9**

**From a broadcaster's perspective, how does the length of the license renewal period influence long-term investment decisions in infrastructure and content production?**

<sup>19</sup> Government Gazette No. 36170 of 18 February 2013.

**5.5. Digital Incentive Channel and Channel Authorisation**

- 5.5.1. The Regulations provided broadcasters with digital incentive channels based on the Authority's assessment that the spectrum released during migration justifies offering incentives to broadcasters. The purpose of digital incentive channels was to compensate broadcasters for taking on the burden of shifting from analogue to digital. The Regulations also provided a framework for channel authorisation, which outlines the application procedure, timelines and requirements.
- 5.5.2. The Authority is tasked with evaluating the potential need for additional channels among incumbent broadcasters and exploring the possibility of introducing additional broadcasting service licenses post-ASO.

**Question 10**

**What are stakeholders' perspectives on the consequences of assigning digital incentive channels to broadcasters?**

**Question 10.1**

**Do stakeholders believe this allocation is essential in the Digital Terrestrial Television (DTT) environment?**

**Question 11**

**What factors should be considered to maintain a diverse and competitive broadcasting landscape in the post-ASO period in relation to channel authorisation?**

**6. TECHNICAL CONSIDERATIONS POST MIGRATION****6.1. Roll-Out Targets /Coverage and Access**

- 6.1.1. The targets for the rollout of digital television broadcasting have been adjusted under the 2015 BDM Policy, aiming to cover eighty-four percent (84%) of the population on Multiplex 1, while the remaining sixteen



percent (16%) will be served by a nationwide free-to-air Direct to Home (DTH) satellite network.

6.1.2. Sub-regulation 10(1) of the Regulations is formulated in alignment with the coverage criteria outlined in the 2008 BDM Policy however, the Minister amended the BDM Policy in 2015, reflecting changes in national policy since its initial formulation in 2008 and these amendments are now in effect.

6.1.3. In accordance with section 3 (4) of the ECA, the Authority is obliged to consider policies and policy directions issued by the Minister and this would entail any amendments made to a Policy by the Minister. Sub-regulation 10 (1), delineating the population reach of the digital broadcast signal for the SABC, no longer aligns with national policy and is inconsistent with the updated Terrestrial Broadcasting Frequency Plan, 2013<sup>20</sup>. As a result, it necessitates amendment.

6.1.4. The Authority acknowledges the urgency to amend sub-regulation 10 (1) due to its direct impact on the current migration process. However, it emphasises a non-penalising approach toward broadcasters in cases where policy or legislation surpasses regulations, recognising that the Authority's processes are governed by legislation that often requires consultation and may require time before finalisation.

### **Question 12**

**Do stakeholders believe there is a need for specific coverage targets in the DTT landscape post-ASO? (Yes/No)**

**What considerations or criteria do stakeholders propose for establishing and evaluating these coverage targets to ensure an effective and inclusive DTT environment?**

## **6.2. Signal Distribution**

<sup>20</sup> ICASA. (2013). Draft Terrestrial Broadcasting Frequency Plan 2013. Government Gazette No. 36321.

6.2.1. Regulation 9 of the Regulations requires the incumbent television broadcasters to appoint a signal distributor and submit signal distribution agreements. The Regulations provide for signal distribution in Multiplex 1 and Multiplex 2. During the dual illumination period, two (2) national Multiplexes were set aside for incumbent broadcasters, which are used for both public, community and commercial broadcasting services. A single network operator operates two (2) metropolitan networks of frequencies earmarked for the provision of mobile broadcasting service, with the prospect of achieving national coverage.

6.2.2. The national broadcasting terrestrial television digital signal coverage goal was to reach eighty-four percent (84%) of the total population of South Africa. The free-to-air DTH satellites employing the DVB-S2 technology will cover areas that may be difficult or unaffordable to access. The MUX 1 transmission facilities, or any other multiplex assigned to the public broadcaster, must aim to cover eighty-four percent (84%) of the population and the remaining sixteen percent (16%) will be served via a free-to-air DTH satellite network with a nationwide footprint. As a result, South Africa's public broadcasting services will be able to switch off analogue with 100% population coverage. The requirements of coverage for MUX 2 transmitters were determined by the broadcasters' licence conditions.

**Question 13**

**Are there any foreseeable issues or concerns that should be considered regarding the appointment of a signal distributor to provide signals within a multiplex post-ASO?**

**6.3. Data Services**

6.3.1. Sub-regulation 11 (2) of the Regulations outlines that terrestrial television broadcasting service licensees may provide data services and radio channels but with a collective limitation of 15% of the allocated capacity

in Multiplex 1 or Multiplex 2 and subject to agreement with the relevant channel provider. The primary aim of this limitation was to ensure that television broadcasting remains the principal usage of Multiplex capacity, preventing its overshadowing by electronic communication services or radio channels. However, the following several challenges and uncertainties have surfaced as submitted to the Council of the Authority by JSAG:<sup>21</sup>

- i. The regulations do not provide a definition of "data services,". This fact contributes to regulatory uncertainty about what falls under the 15% cap. The initial intention was to encompass standalone electronic communication services distinct from television broadcasting.
- ii. Multiplexing involves dynamically combining television channels, sound programming services and data streams into a single complex signal for distribution. This dynamic process complicates the measurement of the 15% data cap.
- iii. The regulations were established before the finalisation of the Promotion of Diversity and Competition on Digital Terrestrial Television Regulations, 2014. Consequently, the 15% data cap does not apply to licensees on DTT Multiplex 3, leading to unequal treatment among licensees in the same television broadcasting service category and on the same broadcasting platform.

