



ATU-R STRATEGY

relating to

**STRATEGY ON INTRODUCTION AND PROMOTION
OF DIGITAL SOUND BROADCASTING IN AFRICA**

numbered

ATU-R Strategy 002-0

August 2022

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EXECUTIVE SUMMARY

Digital Sound Broadcasting (DSB) offers better reception and far superior sound quality to the consumer as compared with Analogue Sound Broadcasting (ASB). Furthermore, it delivers a range of new data services on a radio screen from identifying song titles and artists to scrolling local traffic, weather and news.

The scope of DSB in this strategy document is limited to the radiocommunication based aspect of the terrestrial sound services as governed by the ITU Radio Regulations.

But moving from principles to reality, will depend on the process of implementing this technology.

Elsewhere, countries are going their own way, but Africa, on ATU initiative, has chosen to go in a coordinated manner through the development of a strategy for the benefit of all African countries.

That said, this strategy does not define a national approach, but rather, it lays foundations for a harmonization of practices and methods across African continent.

The Vision of the strategy is that:

“African continent will be served by a dynamic digital sound broadcasting sector who provide, to African listeners through affordable and wide available receivers, a diverse range of content and programming choices that caters for and reflects Africa culture”.

The Mission of the strategy is:

“to harmonize member states approaches so as to develop digital sound broadcasting ecosystem across African continent”.

The strategy has the *foundation* and 4 *pillars* as follows:

1. **The foundation (i.e. the core strategic objective):** strengthen spectrum harmonisation;
2. **Pillar 1:** strengthen the market;
3. **Pillar 2:** sensitize Stakeholders;
4. **Pillar 3:** enhance the competitive environment; and
5. **Pillar 4:** support emergency Information dissemination.

The strategy has seven (07) Goals as shown by the table below.

PILLAR	GOAL
Strengthen spectrum harmonization	1. Adopt common DSB standards
Strengthen the market	2. Create a thriving DSB receiver market
	3. Increase local and/or regional content and innovative services
Sensitize Stakeholders	4. Raise political awareness
	5. Define a common implementation approach
Enhance the competitive environment	6. Develop policy objectives guidelines
Support emergency information dissemination	7. Mandate that all DSB receivers have Emergency Warning Functionality

Elements of the strategy can be seen in three (3) milestones which are **awareness**, **harmonization** and **implementation**.

Expected outcomes are adoption and implementation of a common DSB implementation scenario by African countries (i.e. adoption of common of frequency bands and corresponding of common standards for DSB), adoption of minimum receiver requirements, recommendation on network design, guidelines on national strategy and key decisions, guidelines for policy objectives definition.

Implementation promotion of this strategy is done via the ATU Strategic Plan 2023 -2026 i.e. during the period 2023 to 2026.

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1 INTRODUCTION

Broadcasting primarily comprises of two sectors, namely, Television and Sound (Radio). Due to its wide coverage, portability, low set-up cost and affordability, Radio is a prevalent source for providing entertainment, information and education to the masses. This is also true in Africa where radio is still the dominant mass-medium with the widest geographical reach and the highest audiences, delivering significant public value to the audience. Radio is the first and foremost trusted medium and people turn to it for news, social and vital information. A lot of people turned to radio for trusted information during the initial stages of the COVID-19 pandemic due to the high levels of disinformation and fake news events on the Internet and social media platforms.

Since 1990's, given that penetration of digital technologies have been changing the way that consumers access Information and Communications Technology (ICT) services, for radio, it is expected that these digital technologies will overcome problems faced in analogue transmission with exciting new capabilities and promises fast growth. For that, International Telecommunications Union (ITU) have recommended the following standards for terrestrial broadcast of digital radio namely: Convergent Digital Radio (CDR), Digital Audio Broadcasting (DAB), Digital Radio Mondiale (DRM), In-band On-Channel (IBOC), Integrated Services Digital Broadcasting-Terrestrial Sound Broadcasting (ISDB-TSB) and Real-time AudioVisual Information System (RAVIS). The scope of this document is limited to radiocommunication based aspect of the terrestrial sound services as governed by the ITU Radio Regulations.

Based on the existing digital standards, countries around the world have initiated a move towards digital radio broadcasting by drawing roadmap to digitize broadcasting on a selected digital radio standard/s. In order to develop an ecosystem, which can facilitate deployment of digital radio broadcasting in Africa, African Telecommunications Union (ATU)) has taken a decisive step forward by initiating a “study on the state on digital sound broadcasting in Africa” (<https://atuuat.africa/atu-resource-centre/>)

The study led to important outcomes including the one aspect recommending a coordinated approach at continent level as this would be very helpful to create larger markets in the manufacturer’s point of view, thereby lowering the cost for and improving receiver availability. The coordinated approach relates to spectrum, policy (including standard adoption) and regulatory framework harmonisation. The benefits of harmonisation relate to the promotion of economies of scale, minimisation of harmful interference, optimisation of spectrum use, promotion of interoperability of systems and receivers, including roaming of receivers.

In line with the desire to have a coordinated approach at African level, ATU has created this report which concerns the “strategy for the introduction of digital sound broadcasting (DSB) in Africa”.

The report is subdivided in 4 sections.

- Section 1 contains the *Executive Summary, Acronyms, List of Figures, Tables and Boxes* and *Introduction*, which gives the project background and the structure of the report;
- Section 2 recalls the “*Africa digital sound broadcasting landscape analysis*”, which give outline of pillars;
- Section 3 details “*strategic orientation*” as well as “*actions plan and roadmap*”, which explains elements of the strategy (*vision, mission, pillars, goals, objectives*) as well as actions plan and associated roadmap; and
- Section 4 provides “*conclusion and recommendations*” on the way forward.

2 AFRICA DIGITAL SOUND BROADCASTING LANDSCAPE ANALYSIS

This section recalls SWOT elements and performs analysis to highlight independent blocks, which will constitute pillars of the strategy.

2.1 SWOT Matrix

The document titled “*study on the state of DSB in Africa*” details Strengths, Weaknesses, Opportunities and Threats of DSB landscape in Africa.

These elements are recalled in Table 1.

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
- Stable regulatory provisions of analogue sound broadcasting - Existing infrastructures	- Lack of FM frequencies - Lack of innovative services	- ATU initiative for DSB - Mass market - Economies of scale - Initiative to digitize ICT in Africa - Efficient use of spectrum - Lack of frequencies in FM band - DSB features - ITU-R GE84 and GE06; - Best practices; - New revenue	- Political will - Failure of A-D transition - Low-income revenue - Lack of affordable receivers - Funding - Investments - GE84 Plan Optimization - Lack of DSB regulatory provisions - Distortion of the market - Technical skills

Table 1: SWOT matrix

It is now necessary to group ideas according to their similarity and / or possible duplicates.

As regard **Opportunities**, “ATU initiative for DSB”, “initiative to digitize ICT in Africa”, “efficient use of spectrum”, “lack of frequencies in FM band”, “ITU-R GE84 and GE06 agreements” and “Best practices” aim, among others, to ensure efficient and effective use of spectrum, through digitization. These elements can then be group to form a new element such as “*Digitization to ensure efficient and effective use of spectrum*”.

