

**THE ROLE OF THE INTERNATIONAL TELECOMMUNICATIONS UNION
IN OUTER SPACE SPECTRUM MANAGEMENT WITH RESPECT TO
DEVELOPING NATIONS**

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ABSTRACT

“In an interconnected world where information and communication technologies lie at the heart of almost everything we do, the role played by ITU is more critical than ever. From promoting broadband roll-out, forging tomorrow’s technical standards, managing global spectrum and negotiating international frameworks for cyber security, to helping connect isolated schools and communities, or restoring vital communication links in the wake of natural disasters, ITU is truly committed to connecting the world.”¹

From the remarks made by the then Secretary General of ITU, one envisions the possibilities of a truly connected world and upholding of tenets prescribed in the Outer Space Treaty of 1967, which provides for all of outer space, including the Geostationary orbit, as the province of all mankind, to be used for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development.² On the backbone of ‘*connecting the world*’ is the scarce resource, spectrum, which is managed and allocated to states by the International Telecommunications Union (ITU). The demand for radio-based applications has been growing in line with the increasing mobility across the globe. Radio spectrum is a major global asset contributing substantial value to economies of states, whether big or small, and underlines critical aspects of their citizens’ lives. Radio communications is critical to areas such as air travel, emergency services, telecommunications, sound and television broadcasting, military defence, space research and other scientific activities.³

Spectrum plays a very critical role in the economic development of any society as it brings connectivity, it even plays a critical role in developing economies as it serves in bridging the existing “digital divide”. However, this precious commodity is a scarce resource, the available radio spectrum is limited.⁴ The rapidly changing environment of electronic communications, impressive technological progress, convergence and changing habits of

¹H, I, Touré. Collection of the basic texts of the International Telecommunication Union adopted by the Plenipotentiary Conference.

²Art 1. Outer Space Treaty .(1967)

³ITU Regulations. (2018).

⁴ T, Lamanauskas Spectrum Management and Frequencies Assignment for the New Technologies. (2011). Lithuania.

end-users' consumption is creating pressure for existent spectrum as well as its regulation and management. This has necessitated the need for managing a new, previously unused, international resource – the satellite spectrum/orbit., which is becoming increasingly crowded. At the same time, the increasing use of lower Earth orbits is further increasing the need for international coordination. ITU plays a crucial role in ensuring that operators' multimillion dollar satellite systems operate smoothly throughout their lifetimes, delivering services to billions of people without interfering with each other. ⁵

The space-faring states are demanding more spectrum as they increase activities in outer space due to technological advancements, however, at what cost to the non-space faring states. At the same time the ITU is burdened with the responsibility of trying to harmonise the use of spectrum bands across the globe between the space-faring and upcoming non-space faring states, mainly the developing countries. The objective of this research is to ascertain whether, given the rapid technological changes being experienced across the globe, the ITU is still sufficient in its current state, to adequately manage and regulate the allocation of spectrum to all states, maintaining the true spirit of the principle of 'province of all mankind'. Bearing in mind the ever increasing demands of advanced economies over the gradually increasing demands of developing economies and the concept of geostationary orbit being for the benefit of all countries irrespective of their degree of economic or scientific development.⁶

The ITU has no enforcement powers as it is not a law making body and this can become a challenge where other states or organisations are more powerful than others in the wake of a spectrum rush. The fundamental question then is should the ITU be more resourced and empowered to carry out its critical function of coordination and harmonisation of spectrum regimes; or should an entirely separate international authority with law making powers be established; or should the states be left to decide what each does with their own allocation and the effects of each proposed recommendation to the vital principles of 'sovereignty'; 'non-appropriation of outer space' and 'in the interests and benefit of all

⁵ ITU Plenipotentiary. Role In Managing Satellite And Orbit Spectrum Resources. (2014).

⁶ Art 1 of Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, (1967).

countries'. It is against this background that this thesis seeks to address the following question “***The role of the International Telecommunications Union in Outer Space Spectrum management with respect to developing nations***”.