6.3.2. To this end, there is a need for a revision of the regulations to address the ambiguity surrounding "data services" to ensure equitable treatment among licensees and establish practical methods for measuring the 15% data cap within the context of dynamic multiplexing. This Discussion document aims to solicit stakeholder input and insights on potential solutions and adjustments on this issue.

#### **Question 14**

**How can "data services" be defined to mitigate regulatory uncertainty?**

<sup>21</sup> Report of the JSAG to the Council of ICASA.

**Question 15**

**What specific services should be considered as "data services" within the context of the DTT?**

**Question 16**

**Should the Authority continue to put a cap on data services? If not, what practical measurement will be deemed adequate by stakeholders?**

**Question 17**

**How can the Regulations adapt to or leverage emerging technologies that may impact the provision and measurement of data services on DTT Multiplex?**

**6.4. Engineering Channel**

6.4.1. During the implementation of the Regulations, the Authority became aware, particularly through input from the JSAG, that there were inadequacies in the Regulations that needed attention, particularly how the engineering service which is essential for software updates, would be implemented on the DTT platform. The engineering service is understood to be important for manufacturers to deliver software updates to both free-to-air and potentially Pay TV DTT receivers.

**Question 18**

**What specific challenges have stakeholders encountered in the current implementation of the regulation regarding the engineering service channel?**

**Question 19**

**How can the definition and scope of "engineering service" be clarified within the regulatory framework to alleviate uncertainties?**

**Question 20**

**Should the engineering service channel be excluded from the calculation of allocated capacity for broadcasting service licensees on DTT Multiplexes? Please provide reasons for your proposal.**

**Question 21**

**What do you propose as a fair and transparent method for allocating the required Mb/s for the engineering service within the broadcast transmission?**

**Question 22**

**What are stakeholders' opinions on licensing the engineering service capacity to a common carrier on the Multiplex, designated by the Authority, to ensure transparency and non-discrimination?**

**Question 23**

**How can such a licensing approach be structured to accommodate the interests of various stakeholders, including the common carrier and other potential service providers?**

**Question 24**

**What factors should be considered when determining the optimal capacity for the engineering service in the evolving landscape of digital broadcasting?**

## 6.5. Technical Bodies Supporting the Migration

6.5.1. Regulation 13 of the Regulations introduced the establishment of the Joint Spectrum Advisory Group ("JSAG"). Its purpose is to facilitate the effective coordination of frequency spectrum usage and management of interference during the Digital Migration Performance Period.

6.5.2. The Regulations further introduced the establishment of the Digital Television Content Advisory Group ("DTCAG"). The primary purpose of the DTCAG is to offer guidance and advise the Authority on the most effective strategies for ensuring the supply of digital television content. This advisory role extends to encouraging end-users to acquire set-top-boxes, fostering the initiation of digital television service consumption.

### **Question 25**

**How effectively has JSAG facilitated the coordination of frequency spectrum usage and management of interference during the Digital Migration Performance Period as outlined in Regulation 13?**

### **Question 26**

**Are there specific challenges or successes experienced in spectrum coordination that stakeholders would like to highlight?**

### **Question 27**

**Is there a role that the JSAG should continue to play in the post-ASO era to ensure ongoing effective coordination of frequency spectrum usage for DTT?**

**Question 28**

**How can JSAG evolve to address emerging challenges or opportunities in spectrum management beyond the ASO phase?**

**Question 29**

**To what extent has the DTCAG influenced the supply of digital television content as per its advisory role outlined in the 2012 Regulations?**

**Question 30**

**Are there notable successes or challenges in encouraging end-users to acquire set-top boxes and initiating digital television service consumption?**

**Question 31**

**Do stakeholders perceive a continuing need for advisory groups like JSAG and DTCAG in the post-ASO landscape? Why or why not?**

**Question 32**

**What specific functions or roles should such advisory groups undertake to support the evolving needs of DTT stakeholders?**

**Question 33**

**Are there identified gaps or challenges in the current regulatory framework that may necessitate the establishment of new advisory or coordination bodies post-ASO?**

**Question 34**

**What functions or responsibilities could these potential new bodies fulfil to enhance the efficiency of DTT operations?**

**6.6. Technologies for DTT**

6.6.1. South Africa adopted DVB-T2 as the national standard for digital broadcasting<sup>22</sup>, which is described as the 2nd generation terrestrial broadcast transmission system.