In the same order of ideas, “mass market”, “economies of scale”, “DSB features” and “new revenue” are elements which aim to generate new revenue and increase economies of scale to broadcasters through innovative services provide to listeners. They can be group to form “*suitable innovative services to generate new revenue and increase economies of scale*”.

Finally, Opportunities has two elements which are “*digitization to ensure efficient and effective use of spectrum*” and “*suitable innovative services to generate new revenue and increase economies of scale*”.

Concerning **Threats**, “political will”, “failure of A-D Transition”, “lack of funding”, “low income population” and “lack of affordable receivers” are elements that can contribute to political disengagement. They can be group to form “*political disengagement due to failure of A-D transition, lack of funding, low income population and lack of affordable receivers*”.

For broadcasters, “GE84 Plan optimization”, “cost of investment”, “lack of DSB regulations”, “potential distortion of the market” and “lack of technical skills” are reasons not to be interested to digitizing sound broadcasting.

As for opportunities, Threats could have two elements which are “political disengagement due to failure of A-D transition, low income population, lack of funding and lack of affordable receivers” and “broadcasters denial because of GE84 Plan optimization, investments, lack of DSB regulations, distortion of the market and lack of technical skill”.

With these grouping, the new SWOT matrix is shown by Table 2 below, which elements are inputs to define strategic options.

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
- Stable regulatory provisions of analogue sound broadcasting - Existing infrastructures	- Lack of FM frequencies - Lack of innovative services	- Digitization to ensure efficient and effective use of spectrum - Suitable innovative services to generate new revenue and increase economies of scale - Take advantage of DSB introduction to support emergency information dissemination	- Political disengagement due to failure of A-D transition, low-income population, lack of funding and lack of affordable receivers - Broadcasters denial because of GE84 Plan optimization, investments, lack of DSB regulations, distortion of the market and lack of technical skills

Table 2: SWOT matrix reviewed

2.2 TOWS strategic options matrix

TOWS matrix helps to identify systematically relationships between threats, opportunities, weaknesses, and strengths, and offers a structure for generating strategies based on these relationships¹.

			STRENGTHS		WEAKNESSES	
			S1	- Stable regulatory provisions of analogue sound broadcasting	W1	- Lack of FM frequencies in FM band
			S2	- Existing infrastructures	W2	- Lack of innovative services
OPPORTUNITIES	O1	- ICT sector digitization to ensure efficient and effective use of spectrum	O1O2S2	- Digitize existing infrastructures to ensure efficient and effective use of spectrum, and to provide suitable innovative services [...]	O1W1	- Digitize ICT sector to ensure [...] to make frequencies available
	O2	- Suitable innovative services for mass market to generate revenue and increase economies of scale		-		O2W2

¹ The TOWS matrix—A tool for situational analysis, Heinz Weihrich, 1982

			STRENGTHS		WEAKNESSES	
			S1	- Stable regulatory provisions of analogue sound broadcasting	W1	- Lack of FM frequencies in FM band
			S2	- Existing infrastructures	W2	- Lack of innovative services
THREATS	T1	- Political disengagement due to failure of A-D transition, low-income population, lack of funding and lack of affordable receivers	T1S1	- Use principles of current regulatory provisions, and a range of economic, regulatory and technological factors impacting upon the provision of services to generate political enthusiasm	T1W1	- Rely on shortage of FM frequencies hindering market development to stimulate political commitment
				-	T1W2	- Rely on the wide innovative services availability to encourage political commitment
	T2	- Broadcasters denial because of GE84 Plan optimization, investments, lack of DSB regulations, distortion of the market and lack of technical skills	T2S1	- Use current stable regulatory provisions to develop DSB regulations		-
			T2S2	- Reuse existing infrastructures to reduce costs of investment	T2W2	- Develop innovative services generating new revenue to broadcasters for investments and capacity building

Table 3: TWOS matrix

Table 3 gives some indication of nature on areas where actions are required. These are:

- Digitize existing infrastructures to ensure efficient and effective use of spectrum, and to provide suitable innovative services for mass market to generate revenue (for broadcasters) and increase economies of scale;
- Digitize ICT sector (broadcasting sector in this case) to ensure efficient and effective use of spectrum to make frequencies available;
- Provide suitable innovative services for mass market to generate revenue (for broadcasters) and increase economies of scale;
- Reuse principles of current regulatory provisions, and a range of economic, regulatory and technological factors impacting upon the provision of services to generate political enthusiasm;
- Rely on shortage of FM frequencies hindering market development to stimulate political commitment;
- Rely on the wide innovative services availability to encourage political commitment;
- Reuse current stable regulatory provisions to develop DSB regulations;
- Reuse existing infrastructures to reduce costs of investment; and
- Develop innovative services generating new revenue to broadcasters for investments and capacity building.

Part of action a and action b have similarities in the sense that they aim to digitize infrastructures. It is also the case for part of action a and action c which aim to provide innovative services to listeners. Actions c and i are also quite similar. All of them intend to provide innovative services to generate new revenue to help offset costs of investments.

As a consequence, action a can be deleted; c and i can be merged as *“provide suitable innovative services for mass market to generate revenue (to broadcasters) for investments and capacity building, and increase economies of scale”*.

Areas of actions become:

- a. Digitize ICT sector (broadcasting sector in this case) to ensure efficient and effective use of spectrum to make frequencies available;
- b. Provide suitable innovative services for mass market to generate revenue (to broadcasters) for investments and capacity building, and increase economies of scale;
- c. Reuse principles of current regulatory provisions, and a range of economic, regulatory and technological factors impacting upon the provision of services to generate political enthusiasm;
- d. Rely on shortage of FM frequencies hindering market development to stimulate political commitment;
- e. Rely on the wide innovative services availability to encourage political commitment;
- f. Reuse current stable regulatory provisions to develop DSB regulations;
- g. Reuse existing infrastructures to reduce costs of investment; and,
- h. Take advantage of DSB introduction to support emergency information dissemination by way of mandating that all DSB receivers have Emergency Warning Functionality. It should be noted that automatic emergency information dissemination is key in disaster management and mitigation.

Actions which contribute to similar objectives can be grouped together. Resulting blocks must be independent of each other. The actions grouping results in four (4) independent blocks that are:

1. Strengthen the market;
2. Strengthen spectrum harmonization;
3. Sensitize Stakeholders;
4. Enhance the competitive environment; and,
5. Support emergency information dissemination

The four (4) independent blocks actions are given in Table 4.