The author will tackle this research through a quantitative lens, making use of the desktop methodology because of the nature of the research topic. A significant amount of reading will need to be done around the legal framework governing the ITU with regards to space technology. This thesis is mainly based on secondary data, retrieved from official documents, reports, news articles, academic papers and books. The research will take upon the characteristics of being critical to current legislative frameworks as well as the role of the ITU in the management and allocation of spectrum. It will be essential for the author to look at the historical legislature and how it has gradually progressed into what is currently obtaining. The thesis will take a critical approach in order to interrogate the relevance of the ITU in today's modern era in light of the provisions of the Outer Space Treaty and the various ITU regulations particularly the ITU Convention; ITU Constitution and the ITU Radio Regulations in spectrum management and allocation including the position of developing states.

CHAPTER 1

Space Law: An Overview

1.1 Introduction

The purpose of this Chapter is to give an overview of the law of outer space. The ITU, as the arm of the United Nations focusing primarily on technology that manipulates the Radio Frequency spectrum, is mandated to regulate all issues relating to outer space and technology. The uniqueness of Outer Space presents numerous challenges to anyone who seeks to interact with it at any level, let alone the legal framework that is supposed to govern and regulate it.⁷To that extent, the meaning of space law, the relevant treaties; the legal principles and the related resolutions adopted by the General Assembly shall be some of the issues discussed in this Chapter. The United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) is the forum for the development of international space law.

1.2 What is Space Law?

Although there is no fixed legal term for outer space, it should not be taken for granted that there is a clear understanding of outer space as well as outer space activities.⁸Dr. Stephan Hobe postulates that the fact that there is no set legal definition of outer space, is indicative of the fact that there is no natural boundary from where airspace ends and where outer space begins. However, this absence of a set definition or delimitation of outer space, has not stopped space law from evolving. Space law is generally defined as the regulatory framework that controls; governs and regulates the operations of human behaviours in outer space pertaining to space activities.⁹The formulation of outer space law commenced soon

⁷ United Nations. (2002).New York: UN.

⁸S.Hobe. Definition and Delimitation of Outer Space: Sixth ECSL Summer Course on Space Law and Policy (1997) 49.

⁹S.Hobe, The International Legal Order for Outer Space Activities: An Introduction, (1993).

after the launch of the first object into outer space by Russia.¹⁰ causing other states to be greatly concerned and became convinced that man's activities in outer space urgently needed to be regulated in order to preserve outer space from the terrestrial scenes of war and preventing super powers from launching military base stations in outer space.¹¹

Legal principles governing outer space have evolved over three phases, phase one being characterised by hard law (1956-1979); phase two being the soft law phase (1980-1992) and phase three being (1992 to current).¹²The first phase was the finalisation of five treaties through the United Nations Committee on the Peaceful Uses of Outer Space, in particular, its Legal sub-committee.¹³ between the early sixties and the late seventies.¹⁴The concluded treaties were the "Outer Space Treaty" of 1967, also referred to as OST.¹⁵; the "Rescue Agreement" of 1968.¹⁶; the "Liability Convention" of 1972.¹⁷; the "Registration Convention" of 1976.¹⁸ and the "Moon Agreement" of 1979.¹⁹ In the second phase of space law development the UN General Assembly adopted five Resolutions, in addition to the five treaties mentioned earlier. These were the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space.²⁰; Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting.²¹; Principles Relating to Remote Sensing of the Earth from Outer Space.²²; Principles Relevant to the Use of Nuclear Power Sources in Outer

¹⁰ Launch of first Artificial Satellite Sputnik I (1957).

¹¹T, Masson-Zwaan, Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War, (2008)3.

¹² S, Hobe, International Space Law in its First Half Century (1993).

¹³The United Nations Committee on Peaceful Uses of Outer Space (1959).

¹⁴T, Masson-Zwaan, Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War, (2008)3.

¹⁵Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, (1967). Including the Moon and Other Celestial Bodies.

¹⁶Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, (1968).

¹⁷Convention on International Liability for Damage Caused by Space Objects, (1972).

¹⁸Convention on Registration of Objects Launched into Outer Space, (1976).

¹⁹Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, (1984).

²⁰Adopted by the General Assembly in its Resolution 1962 (XVIII) of 13 December (1963).

²¹Adopted by the General Assembly in its resolution 37/92 of 10 December (1982).

²²Adopted by the General Assembly in its resolution 41/65 of 3 December (1986).