6.6.2. The evolution of the second-generation terrestrial broadcast system is blurring the lines between fixed and mobile reception. It involves media broadcasting systems that rely on the Internet Protocol and connect to wireless networks, encompassing both digital terrestrial television and multimedia broadcasting receivers. To facilitate the reception of DTT services from various platforms and operators on existing television sets, the adoption of STBs became prevalent. These STBs are made accessible to consumers at affordable rates, with governmental support aimed at ensuring their availability to the poorest households.<sup>23</sup>

6.6.3. The introduction of Digital Terrestrial Television Broadcasting (DTTB) services does not diminish alternative delivery methods such as satellite TV, cable-TV, IPTV (online TV on managed broadband networks), and over-the-top (OTT) or online streaming services on the open Internet.<sup>24</sup>

6.6.4. These alternative delivery technologies possess inherent advantages in terms of higher capacity compared to DTTB. However, despite its comparatively lower capacity, DTTB is emphasized by the Future of

<sup>22</sup> ICASA (2013) Position paper on Digital Migration Regulations 2012. Government Gazette no.36170

<sup>23</sup> ICASA. (2013) Position paper on Digital Migration Regulations 2012. Government Gazette no.36170

<sup>24</sup> Nerey H. Mvungi, Justinian Anatory, and Fatuma Simba. (2013). Digital Terrestrial Broadcasting Technologies and Implementation Status. World Academy of Science, Engineering and Technology Vol:7.



Broadcast TV ("FOBTV") as uniquely significant. This is attributed to its wireless nature, enabling mobility for receivers, infinite scalability with a point-to-multipoint and one-to-many architecture, localisation capabilities for geographically specific content delivery, timeliness in providing real-time and non-real-time content delivery and flexibility in supporting both free-to-air and subscription services.<sup>25</sup>

- 6.6.5. It's important to note that the implementation of DTTB technology remains as fragmented as the phased-out analogue technology. This fragmentation is influenced by economic, political and historical ties and geographical proximity.<sup>26</sup>
- 6.6.6. According to the ITU, the DVB-T2 system provides several new features for improved versatility and ruggedness under critical reception conditions such as rotated constellations, special techniques to reduce the peak-to-average power ratio (PAPR) and multiple input single output (MISO) transmission modes of Alamouti.<sup>27</sup>
- 6.6.7. A study conducted in Spain on evaluating the behaviour of the DVB-T2 standard benefits reported signal processing and performance improvements over DVB-T2 adoption. The study applied a demapping and decoding strategy which proved that iterative demapping and detection, both regular and irregular, can improve considerably the performance of a DVB-T2 receiver, being especially suitable for problematic or low-level locations.<sup>28</sup>
- 6.6.8. When analysing the multiantenna schemes and channel estimation algorithms for the new standard achieved by the Alamouti MISO

---

<sup>25</sup> Ibid 27

<sup>26</sup> Nerey H. Mvungi, Justinian Anatory, and Fatuma Simba. (2013). Digital Terrestrial Broadcasting Technologies and Implementation Status. World Academy of Science, Engineering and Technology Vol:7.

<sup>27</sup> [https://www.itu.int/dms\\_pub/itu-r/opb/rep/R-REP-BT.2254-2012-PDF-E.pdf](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-BT.2254-2012-PDF-E.pdf)

<sup>28</sup> Mikel Mendicute, Iker Sobrón, Lorena Martínez and Pello Ochandiano, (2010). DVB-T2: New Signal Processing Algorithms for a Challenging Digital Video Broadcasting Standard. Spain. [\(PDF\) DVB-T2: New Signal Processing Algorithms for a Challenging Digital Video Broadcasting Standard \(researchgate.net\)](#)

transmission scheme against the maximal ratio combining (MRC) diversity scheme the study has shown a high-performance improvement in DVB-T2 scenarios.

- 6.6.9. Considering the performance of the standard in an SFN interference scenario, DVB-T2 has shown to be a much more robust standard, allowing perfect reception of the signals in interference regions where DVB-T did not work.<sup>29</sup>

**Question 35**

**How has the implementation of this DVBT-2 contributed to enhancing capacity, ruggedness and flexibility?**

**Question 36**

**How are broadcasters and broadcast signal distributors taking advantage of Internet Protocol connectivity and wireless networks?**

**Question 37**

**How does the introduction of DTT complement or differentiate itself in comparison to alternative delivery methods and what advantages does it offer?**

**6.7. Broadcasting Beyond DTT (5G and 6G Technologies)**

- 6.7.1. Ongoing technological advancements consistently present the broadcasting sector with opportunities for the cost-effective and frequency-efficient delivery of new broadcasting services. It's noteworthy that the transformation extends beyond DTTB systems, encompassing

---

<sup>29</sup> Ibid 31.

other information infrastructure like the Internet, primarily driven by the need to expand data rates<sup>30</sup>.