STRENGTHEN THE MARKET	STRENGTHEN SPECTRUM HARMONIZATION	SENSITIZE STAKEHOLDERS	ENHANCE THE COMPETITIVE ENVIRONMENT
Provide suitable innovative services for mass market to generate revenue (to broadcasters) for investments and capacity building, and increase economies of scale.	Digitize broadcasting sector to ensure efficient and effective use of spectrum to make frequencies available.	Reuse principles of current regulatory provisions, and a range of economic, regulatory and technological factors impacting upon the provision of services to	Reuse current stable regulatory provisions to develop DSB regulations; Reuse existing infrastructures to

STRENGTHEN THE MARKET	STRENGTHEN SPECTRUM HARMONIZATION	SENSITIZE STAKEHOLDERS	ENHANCE THE COMPETITIVE ENVIRONMENT
		generate enthusiasm; political • Rely on shortage of FM frequencies hindering market development to stimulate political commitment; • Rely on the wide innovative services availability to encourage political commitment.	reduce costs of investment.

Table 4: Independent blocks derived from TOWS Matrix

This four (4) blocks will constitute elements of the strategy for the introduction of DSB in Africa.

3 STRATEGIC ORIENTATION

This section presents and explains the *Vision, Mission, Pillars, Goals* and *Objectives* of the strategy for the introduction of DSB in Africa.

3.1 Vision and Mission Statements

ATU vision in developing this strategy is that:

“African continent will be served by a dynamic digital sound broadcasting sector who provide, to African listeners through affordable and wide available receivers, a diverse range of content and programming choices that caters for and reflects Africa culture”.

To realize this vision, ATU mission is:

“to harmonize member states approaches so as to develop digital sound broadcasting ecosystem across African continent”.

3.2 Core Strategic Objective and Pillars

The four (4) elements from section 2.2 are to be understood as follows:

- “*Strengthen spectrum harmonisation*” is the core strategic objective as it traces the contours of the digital future of sound broadcasting landscape in Africa. As such, it's the foundation of the strategy; and
- “*Strengthen the market*”, “*Sensitize Stakeholders*” and “*Enhance the competitive environment*” are Pillars or strategic axes.

These elements will use the mission statement in order to achieve the vision statement. The strategy for the introduction of DSB in Africa can be summarized as follows:

- **The Foundation (The core strategic objective):** Strengthen spectrum harmonisation;
- **Pillar 1:** Strengthen the market;
- **Pillar 2:** Sensitize Stakeholders;
- **Pillar 3:** Enhance the competitive environment;
- **Pillar 4:** Support emergency information dissemination

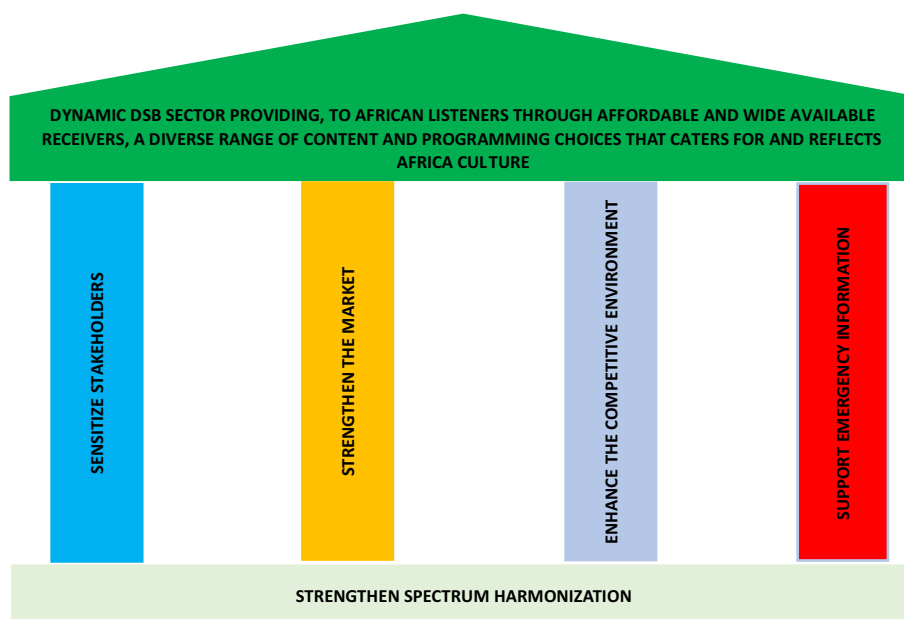


Figure 1: Graphical representation of the strategy for the introduction of DSB in Africa

3.3 Goals

This sub-section outlined the associated goals for the core strategic objective and pillars. The associated goals and scope are limited to radiocommunication based aspect of DSB as governed by the ITU Radio Regulations.

3.3.1 Strengthen spectrum harmonisation

Spectrum, policy and regulatory framework harmonization are the keystones of the strategy, since it determines the future landscape and deployment of DSB in Africa. The harmonization of spectrum presupposes agreeing on the best suitable scenario and therefore deciding on frequency bands to be considered. Spectrum harmonization should be considered in the Bands MF (0.5265 – 1.6065 MHz), I (41 – 69 MHz), II (87.5-108 MHz) and III (174-230 MHz). Policy and regulatory framework harmonization enable a coordinated effort to address some of the challenges related to introduction of new technologies, such as the cost of infrastructure and devices.

3.3.1.1 Adopt a best suitable scenario of DSB introduction

The document titled “*study on the state of DSB in Africa*” notes that the introduction of DSB in Africa would benefit from relying on terrestrial platform, which will be complemented by other existing broadcasting platforms. As for satellite platform, L-band is allocated to Mobile and identified for IMT, the preferred complemented platform is then IP platform².

For terrestrial platform, the document has identified Band I, Band II and Band III as candidate bands for the digitization of sound broadcasting in Africa. It is important to note there are different technologies for each band. Identifying which technology standards for Band II and Band III raises the question of the most realistic option to promote DSB in Africa. The deployment scenarios for DSB in Band II must take into consideration the possible framework for the coexistence of analogue and digital services, including the outcome of the GE84 optimization process concluded in January

² Section 4.1.2, Study on the state of DSB in Africa, ATU, August 2020 <https://atuuat.africa/atu-resource-centre/>

2022. With respect to Band III, the technology standard can either replace FM services or augmenting analogue, and digital services in Band II.

In the short and medium term, the possible scenarios are the following: 1) FM coexisting with DSB services in Band II and DSB in Band III augmenting the former, or 2) FM analogue services remaining in Band II and introducing DSB services in Band III to augment analogue services. Taking into consideration the second scenario, once the DSB ecosystem sufficiently matures Band II can transition to DSB. The determination of which scenario to deploy will be based on the cost of running two networks (dual illumination or two standards in different bands) and the price of digital devices vs existing analogue devices.

The choice of which scenario to pursue will be determined by each Member State. From a technical perspective for coexistence of analogue with Band III to be possible, 1) band III needs to be relatively free of TV services through the digitisation of TV. 2) Any DAB+ service, always a local service, requires a broadband multiplex. In DRM the broadcaster does not share a multiplex platform and remains fully in control of its own infrastructure, content and also costs. No intermediary and sharing required.

DRM in FM uses the white spaces otherwise not available to FM/analogue and is thus allowing for maximum usage of the spectrum, as demonstrated in Johannesburg or during the India trial last year. With DRM it would thus not be necessary to go to band III as the extensive and full spectrum can be optimally used in the FM band. With DRM it would thus not be necessary to go to Band III (as FM band can be used fully).