Space.²³; Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.²⁴ The third phase involved the Related Resolutions adopted by the United Nations General Assembly and these included the resolution for International Cooperation in the Peaceful Uses of Outer Space.²⁵; Some Aspects Concerning the Use of the Geostationary Orbit.²⁶; Application of the Concept of the “launching State”.²⁷; Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects.²⁸; Recommendations on National Legislation relevant to the Peaceful Exploration and Use of Outer Space.²⁹

1.3 Phase One: United Nations General Assembly Treaties (1956-1979)

The five treaties mentioned above set the scene for the activities of man in outer space and have generally been ratified by the majority of states.³⁰ except for the Moon Agreement.³¹, which has not been very successful in its ratification by states mainly due to Article 11 (d), which provides for “*an equitable sharing by all States in the benefit derived from those resources, whereby the interests and needs of the developing countries and efforts of those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration*”. These five treaties address issues of non-appropriation of outer space by one state, arms control, liability for damage by space objects, the rescue of spacecraft and astronauts, the avoidance of harmful activities in the space environment, the registration of space objects, among other issues.³²

²³Adopted by the General Assembly in its resolution 47/68 of 14 December (1992).

²⁴Adopted by the General Assembly in its resolution 51/122 of 13 December 1996.

²⁵Resolution 1721 A and B (XVI) of 20 December (1961).

²⁶Paragraph 4 of resolution 55/122 of 8 December (2000).

²⁷Resolution 59/115 of 10 December (2004).

²⁸Resolution 62/101 of 17 December (2007).

²⁹Resolution 68/74 of 11 December (2013).

³⁰T, Masson-Zwaan, Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War, (2008)3.

³¹The Moon Agreement of (1979).

³²M, S, Islam. The Sustainable Use of Outer Space: Complications and Legal Challenges to the Peaceful Uses and Benefit of Humankind. Beijing Law Review, (2018) 9, 235-254.

The Outer Space Treaty (OST) is considered the Constitution for outer space, the ‘Magna Charta’ of outer space regulations as it is the basic instrument governing the activities in outer space.³³ This view is supported by other scholars.³⁴ as they have observed that although the OST was written more than fifty decades ago, in an area of specialisation that is characterised by rapid technological advancements that could not possibly have been foreseen in the sixties, its provisions are still relevant today, and are astoundingly broad enough to accommodate the most incredible range of space activities developing in the present age, for example the foresight that private entities would carry out space activities.³⁵

The OST refers to outer space as a ‘province of all mankind’, proffering the concepts of equitable access and sharing of benefits derived therefrom.³⁶ The principle of ‘province of mankind’ was explicitly first recognised in the first resolution of the United Nations General Assembly in 1958.³⁷, which placed great emphasis on principles of “*the common interest of mankind*”, “*common aim that outer space should be used for peaceful purposes only*”, “*benefit of mankind*”, “*strengthening of friendly relations among people*”.³⁸ Among other pertinent principles. Article 1 paragraph 1 of the OST provides that “*the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.*” From the wording of the provision it would appear that there is an inherent right to free and equitable access to outer space for exploration and use for all states.

Further, “*for the benefit and in the interest of all countries irrespective of the degree of economic or scientific development*” means all states shall be entitled to the

³³S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).

³⁴T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008)3.

³⁵T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008)3.

³⁶S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).

³⁷1348 (XII) of 13 December (1958).

³⁸UN General Assembly Resolution 1348 (XII) of 13 December (1958).

benefit of space exploration and use irrespective of that State's degree of development or contribution towards that exploration.³⁹ The legal consequences of the binding character of the "common benefit" clause is that the Outer Space Treaty aims to prohibit any national monopolisation and appropriation of outer space, outer space activities and the benefits derived therefrom.⁴⁰ This effectively means that space activities cannot be pursued to the sole advantage of the super powers or only for those countries which are capable of doing so. These economically advanced States are expected to also keep in mind the interests of the less developed countries because outer space and the celestial bodies do not belong to them, but as the principle says, are vested to mankind as a trustee.⁴¹ According to Prof. Hobe⁴², in principle, the common province concept also asks for an effective participation and even promotion of developing countries, but the Outer Space Treaty itself is very reluctant in deriving concrete consequences from the concept, and the writer agrees with Prof. Hobe on this observation.