- 6.7.2. While considerable progress has been made, there are still challenging issues that need resolution. The envisioned future of next-generation DTTB systems is not only expected to deliver superior services but is also anticipated to play an important role in addressing the challenge of information expansion through the convergence of the Internet and broadcasting. This sets the stage for a discussion on the path towards these advancements<sup>31</sup>.
- 6.7.3. Both ITU<sup>32</sup> and FOBTV<sup>33</sup> anchor the sentiments expressed by Dai et.al. (2015) that Terrestrial broadcasting and mobile broadband are both significant however neither innovation alone will most likely satisfy the future need for remote media. Future developments need to improve ways of corresponding and using these together<sup>34</sup>.
- 6.7.4. As per a GSMA report, 5G technologies offer several advantages, including the reduction of barriers to live broadcasts, as demonstrated by TVU Networks in 2021. In this case, mobile phones were used to stream high-definition footage live to a TVU server in the cloud, making it instantly accessible to producers. The significance of 5G lies in its low latency and high throughput, which are particularly beneficial for remote production<sup>35</sup>.
- 6.7.5. Furthermore, taking advantage of 5G-enabled remote production is understood to hold the potential to reduce production costs, facilitating the creation of diverse content to meet the growing demand. The incorporation of 5G technology allows traditional television broadcasters to collaborate

<sup>30</sup> Linglong Dai, Zhaocheng Wang, and Zhixing Yang. (2015). Next-Generation Digital Television Terrestrial Broadcasting Systems: Key Technologies and Research Trends. Tsinghua University. <https://www.researchgate.net/publication/239766143>

<sup>31</sup> Ibid 33, Next-Generation Digital Television Terrestrial Broadcasting Systems.

<sup>32</sup> ITU, (2013). Trends in broadcasting - An overview of developments

<sup>33</sup> Hamidreza Damghani, Heliasadat Hosseini, and Leila Damghani, (2019). FOBTV: Next Generation of TV Broadcasting System. Paper presented at 2019 4th Conference on Technology In Electrical and Computer Engineering (ETECH 2019) Information and Communication Technology (ICT) Tehran, Iran

<sup>34</sup> Ibid 35, FOBTV: Next Generation of TV.

<sup>35</sup> <https://www.gsma.com/5ghub/broadcast>

with mobile operators, offering customised connectivity that could become an additional revenue stream for broadcasters<sup>36</sup>.

6.7.6. Currently, network providers are actively advancing in the implementation of 5G networks. Beyond the scope of DVBT-2, there are ongoing discussions regarding how the introduction of the fifth generation of wireless networks (5G) will reshape the landscape of content consumption.

6.7.7. Notably, countries like China have already initiated testing of 5G capabilities, with China Broadcasting Network (CBN) being granted a 5G license in 2019. This license enables CBN to operate a nationwide cable TV network and provide 5G network services encompassing cable TV, mobile, fixed broadband and satellite communication<sup>37</sup>.

6.7.8. In China's paper titled "6G Networks for the Next Generation of Digital TV Beyond 2030," Sergio, P. et al. argued that 4G technologies enabled the broadcast, multicast and unicast of UHD television over consumers' cellular networks. They argue that 5G will bring a continuous evolution in multimedia services, impacting the television and cinema industry and laying the foundation for Cross Reality (XR) and Augmented Reality (AR) applications. They also propose the significance of exploring the ongoing evolution of cellular network architecture beyond the 5G era<sup>38</sup>.

6.7.9. The authors depict the characteristics of 6G as encompassing omnipresence and superfast quality, designed to function in the Terahertz radio frequency domain utilizing Ultra-Massive MIMO antennas (UM-MIMO) and Holographic Radio technologies, aiming to establish a hyperconnected society. Additional features involve a human-centric approach, the integration of Communication Navigation, Sensing, and Services (CONASENSE), and enhanced intelligence. The exploration of the Visible

<sup>36</sup> <https://www.gsma.com/5ghub/broadcast>

<sup>37</sup> Shuang Li, (2020). presentation on the new broadcasting Based on 5G NR Technology. China Broadcasting Network Co.

<sup>38</sup> Segio, P., Henrique, R. and Prasad, R. (2021). 6G Networks for Next Generation of Digital TV Beyond 2030. Springer. <https://doi.org/10.1007/s11277-021-09070-2>

Light Spectrum is considered an option to extend 6G signal coverage, with Artificial Intelligence (AI) and Machine Learning (ML) deemed as essential prerequisites<sup>39</sup>.

6.7.10. The successful future development of DTT depends on the efforts of broadcasters and relevant authorities to introduce advanced technologies, such as DVB-T2/MPEG4 or HEVC to ensure the continuity of DTT broadcasting in the remaining part of the UHF band (470-694 MHz) while keeping or enhancing the existing DTT broadcasting capacity. This leads to the need for additional DTT channels in this part of the UHF band, taking into account advanced DTT technologies.