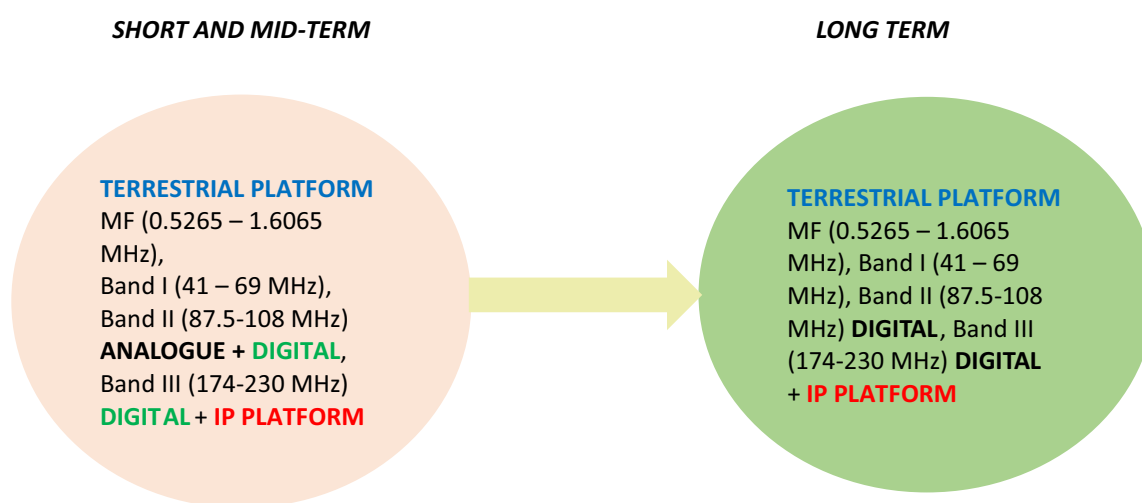


Figure 2: Scenario of the introduction of DSB in Africa

The most realistic scenario for sound broadcasting in Africa is the one that will have the least cost for consumers.

The digitization of sound broadcasting in short, mid and long term should cover MF Band (0.5265 – 1.6065 MHz), Band I (41 – 69 MHz), Band II (87.5-108 MHz) and Band III (174-230 MHz).

Box # 1: Realistic scenario

For the short, mid and long term, African countries must adopt terrestrial sound broadcasting as primary platform while Internet radio is the complement platform. Networks of terrestrial platform can be rolled-out in either Band I or Band II and Band III.

3.3.1.2 Adopt a common DSB standard

The development of DSB on a large scale across Africa require the identification of common driving forces, which will increase certainty and provide the necessary volumes for consumer device manufacturers to invest appropriately for affordable and effective receivers.

One of these common driving forces is the global or continental harmonisation of implementing DSB which entails, amongst other things, the identification, adoption and promotion of one standard or a combination of standards for each band.

When it comes to standard/s to be adopted, the best approach is to build on what is on the ground. Based on that, it should be recalled that African countries that have introduced such technologies have adopted either DRM³ or DAB+⁴. If continental harmonisation is sought, then standards to be considered can only be among these two.

In addition, based on the applicability of DSB standard⁵ and best practices from other regions described⁶ in the document “*Study on the state of DSB in Africa*”, it appears that DRM and DAB+ are widely used in ITU-R Region 1, as well as in some countries of Region 2 or 3.

Box # 2: Common standards

African countries must adopt:

- DRM to replace and/or augment analogue services in the LF, MF and SW bands, including Band I
- DRM to complement analogue FM sound broadcasting in Band II (87.5-108 MHz);
- DRM and/or DAB+ to introduce digital sound broadcasting in Band III (174-230 MHz).

3.3.1.3 Voluntary Analogue Switch-off in the VHF band

A number of African countries may need to voluntarily consider expediting digital switch-over (DSO) in the VHF band to enable the introduction of DAB+ services. Countries planning on introducing digital terrestrial televisions (DTT) services may consider coordinating both digital services in the allocated VHF band.

3.3.2 Strengthen the market

DSB market in Africa can only exist and prosper if conditions for its economic viability are met. Demand can only be expressed if receivers are widely available and affordable. Offer can only exist and be attractive if broadcasters have visibility on possible new income to compensate additional costs.

3.3.2.1 Create a thriving DSB receiver market

A common course of action in Africa is important to reach economical scale, which is very essential to provide cheap and attractive receivers on the market.

After the commitment on DRM and DAB+, assurance on profiles for the receiver functionalities is essential for a move forward enabling a single African market providing certainty for economies of scale to device manufacturers.

³ Historically, the terms “DRM30” and “DRM+” have been used to differentiate the technical parameter sets for DRM transmissions below and above 30 MHz, respectively. However, these terms are no longer used because they could be seen as confusing.

⁴ See Section 3.3, Study on the state of DSB in Africa, August 2020; <https://atuuat.africa/atu-resource-centre/>

⁵ See Section 2.3.4, Table 2, Study on the state of DSB in Africa, August 2020; <https://atuuat.africa/atu-resource-centre/>

⁶ See Section 2.4, Study on the state of DSB in Africa, August 2020; <https://atuuat.africa/atu-resource-centre/>

Therefore, it is essential to set common minimum receiver requirements to label "African receivers" to speed the take-off of DSB in Africa and allow sub-regions or countries to add additional functionality to these minimum requirements.

Box # 3: Labelling "African receivers"

To benefit of a large market of cheap and attractive digital receivers, a set of common minimum receiver requirements is to be defined in order to develop core technical specifications for equipment for use in Africa.

Moreover, additional optional receiver specifications can be recommended for sub-regions or countries willing to have more features.

3.3.2.2 *Increase offer of new contents and innovative services*

In most of African countries, broadcasters are completely dependent on advertising revenue for their operation. When it comes to digitizing sound broadcasting, broadcasters need to explore alternative source of revenues to ensure sustainability. DSB empower broadcasters to provide innovative services in view of increased competition from other platforms; improved ability to target audiences; and improved cost-efficiencies with regards to signal distribution. Listeners are exposed to greater choice in terms of language, variety and format; better reception quality; programming for niche markets and new features such as OTT services.

For broadcasters, the primary way to increase revenue is by varying service offering and augmenting services with value-add whilst keeping operational costs low, in more areas of the country than is currently possible in their FM network.

To ensure DSB deployment is cost efficient and there is optimal use of frequencies, countries may need recommendations and/or best practices on network designing.

Box # 4: Increase Local and/or Regional content and innovative services

Countries may need recommendations on DSB network designing to enable broadcasters programming more services in their portfolio to increase their revenue.

3.3.3 Sensitize stakeholders

3.3.3.1 *Raise political awareness*

The case of South Africa is good to highlight, where after having authorized extensive trials, the Government issued in July 10th, 2020 a policy direction⁷ to [ICASA](https://www.icasa.org.za/) to determine priorities for the introduction of DSB networks and services in its territory.

This leads to the conclusion that what must be met first hand in Africa countries, is to raise political awareness about the benefits, to be able to move towards the introduction of digital sound broadcasting.

Box # 5: Unlocking political reluctance

A coordinate action is to be developed to raise political awareness and understanding of DSB. This action should target ministries and regulatory authority.

3.3.3.2 *Coordinated implementation approach*

As seen in previous sections, the introduction of DSB requires decisions to be made on a great number of issues, especially political commitment. It is important to note that political commitment

⁷ https://www.gov.za/sites/default/files/gcis_document/202007/43514gon759.pdf

must be complemented with the upgrading of existing skills and sourcing of innovative competences to enable the successful adoption and sustainability of DSB services.

Therefore, it would be necessary to create guidelines on the development of a roadmap covering national strategies and key decisions, to enable the acquisition of a global overview on actions to be undertaken for a flexible and smooth introduction of DSB.

Description of actions should detail essential actions and optional. Essential actions become common activities for countries to enable a coordinated approach to assess progress made in each country.

Box # 6: Common implementation approach

Defining a common implementation approach will assist countries with increased certainty over the introduction of DSB.

3.3.4 Enhance the competitive environment

Majority of countries, the existing legislation or regulatory framework for sound broadcasting regulates is currently limited to terrestrial analogue sound, therefore necessitating a review to enable the introduction of digital. To encourage policy makers to act, it is prudent that guidance is provided on policy objectives, legislation and regulations.

This will help countries to develop policy directives in time bound manner to improve competitive environment; as such, it is a guarantee of market stability which will ensure broadcasters to invest for developing the ecosystem for digital sound broadcasting.

Box # 7: Policy objectives guidelines

There is a need to develop policy objectives guidelines to ease countries put in place legislative and regulatory provisions for a viable and competitive market.

3.3.5 Emergency Warning Functionality for Digital Sound Broadcasting

The policy and regulatory frameworks are encouraged to take advantage of the introduction of DSB by adopting and ensuring Open Digital Radio Standards have Emergency Warning Functionality (EWF) as a default feature.

The inclusion DSB EWF as part of the tools for information dissemination should be supported by the regulatory type-approval framework, with respect to EWF-ready devices.

The use of DSB EWF as part of a country's approach to disaster management approach will be supported by the ubiquitously available terrestrial radio coverage, the advantage that radio has become a typical companion with any everyday purpose and the independence of radio from local infrastructure.

Box # 8: Emergency Warning Functionality for DSB to Support emergency information dissemination

The Digital Radio standards ,DRM and DAB+, discussed as part of the strategy consideration have all required tools built-in for a quick and complete mass-notification in case of disasters / catastrophes.

3.3.6 Summary

Goals underlying the core strategic objective and pillars are summarized in Table 5 below.

PILLAR	GOAL
Strengthen spectrum harmonization	Adopt a common DSB standards for Band I, II and III
Strengthen the market	Create a thriving DSB receiver market
	Increase local and/or regional content and innovative services
Sensitize Stakeholders	Raise political awareness
	Define a common implementation approach
Enhance the competitive environment	Develop policy objectives guidelines
Support emergency information dissemination	Mandate that all DSB receivers have Emergency Warning Functionality

Table 5: Goals of the strategy on introduction of DSB in Africa

3.4 Strategic Objectives

3.4.1 Development of Strategy and Proposed Implementation period

The introduction of DSB in Africa being an activity of ATU Strategic Plan 2019-2022, its development should be completed in 2022. Its implementation will be included ATU Strategic Plan 2023-2026.

The introducing of DSB in Africa is a process that should be carried out in three (3) milestones: awareness, harmonization and implementation.

With regard to awareness, technological development is making the digitization of sound broadcasting inevitable; it is therefore the mission of ATU to sensitize all African countries on the issue.

3.4.2 Objectives trajectory

The section is about distributing objectives of each milestone over the two years of achievement.

Apart from **awareness** where a strong support is expected at the commencement, it is assumed for **harmonization** and **implementation** a weak support at the beginning; fashion effect intervening, a strong adhesion will be noted at the end.

3.4.3 Objectives

Based on previous sections, objectives of the strategy for the introduction of DSB in Africa are summarized in Table 6 below.

PILLAR	GOAL	OBJECTIVES	
		2023	2024
Strengthen spectrum harmonization	Promotion of national adoption of the common DSB frequencies and corresponding DSB standards	29.6% of African countries implement (or plan to implement) the adopted DSB standards	Increase by 1.88 the number of countries implementing (or plan to implementing) the adopted DSB standards
Strengthen the market	Create a thriving DSB receiver market	29.6% of African countries adopt common minimum receiver requirements	Increase by 1.88 the number of countries adopting common minimum receiver requirements

PILLAR	GOAL	OBJECTIVES	
		2023	2024
	Increase local and/or regional content and innovative services	18.5% of African countries implement DSB network designing principles	Increase by 1.4 number of countries implementing DSB designing principles
Sensitize Stakeholders	Raise political awareness	55.6% of African countries recognize the need to digitize sound broadcasting	Increase by 0.7 the number of countries recognizing the need to digitize sound broadcasting
	Define a common implementation approach	18.5% of African countries develop national strategy and roadmap	Increase by 1.4 the number of countries developing national strategy and roadmap
Enhance the competitive environment	Develop policy objectives guidelines	18.5% of African countries improve national legislation and regulations	Increase by 1.4 the number of countries improving national legislation and regulations

Table 6: Objectives for 2023 and 2024

4 HIGH-LEVEL IMPLEMENTATION ACTION PLAN

This section describes actions plan resulting from goals and associated roadmap.

4.1 Actions Plan

Action plans are statements of specific actions or activities that will be used to achieve a goal within the constraints of the objective. Thus, for each goal, actions or activities are detailed below.

4.1.1 Strengthen spectrum harmonisation (by means of adopting of common DSB frequency band and corresponding DSB standard)

This involves adopting MF Band (0.5265 – 1.6065 MHz), Band I (41 – 69 MHz), Band II (87.5-108 MHz) and Band III (174-230 MHz) as harmonized frequency bands for DSB in Africa, and DRM+ and DAB+ as transmission standards, respectively for stated bands. The meeting of the ATU Task Group on Broadcasting adopted the DSB frequency bands and corresponding DSB standards as summarised in Section 5 below.

4.1.2 Strengthen the market (by way of creating a thriving DSB receiver market)

This entails defining common minimum receiver requirements for equipment for use in Africa. The ATU Task Group on Broadcasting will spearhead this work.

4.1.3 Sensitize stakeholders

4.1.3.1 Raise political awareness

The goal of this element is to raise awareness of policy makers around digital sound broadcasting. ATU and the RECs (Regional Economic Communities) to spearhead this aspect.

4.1.3.2 Coordinated implementation approach

The main under this element is to provide African countries with guidelines on the development of roadmap covering national strategies and key decisions. The guidelines should outline essential actions and options. The ATU Task Group on Broadcasting will spearhead this work.