#### **Question 38**

**In the context of next-generation DTTB systems, what are the anticipated enhancements in application-oriented technologies?**

**How can these advancements contribute to delivering superior services while addressing the challenge of information expansion through the convergence of the Internet and broadcasting?**

#### **Question 39**

**What advantages do 5G technologies offer in terms of reducing barriers for live broadcasts and how can these technologies benefit remote production by traditional television broadcasters, potentially creating additional revenue streams?**

#### **Question 40**

<sup>39</sup> Segio, P., Henrique, R. and Prasad, R. (2021). 6G Networks for Next Generation of Digital TV Beyond 2030. Springer. <https://doi.org/10.1007/s11277-021-09070-2>

**Considering the active progress in implementing 5G networks by network providers, how might the introduction of the fifth generation of wireless networks reshape the landscape of content consumption, particularly beyond the scope of DVBT-2?**

**Question 41**

**How do 4G and 5G technologies contribute to the broadcast, multicast, and unicast of UHD television and what transformations can be expected in the television industry with the evolution towards XR and AR applications?**

## **7. CONSUMER CONSIDERATIONS POST MIGRATION**

### **7.1. Consumer Considerations**

7.1.1. The transition to digital television brings new possibilities for better and more varied audio-visual services. This change is fuelled by new technologies and more competition in the market<sup>40</sup>. The introduction of internet-based services, such as subscription video-on-demand and satellite options, provides a range of choices for consumers. While many people now use these online services to access content, it's important to note that low-income households still heavily depend on terrestrial television<sup>41</sup>. Television serves as a primary source of news, information, and educational content, providing the public with access to current events, documentaries and various educational programs.

7.1.2. In South Africa, television contributes to the democratic process by providing a platform for political discussions, debates and coverage of

<sup>40</sup> International Telecommunications Union. (2017). Examination of strategies and methods of migration from analogue to digital terrestrial broadcasting and implementation of new services: Question 8/1 – ITU-D Study Group 1. 6<sup>th</sup> Study Period 2014-2017 (page 14).

<sup>41</sup> Krüger F (2022) 'Digital migration: court delay upholds information rights of poor South Africans', *The South African*, 30 June. Available at <https://www.thesouthafrican.com/news/how-digital-migration-affects-the-poor/> (Accessed: 01 August 2023).

elections. It facilitates public discourse, enabling citizens to stay informed and engaged in civic matters. Consumer access to television is important because it serves as a multifaceted medium that informs, entertains, connects and influences society in diverse and impactful ways.

7.1.3. Addressing consumer considerations will ensure that DTT remains accessible and inclusive for a diverse audience, including those with varying economic backgrounds and geographic locations.

**Question 42**

**Are there individuals that may face challenges in adopting DTT and how can these challenges be addressed?**

**Question 43**

**How can DTT services be made more accessible and inclusive for diverse user groups, including those in rural areas or with limited technological access?**

## 7.2. **Harnessing the Digital Dividend**

- 7.2.1. The ITU defines the digital divide as the gap in usage of and access to modern ICT between individuals, households, businesses, or geographical areas. Individuals experiencing the connectivity gap can be categorised into two groups: those who have coverage but remain unconnected and those who lack coverage entirely. Most of the uncovered population lives in rural and remote areas in developing countries, like South Africa<sup>42</sup>.
- 7.2.2. The term "digital dividend" refers to the efficiency gains in the spectrum resulting from the transition from analogue to digital terrestrial television services<sup>43</sup>. The concept of the digital dividend remains a significant and extensively discussed matter among broadcasters and operators in telecommunication and related services sharing the same frequency bands.
- 7.2.3. In navigating this discourse, regulatory authorities play a crucial role in striking a balance between user interests and the increasing demands across various industry sectors. Leveraging the digital dividend for bridging the digital divide, particularly in advancing communication services for rural and remote areas, emerges as a critical aspect. The migration to digital broadcasting not only provides the necessary bandwidth for new technological advancements but, more significantly, holds the potential to directly contribute to socio-economic development and enhance the overall quality of life for South Africans<sup>44</sup>.

---

<sup>42</sup>

International Telecommunications Union, (2021). Strategies, policies, regulations, and methods of migration to and adoption of digital broadcasting implementation of new services: Output Report on ITU-D Question 2/1 for the study period 2018-2021. Geneva: International Telecommunication Union.

<sup>43</sup> International Telecommunications Union. (2018). Digital dividend: Insights for spectrum decisions. Thematic Report Infrastructure. ITU Publications.

<sup>44</sup> 2008 Policy above n2, paragraph 1.4



- 7.2.4. In the USA, the DTT transition process was completed on June 12, 2009, when full-power television stations switched off their analogue signals and began broadcasting exclusively in digital format. The Federal Communications Commission (FCC) conducted spectrum auctions to reallocate frequencies from television broadcasters to other uses, such as wireless communication services. This process of spectrum repacking involved reorganising the broadcasting spectrum to free up space for other services<sup>45</sup>. After the 2013 digital switchover in Australia, there was a concerted effort to repurpose the analogue TV spectrum for different services. The government proceeded to auction the 700 MHz and 2.5 GHz bands, formerly allocated to analogue TV, for mobile broadband services. This initiative played a significant role in advancing the expansion of 4G networks.<sup>46</sup> The Australian Communications and Media Authority (ACMA) continued to manage spectrum allocation and enforce regulations to ensure efficient use.
- 7.2.5. In Kenya, prior to the digital migration, the broadcasting licensing framework consisted of a two-stage process involving the Ministry of Information and Communications Technology (MICT) and the Communications Authority (CA). MICT was responsible for issuing broadcasting permits, while CA undertook the technical function of assigning broadcast frequencies to the permit holders<sup>47</sup>.
- 7.2.6. In 2009, the Kenya Information and Communications Act (KICA) broadened the mandate of the Communications Authority (CA) to encompass the licensing and regulation of broadcasting services. This modification streamlined the licensing procedure, granting CA increased independence and responsibility. Consequently, CA gained the authority to issue broadcasting permits, undertake the technical assignment of frequencies, and regulate licensees. CA played an important role in overseeing spectrum allocation, licensing and ensuring adherence to digital broadcasting standards. It directed all analogue television broadcasters to surrender their Free-to-Air (FTA) television broadcasting frequencies and initiate applications for new broadcast licences.

- 7.2.7. The BDM Policy recognises that South Africa faces numerous developmental challenges, including issues like the digital divide, information gaps, poverty and unemployment, among others<sup>48</sup>. Consequently, digital broadcasting is understood to have the potential to contribute significantly to addressing these challenges. One of the key benefits of digital broadcast technologies is that scarce national radio frequency spectrum is used far more efficiently than analogue technologies. This means that existing broadcasting services can be provided using less of the radio frequency spectrum currently occupied<sup>49</sup>. Spectrum in the 700 MHz band provides significant cost savings for operators that also benefit consumers as fewer base stations would be required, which means lower capital cost per area covered, more rapid roll-out for operators and lower connectivity prices for consumers.
- 7.2.8. In addition, the 700 MHz spectrum can play an important role in bridging the digital divide by providing coverage in rural and remote areas where population density is low and where communication infrastructure investment may not be commercially viable.

<sup>45</sup> <https://www.fcc.gov/document/fcc-initiates-incentive-auction-process> , accessed 1 March 2024

<sup>46</sup> <https://www.itu.int/en/ITU-R/GE06-Symposium-2015/Session2/201%20%20Digital%20Terrestrial%20Television%20in%20Australia%20-%20ITU%20Symposium%20-%2017%20June%202015.pdf>

<sup>47</sup> <https://www.itu.int/en/ITU-R/seminars/rrs/2017-Africa/Forum/GSMA%20Digital%20Migration%20Process%20in%20Kenya.pdf>

<sup>48</sup> 2008 Policy above n2, paragraph 1.1.4

<sup>49</sup> 2008 Policy above n2, paragraph 1.1.5

7.2.9. However, digital transmission raises an additional need to address transmission apparatus concerns. In the context of terrestrial-based signal distribution, the existing analogue transmission towers must undergo costly upgrades to facilitate the transmission of digital signals. In cases where signals lack sufficient strength, consumers may be required to obtain and install new antennas, particularly if their current equipment is designed for Very High Frequency (VHF) rather than Ultra High Frequency (UHF), where digital transmissions are situated.

7.2.10. Digital broadcasting has a challenging requirement to minimise delays between the reception of a signal by a broadcast tower and its relay to the public or neighbouring towers. Synchronisation of digital signals based on Geographical Positioning System coordinates is crucial to prevent interruptions and ensure smooth reception. In cases where satellites are employed to serve rural towers, significant delays may occur due to the vast distance signals must cover, leading to potential disruptions. Additionally, the complexity arises from the fact that a digital television signal can carry approximately ten channels, necessitating the involvement of a specialised agency to merge separate channel signals, even from different broadcasters, into a single combined signal process known as "Multiplexing". The successful reception of digital signals depends on the public's adoption of the necessary technology.

**Question 44**

**In the context of digital broadcasting, what strategies can be employed to minimise delays in signal transmission, especially in rural areas, and ensure a seamless and uninterrupted viewing experience for the public?**

**Question 45**

**How can stakeholders collaborate to address challenges related to upgrading existing analogue transmission towers for digital signals and what measures can be taken to assist consumers in obtaining and installing new antennas for digital transmissions?**