4.1.4 Enhance the competitive environment

It is about developing policy objectives guidelines to ease countries put in place legislative and regulatory provisions for a viable and competitive market. The ATU Task Group on Broadcasting will spearhead this work.

4.1.5 Summary

Actions to be carried out described in previous sections are summarized in the Table 7 below.

PILLAR	GOAL	ACTION
Strengthen the market	Create a thriving DSB receiver market	- Set up a Technical Committee; - Send circular letters⁸ and questionnaire; - Organize a workshop.
	Increase offer of new contents and innovative services	- Set up a Technical Committee; - Send circular letters and questionnaire; - Organize a workshop.
Sensitize stakeholders	Raise political awareness	- Organize a workshop
	Coordinated implementation approach	- Mandate Algeria, South-Africa and Tunisia or recruit a Consultant; - Send circular letters⁹ and questionnaire; - Organize a workshop.
Enhance the competitive environment	Develop policy objectives guidelines	- Mandate Algeria, South-Africa and Tunisia or recruit a Consultant; - Send circular letters and questionnaire; - Organize a workshop.

Table 7: Summary of Actions

⁸ Outcomes of Technical Committee could be discussed and approved through a virtual meeting.

⁹ Outcomes of mandated countries/ or Consultant could be discussed and approved through a virtual meeting.

5 SUMMARY OF ADOPTED FREQUENCY BANDS AND STANDARDS (FOR PURPOSES OF HARMONIZATION) FOR DSB IN AFRICA

The following table summarises the frequency bands and the respective adopted standards.

PARAMETER	DRM FOR THE AM BAND	FM* (ANALOGUE)	DRM FOR THE VHF BANDS	DAB+**
Frequency Range (MHz)	0.5265 – 1.6065	87.5 – 108	87.5 – 108	174 – 230***
Programs / Channel	1 to 4	1	1 to 4	18 - 24 (Typically)
Analogue Simulcast	Yes	N/A	Yes	No
Channel Bandwidth (MHz)	0.009	0.2	0.1	1.7
Typical Data Capacity (Mbits/s)	0.025	N/A	0.144	1.152

Table 8: Summary of Adopted Frequency bands and Standards

Note that DRM receivers shall also support Short Wave frequencies which are internationally coordinated by HFCC (hfcc.org).

* Analogue FM is included in the table for comparison purposes only.

**MPEG-4 High Efficiency AAC version 2 profile (HE-AAC v2). This audio codec allows for up to three times as many services per multiplex as the original DAB: A 48 kbps subchannel with HE-AAC v2 provides a similar audio quality (even slightly better in most cases) as MPEG Audio Layer II at 128 kbps.

*** RR edition 2020: Footnote 5.252 Alternative allocation: in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-19)

6 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Like everywhere else in the World, the future of sound broadcasting in Africa is likely to be digital. So far, few countries have decided on their own how to approach the introduction of digital sound broadcasting.

However, this document urges for a coordinated approach on how all African countries could introduce this technology, each at their own pace. The coordinated approach will help create conditions to maximise the continent's benefit from DSB. Specifically, the objective is to benefit from enhanced economies of scale via:

- the stimulation of the demand by providing affordable and widely available receivers to the population; and
- the increasing of broadcasters' revenue through the provision of wide diversified services.

The goal of the strategy includes the following:

- promotion of national adoption of the common frequency bands and corresponding DSB standards for radiocommunications based DSB;
- common receiver specifications and labelling African receivers; and
- harmonization of principles governing the regulation of the sector.

The implementation of this strategy begins with raising the awareness of various stakeholders, particularly Policy makers whose good-will and commitment constitute the key success factor.

6.2 Recommendations

Actions plan of the strategy is spread over two (2) years. This timeframe, which may seem sufficient, may no longer be if prerequisite for the adoption of this document is not met.

To have a frank and total support of ATU initiative to lay foundations for digitizing sound broadcasting in Africa, this document must be made available to all members so that everyone can appropriate ATU's vision so as to fulfil conditions mentioned below.

The harmonization process discussed must include engagement with Policy makers to promote timeous national adoption. Additionally, there is a need for prepared consultation documentation circulated to all key stakeholders.

The documentation must clearly define and explain DSB, indicate benefits, how DSB is going to be introduced, available standards in the market, spectrum band characteristics and discuss issues related to receivers and specifications. ATU recommends the adoption for DRM for MF Band (0.5265 – 1.6065 MHz), Band I (41 – 69 MHz) and II (87.5-108 MHz), and DAB+ (174-230 MHz) for Band III as common standards.

6.2.1 DRM: AM band (0.5265 – 1.6065 MHz)

DRM is the digital standard for AM bands offering broadcasters the opportunity to provide listeners with significant improvements in audio quality and service reliability. The DRM standard provides many features and facilities that are impossible to replicate in analogue broadcasting. It is essential that prospective broadcasters understand the potential and flexibility of the system in order to allow them to optimize and configure their DRM networks in accordance with their particular market conditions. DRM is the only digital radio system that embraces all the currently used radio frequency bands; it provides an ideal replacement for existing analogue services. DRM enhances audio and service quality and reduced energy costs.

6.2.2 DRM: Band I (41 – 69 MHz), II (87.5-108 MHz) and III (174 – 230 MHz)

There is a global trend towards the adoption of digital technology in radio and communications, especially for distribution and transmission. Digitalization offers many advantages to national and international broadcasters. The introduction of DRM services allows broadcasters to provide listeners with significant improvements in audio quality and service reliability. The DRM standard provides many features and facilities that are impossible to replicate in analogue broadcasting. It is essential that prospective broadcasters understand the potential and flexibility of the system in order to allow them to optimize and configure their DRM networks in accordance with their particular market conditions. DRM is the only digital radio system that embraces all the currently used radio frequency bands; it provides an ideal replacement for existing analogue services, leaving them in control of their content and infrastructure. DRM is complementing other digital radio services based on open standards, such as DAB+.

6.2.3 DAB+: Band III (174 – 230 MHz)

In areas where there are, or expected to be in the future, more than 10 services it is most efficient to implement DAB+ as it offers enhanced performance in terms of the enhanced audio quality with the same number of radio stations, more than twice the number of stations compared to DAB, lower transmission cost per station and lower cost for small station transmissions. The preferred transmission band for DAB+ is VHF Band III (174-230 MHz). The propagation characteristics of Band III gives better coverage in both urban and rural areas compared with higher frequencies. All DAB+ receivers support Band III reception. It is often useful to set up a DAB+ trial network to demonstrate coverage, functionality, and affordable good quality for DAB+ receiver sets to raise awareness on DAB+ and train broadcasters, regulators, and other stakeholders.