**Question 46**

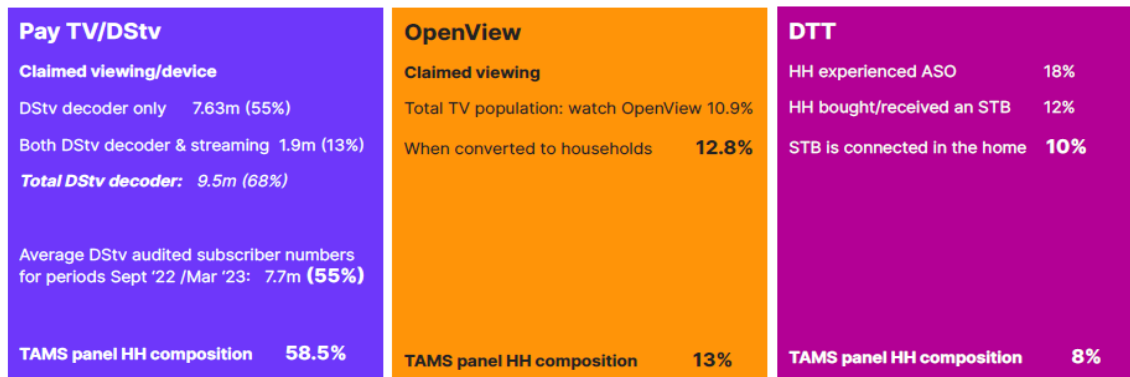
**What measures should be in place to ensure a smooth and efficient integration, especially when signals come from different broadcasters?**

**Question 47**

**Stakeholders are requested to comment on the repurposing of a portion of the digital spectrum for alternative uses, including for mobile broadband services post-ASO.**

**7.3. Set-Top Box**

7.3.1. To access digital terrestrial television, consumers require an STB that converts analogue signals to digital or a television set equipped with an integrated DTV decoder. Many individuals, particularly those in low-income households, lack digital receivers in their televisions, even if other components are digital. As a result, an intermediary device is essential to receive DTT signals. Recognising that some low-income households may face financial constraints in acquiring this equipment, the government has stepped in to aid qualifying indigent households in migrating to the digital platform by offering necessary assistance, in the form of subsidised STBs.

**Figure 1: DStv/Pay TV, OpenView, DTT**

**Source: Nielsen - TV Establishment Survey 2023 Topline view**

7.3.2. The figure above illustrates the complexities of content viewing, showcasing numerous platforms accessible to consumers. Notably, subscription video-on-demand services are not included in this depiction. The statistics for DTT usage are notably low, potentially linked to the reality that many communities across the country lack information about the digital television migration process. Terrestrial dependency persists in thousands of South African households. In rural areas, the dissemination of information regarding accessing STBs may be limited and some communities may struggle with the installation process due to challenges in network connectivity, particularly impacting impoverished communities<sup>50</sup>.

7.3.3. Sentech has developed a system to view the areas that are covered by DTT or Direct to Home platform<sup>51</sup>. The system of Sentech will assist and benefit the Post Office in checking the DTT or Direct to Home coverage before issuing the set-top box to the qualifying end users.

<sup>50</sup> Chetty RC (2022) 'Villagers express concerns over migration to digital television', The South African, 14 August. Available at <https://www.thesouthafrican.com/news/villagers-express-concerns-over-migration-digital-terrestrial-television-sa/> (Accessed: 01 August 2023).

<sup>51</sup> DTT Coverage. <http://cispub.sentech.co.za/>

**Question 48**

**How has the adoption of STBs facilitated the reception of DTT services on existing television sets, especially in terms of accessibility and affordability for consumers, particularly those in poor households?**

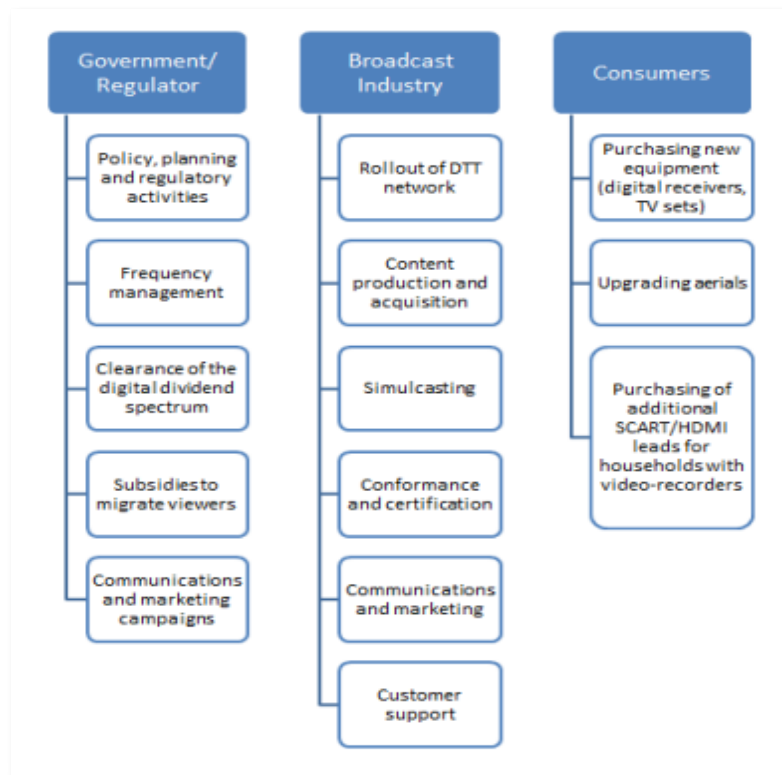
**7.4. Internet connectivity and consumption**

7.4.1. Migration to digital broadcasting delivers many benefits. However, there are also significant costs to be considered, including new and upgraded broadcasting and transmission equipment end-user STB and consumer-awareness programmes, among other things.