7 ANNEXURE A: FRAMEWORK ON ESTABLISHMENT OF DIGITAL SOUND BROADCASTING

7.1 ACRONYMS

ATU	: African Telecommunications Union
AfriSAP	African Spectrum Allocation Plan
CDR	: Convergent Digital Radio
DAB	: Digital Audio Broadcasting
DRM	: Digital Radio Mondiale
DSB	: Digital Sound Broadcasting
DTT	: Digital Terrestrial Television
ECC	: Electronic Communication Committee
IBOC	: In-Band On Channel (IBOC)
ISDB-TSB	: Integrated Services Digital Broadcasting - Terrestrial Digital Sound Broadcasting
ITU	: International Telecommunications Union
RAVIS	: Real-time AudioVisual Information System

7.2 INTRODUCTION

The introduction of DSB on the African continent has been motivated by acknowledging that FM Radio is the most prevalent form of sound broadcasting, and therefore, will remain in existence in the foreseeable future. In addition, it is acknowledging that there is existence of a shortage of available spectrum to accommodate demand for FM broadcasting frequencies within the African countries. This shortage is more evident in metropolitan areas and has necessitated the need for African countries to consider migrating to DSB. Apart from countering congestion currently experienced in FM, DSB offers an opportunity for the continent to create jobs in content creation and manufacturing as well as other support services. In addition, DSB also offers a more economical alternative in relation to transmission costs as digital broadcasting in lower frequencies of Shortwave and Medium wave bands is energy and spectral efficient.

Though a number of DSB technologies (e.g. CDR, DAB, DRM, IBOC, ISDB-TSB and RAVIS) were studied the framework is limited to DAB, DRM. According to studies completed on Digital Broadcasting Standards, the DAB technology will allow for the more efficient use of spectrum and is already provided for in terms of the provision of International Telecommunications Union (ITU) Geneva 2006 (GE06); while on the other hand the DRM technology will allow for more efficient use of spectrum and is already provided for in terms of the provisions of GE84. Both the DAB and the DRM technologies have been widely adopted and implemented in ITU Region 1 enabling the continent to contribute and benefit from economies of scale, best practices in respect of implementation, customer awareness and financial implications. The bottom line for the DSB standards analysed is that they offer many benefits to consumers, manufacturers broadcasters and regulators. These benefits include clear and better sound than analogue and easy tuning, efficiency in management of spectrum, less susceptible to a number of signal interference sources, lower transmission costs, lower power consumption, less capital intensive and offers innovative service opportunities.

However, as a continent there is a need to move with care and utilize lessons learnt from the recent DTT migration. Whilst, DTT migration was attached to a deadline to free up spectrum for implementation of telecommunications services, DSB implementation is aimed at enhancing the quality of sound broadcasting and to provide additional spectrum capacity to foster further market development in the broadcasting industry without discontinuing analogue sound broadcasting. The

proposed adoption of DSB requires a harmonised spectrum, policy (including standard adoption) and regulatory framework that will allow seamless switching between the DSB and analogue technologies. In addition, the financial implications of DSB to consumers, broadcasters and governments should be known from the onset.

Both technologies are depicted in the diagram below:



Figure 3 : Analogue and DSB Technologies

7.3 SCOPE

It is acknowledged that a number of ATU Member States are party to the GE84 and GE06 Agreements. The need for more efficient use of spectrum for broadcasting services and the need for broadcasters to expand their service portfolios to meet the public's need for access to information and conveyance of messages in emergency situations warrants Members States to consider the implementation of digital sound broadcasting. This document recommends a possible implementation framework in respect to the digital broadcasting as detailed herein.

7.4 THE REGULATORY FRAMEWORK

It is recommended that ATU Members States plan for digital radio networks that will compliment and eventually replace analogue radio networks. The requirement for policy makers and regulators is a multi-tasked exercise made up of the following processes:

- i) establishment of policy guidelines allowing for implementation of more than one standard as proposed in this document to facilitate the implementation of DSB in more than one spectrum band of AfriSAP allowing as many as possible broadcasters to provide services at public, commercial and community level;
- ii) implementation of regulatory processes which should provide for the licensing of the new digital radio technology as eventual replacement of the analogue radio broadcasting. These are to be set out by each regulator to issue new licenses for digital radio and the migration processes;
- iii) establishment of the technical framework, which defines the standards which should be set and adhered to by licensees. This technical framework will feed into the regulatory process in (i); and
- iv) development and implementation of the radio spectrum planning mechanisms to be undertaken to enable availability of radio frequencies for the new digital services and of the voluntary migration process of transit from analogue to digital radio. This also feeds into the general regulatory processes in item (i) above.

7.4.1 Policy Framework

Policy makers may wish to consider the following aspects linked to implementation of digital sound broadcasting:

- i) adoption of multiple standards allowing for the most efficient use of spectrum and regional harmonisation;
- ii) address the current lack of available spectrum in the analogue sound broadcasting band, especially, in major cities prohibiting the provisioning of more broadcasting services;
- iii) allow for provision of high-quality broadcasting services through multiple channels and content utilising one frequency to facilitate universal access to information;
- iv) provide opportunities for delivering services at national, provincial and community level;
- v) foster innovation through expansion of services offered by broadcasters;
- vi) aid in distribution of information and public announcements in case of emergency situations taking into account that sound broadcasting is the most widely adopted technology in all ATU Member States;
- vii) encourage the utilisation of digital technologies to derive environmental and energy saving benefits as provided for by these technologies; and
- viii) encourage the implementation of an effective and modern broadcasting infrastructure taking into account the convergence of information technologies, news media, telecommunications and consumer electronics.

7.4.2 Regulatory Processes to be Undertaken

The DAB and the DRM technologies have been widely adopted and implemented in ITU region 1 enabling ATU Member States to contribute and increase benefits from economies of scale; best practices with respect to implementation; customer awareness; and financial implications. ATU Member States should take advantage of the already established technologies of digital radio broadcasting which are already deployed elsewhere in the Region 1.

The envisaged licensing regime should consider the following:

- i) regulators should engage in a staggered licensing process with clear timelines. The timelines should make provision for co-existence of digital and analogue sound broadcasting and cater for issuance of new digital radio licenses;
- ii) licenses awarded should be operational within specified timelines as per license conditions;
- iii) choice of technologies should be a business decision made by licensees. However, they should be guided by set technical standards as per the licensing regime of each member state; and
- iv) receivers should have a built-in capacity for both technologies (DAB and DRM) as well as existing analogue technologies to allow for seamless operation of radio stations. Selection of the radio station to be tuned-into should be on a station name basis and not on frequency selection.

7.4.3 Roadmap to Implementation

Considering that analogue and digital sound broadcasting will co-exist, it is advised that ATU Member States set a timeline for implementation based on national requirements in respect of the policy and regulatory framework required as well as all technical and economical requirements.

7.5 TECHNICAL FRAMEWORK

7.5.1 Common Standards Adopted

Choice of technologies should be a business decision made by licensees. However, they should be guided by set technical standards as per the licensing regime of each country. Minimum standards to be adopted by regulators are as follows:

- i) [ETSI TR101 758](#): Digital Audio Broadcasting (DAB); Signal strengths and receiver parameters;
- ii) [ITU-R Rec.BS 1114](#): Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3 000 MHz;
- iii) [ITU-R Rec.BS 1660](#): Technical basis for planning of terrestrial digital sound broadcasting in the VHF band;
- iv) [ETSI ES 201 980](#): Digital Radio Mondiale (DRM); System Specification;
- v) [ITU-R P.1321](#): Propagation factors affecting systems using digital modulation techniques at LF and MF;
- vi) [ITU-R P.368](#): Ground-wave propagation curves for frequencies between 10 kHz and 30 MHz;
- vii) [ITU-R P.1147](#): Prediction of sky-wave field strength at frequencies between about 150 and 1 700 kHz; and
- viii) [ITU-R BS.1615](#): “Planning parameters” for digital sound broadcasting at frequencies below 30 MHz.

7.5.2 Harmonised Channelling Plan

There will be a need for new frequency channelization that should be in compliance with existing frequency plans. This implies that the new digital radio networks should fit into the GE75, GE84 (as updated in January 2022), GE06 Agreements. This will be an advantage in the frequency planning tasks because it means that regulators will not need to re-negotiate new international agreements.

7.5.3 Cross Border Coordination

ATU Member States that are signatory to the GE75, GE84 and GE06 Agreements have likely coordinated the frequency plans and frequency channelization with neighbouring countries and agreed on coordination procedures. This will result in frequencies registered in appropriate ITU Agreements and guided by coordination of frequencies with neighbouring countries taking into consideration:

- i) Existing ITU agreements;
- ii) African continental agreements (HCM4A);
- iii) Regional Agreements; and
- iv) Specific neighbouring country harmonised Agreements.

It should be noted that ATU Member States will derive benefits from pre-arranged coordination agreements in respect of:

- i) simplifying International coordination via ITU;
- ii) saving time with international coordination process;
- iii) creating confidence for future cooperation;
- iv) simplifying and providing for faster technology implementation;
- v) selecting frequencies or parameters of a radio stations in a way that minimise interference across borders; and

- vi) adding necessary additional requirement should it be found that the ITU Radio Regulations be inadequate.

ATU Member States not signatory to existing ITU Agreements are urged to register all their frequencies in the appropriate ITU agreements following the steps as set out below-

- i) perform an interference analysis for every frequency that needs to be registered;
- ii) apply for coordination of frequencies per Agreement as per ITU procedures taking into account that regional Agreements between neighbouring countries are crucial for ITU Coordination confirmation; and
- iii) note that each country is obliged to take into account existing radio station(s) (domestic or foreign) before putting the new radio station(s) into operation.

7.5.4 Technical Implementation Digital Sound Broadcasting

The implementation of digital sound broadcasting does not only depend on the development of channelling plans and other related spectrum management activities but also requires a review of the regulatory frameworks set-out hereunder to ensure alignment of all regulations impacted by such implementation:

- i) a review of the licensing framework in respect of licence categories and associated fees and licence conditions given the fact that similar to digital terrestrial television, digital sound broadcasting will utilise multiplex and signal distributors or multiplex operators whilst actual broadcasting content will be provided by broadcasters and content providers;
- ii) a review of broadcasting codes to incorporate the provision of information services, emergency and public service announcements and provision of data services for text and pictures (referred to as “*journaline*”);
- iii) a review of enforcement of type approval of equipment in accordance with common technical standards for receiver equipment; and
- iv) a review of spectrum fees given the increased market value of spectrum considering that a single frequency will be utilised to broadcast multiple content channels.

Necessary amendments of the aforementioned regulations may differ between ATU Member States and require consultation with stakeholders and interested parties prior to publication thereof and should be incorporated in the roadmap for implementation.

7.6 ECONOMICAL FRAMEWORK

7.6.1 Financing

It should be emphasized that the implementation of digital sound broadcasting will not replace analogue sound broadcasting outright, but that the two technologies will co-exist until such time that market adoption of digital sound broadcasting services diminish the need for analogue sound broadcasting.

It is therefore fair to assume that ATU Member States may opt to provide funding for national digital implementation by the public broadcaster taking into account the universal need for access to information, the efficient use of a scarce national resource, energy savings and to lessen the environmental impact of constructing broadcasting infrastructure.

However, commercial broadcasters will consider implementation of digital sound broadcasting based on their respective business models and benefits derived from savings incurred with respect to capital investment and operational expenses. Implementation will therefore depend on financing obtained by the commercial broadcasters themselves based on the attractiveness of the new

technologies and future revenue generation through providing convergent services going forward and not only traditional broadcasting services.

Member States may wish to consider provision of some funding for implementation of digital sound broadcasting to community broadcasters, based on the need for universal access to information and the fact that these entities do not operate on a profit basis, but provide a valuable service at community level.

Broadcasters may choose to adopt a phased approach for implementation given the fact that analogue sound broadcasting and digital sound broadcasting will co-exist for some time and does not require the immediate replacement of all analogue broadcasting equipment at the advent of opening markets for digital sound broadcasting.

7.6.2 Commercial Implementation Digital Sound Broadcasting

The successful commercial implementation of digital sound broadcasting will require the replacement of analogue receivers with receivers capable of receiving both analogue and digital sound broadcasts, for example, car radios and personal radio sets.

The receivers are to support both technologies to facilitate the seamless provision of broadcasting services whilst moving from one geographical area to another as well as between neighbouring countries that may be at different stages of implementation of digital sound broadcasting.

7.6.3 Socio-Economic Benefits of Digital Sound Broadcasting

The socio-economic benefits that can be derived from digital sound broadcasting are plentiful in that it provides for-

- i) implementation of universal access to information through provisioning of high-quality broadcasting service offering multiple content channels as well as information services via text and pictures;
- ii) ability to provide emergency and public service announcements;
- iii) provide businesses, large and small, access to multiple channels to advertise their products and services;
- iv) increase the sharing of information and support integration on national and regional levels;
- v) support employment creation through the production of content and information services to be distributed by broadcasters;
- vi) provide for development of education and community uplifting through skills development
- vii) support the implementation of e-services in respect of education, health and the public service;
- viii) support new business models ensuring the sustainability of broadcasters in a converged environment
- ix) more efficient use of radio frequency spectrum allows for the entry of more broadcasters into the market fostering wider access to information through innovative new services.

7.6.4 Consumer Awareness

Consumer awareness should target all stakeholders. The regulatory authority within member states will play a key role in engaging broadcasters to create awareness of the technical benefits to be derived from the implementation of digital sound broadcasting.

The broadcasters will engage with the public to market new opportunities for wealth creation and access to information presented by digital sound broadcasting to ensure market uptake of new technologies as it allows broadcasters to adapt their business models to remain relevant in the

converging environment between telecommunications and broadcasting promoting socio-economic development.

Consumer awareness campaigns will not only focus on the technological benefits, but will also help radio listeners to utilize the new services that will be provided by the broadcasters.

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ABOUT THIS REPORT

Development: The report was developed by an ATU Task Group on Broadcasting. At this time, this group was led by the following:

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Vice Chair	Ahmed EL-KARADAWY (Egypt representing North Africa)
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Validation: This report was validated by a validation forum that was held from 22 to 23 August 2022. The forum was led by the following bureau:

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