7.4.2. The main costs of the digital switchover are summarised in the figure below adopted from an ITU report <sup>52</sup>:

---

<sup>52</sup>ITU-D study groups. Annual deliverable 2019-2020 for ITU Question 2/1. [Considerations about the cost structure of the digital transition, including new services and applications.](#)

**Figure 2: Costs of transition to digital broadcasting**

- 7.5. The study paper identifies 3 key trends to reduce costs and allow for increased network deployment and content delivery. 1) consolidation; 2) co-investment; and 3) infrastructure sharing.

#### **Question 49**

**In understanding the costs of the transition to digital broadcasting and its implications for various stakeholders post-ASO, what key factors should the Authority consider when developing post-ASO regulations?**

## 8. TRANSITION FROM ANALOGUE TO DIGITAL

### 8.1. Analogue Switch Off/Shut Down

8.1.1. The phased analogue switch-off in each province is designed to facilitate the activation of digital transmitters on specific bands. This transition signifies that mobile telecommunications companies will gain access to the high-demand radio frequency spectrum they acquired through the previous auction conducted by the Authority. This development ensures the availability of enhanced high-speed Internet and other technological innovations in a cost-effective manner. Telecommunication companies will now have the capability to deploy robust networks, thus contributing to universal access to the internet in the country.

### 8.2. ASO Timelines

8.2.1. The analogue transmitters in five (5) provinces of South Africa have been switched off to make way for DTT. These provinces include Free State, Northern Cape, Northwest, Limpopo and Mpumalanga. The remaining four (4) provinces namely, Eastern Cape, KwaZulu-Natal, Western Cape and Gauteng have switched off all analogue transmitters operating above 694 MHz. Table 1 below provides more information on the analogue switch off dates of provinces.<sup>53</sup>

**Table 1: Analogue switch off dates**

Provinces	Start date	Finish date
Free State	08/01/2018	31/05/2021
Northern Cape	08/01/2018	30/06/2021
Northwest	05/04/2021	31/07/2021

<sup>53</sup> Ministry of Communication and Digital Technologies. (2021). Media Statement by the Minister of Communications and Digital Technologies, Ms Khumbudzo Ntshavheni on Broadcast Digital Migration and Analogue Switch-Off Plan.  
[https://www.sentech.co.za/sites/default/files/Broadcast\\_Digital\\_Migration\\_and\\_Analogue\\_Switch-off\\_Plan\\_-\\_5\\_October\\_2021.pdf](https://www.sentech.co.za/sites/default/files/Broadcast_Digital_Migration_and_Analogue_Switch-off_Plan_-_5_October_2021.pdf)



Limpopo	06/12/2021	20/12/2021
Mpumalanga	03/05/2021	31/08/2021
Eastern Cape	31/05/2021	Ongoing
KwaZulu-Natal	26/07/2021	Ongoing
Western Cape	20/09/2021	Ongoing
Gauteng	20/12/2021	Ongoing

8.2.2. To date, Sentech has been able to switch off all (84 sites) Multichoice analogue transmissions, 120 out of 288 (41%) SABC analogue transmissions and 39 of the 95 (41%) e.tv analogue transmissions. On 31 July 2023, Communications and Digital Technologies Minister, switched off the last transmitter operating above 694 MHz in Stellenbosch in the Western Cape to mark the successful conclusion of Step one of the Two-Step Approach to ultimate analogue switch off in South Africa.

8.2.3. The conclusion of Step 1 ensures the free occupancy of broadcasting services on the IMT bands that were auctioned. This helps in the effective and efficient assignment of the spectrum, analogue-to-digital migration decisions and identification of illegal/rogue spectrum users.

#### **Question 50**

**What timeline would be appropriate for the imposition of new regulations governing DTT post-ASO and what factors should be considered in determining this timeline?**

#### **Question 51**

**What should be the overarching purpose of the revised regulations in the post-digital migration environment?**

**Question 52**

**How can the new regulatory purpose best support the evolving needs and dynamics of the digital broadcasting landscape?**

**9. CONCLUSION**

- 9.1. In conclusion, the discussion on DTT, stakeholders' insights and perspectives are important in shaping the way forward. The shift to DTT is a significant move for broadcasting and the input will help create regulations that make the post-ASO environment favourable and more beneficial for all stakeholders involved. As the country navigates the challenges and embraces the opportunities of digital broadcasting, these insights will play an important role in building a future where DTT enhances the media landscape and contributes to the overall development of the South African community.
- 9.2. The Authority extends appreciation to all stakeholders for their valuable contributions to this important discussion and encourages a continued collaborative approach for a digitally connected and enriched broadcasting future.
- 9.3. Your continued engagement is instrumental in shaping the way forward for the broadcasting industry. Thank you for your active participation and commitment to this shared endeavour.