The other treaties more or less expagorate on principles already contained in the Outer Space Treaty.⁴³ and at this point only the significant features of Space law as enshrined in these Treaties will be highlighted. It is important to note firstly, the absence of "territorial sovereignty" in outer space compared to airspace above the territory of a State and the actual geographical territory of a state. An important 'collateral' of the freedom of use, as stated earlier, is that it must be carried out "for the benefit and in the interests of all countries", and shall be the "province of all mankind".⁴⁴ Remarkably, although airspace and outer space are characterised by diametrically opposed legal regimes, that is sovereignty in air law and freedom in space law, there is no actual precise boundary between airspace and outer space. The debate about outer space and air space delimitation has been ongoing within

³⁹S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).

⁴⁰S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).

⁴¹S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).

⁴²S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).

⁴³T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008)4.

⁴⁴S.Hobe, *Outer Space as Res Communis*, *Space Law Reader*, Institute of Air and Space Law, University of Cologne, Germany.(1997).

the UN for over fifty decades with no clear solution readily available as yet, however, it is anticipated that with the rise of space tourism, efforts may be accelerated to set a clear demarcation between the two spaces.⁴⁵

Another important feature of the other four treaties in this era was the fact that they enshrined the concept that all activities in outer space must be carried out in accordance with international law, including the UN Charter, in the interest of maintaining international peace and security and promoting international co-operation and understanding.⁴⁶ The treaties also cover issues of concern regarding responsibility and liability and provisions have been put forward in the treaties to show state liability, for instance, a state is accountable for 'national activities' in space, and a launching state is liable for damage caused by its space object to another state or its natural or juridical persons, whether that damage occurs in space, in the air or on the ground.⁴⁷ It must be noted that space law only has a system of state liability, i.e. a private entity or a natural person cannot claim directly under the Treaties but must be represented by its state.⁴⁸ An interesting observation includes the fact that all five treaties have clauses that provide for amendments to be made to the treaties after a specific period of time, for instance, Article XV of the OST; Article 8 of the Rescue Agreement; Article XXV of the Liability Convention; Article 9 of the Registration Convention and Article 18 of the Moon Agreement. However, it should be noted that to date no amendments have been made to the treaties.⁴⁹

1.4 Phase Two: UN General Assembly Resolutions (1980-1992)

In the 1980s, a different means of international law making for outer space was applied through the adoption of the United Nations General Assembly Resolutions

⁴⁵T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008).4.

⁴⁶T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008).4.

⁴⁷ Convention on International Liability for Damage Caused by Space Objects (1972).

⁴⁸T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008).4.

⁴⁹S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).5.

mentioned in paragraph 1.2 above. There were certain issues that had arisen during this era that needed address through guidelines for the states, including the matter of broadcasting signals overlap and the possibility of blocking incoming satellite signals of other broadcasting entities giving rise to the ‘*free flow of information*’ versus ‘*prior consent*’ discussion during that period.⁵⁰ This gave rise to the adoption of the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting. However, given the technological developments in telecommunications which are of a highly globalised nature, this matter seems to be a core issue today.⁵¹ It should also be noted that the United Nations General Assembly Resolutions do not have the same binding force as a treaty, however, the fact that most of them were adopted by unanimity and have given rise to consistent state practice and *opinio iuris*, satisfying the two basic requirements for customary international law, means that at least some of the principles contained therein have become binding at international law as ‘international custom’.⁵²

1.5 Phase 3: Related Resolutions adopted by the United Nations General Assembly (1992 to Date).

This third phase in the evolution of space law is characterised by the redefinition of major notions of international space law through the adoption of related resolutions by the United Nations General Assembly mentioned in paragraph 1.2 above. It was during this period that some of the developing countries sought the re-phrasing of Article I paragraph 1 of the OST and it was tabled as an agenda item at the UN Committee on the Peaceful Uses of Outer Space as follows “*Consideration of the legal aspects related to the application of the principle that the exploration and utilisation of outer space should be carried out for the benefit and in the interest of all states, taking into particular account the needs of developing countries*”.⁵³ The Committee was seized with the task of making tangible recommendations of how

⁵⁰ S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993)5.

⁵¹ S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993)5.

⁵² T, Masson-Zwaan, *Legal Principles Governing the Exploration and Use of Outer Space in Times of Peace and War*, (2008)3.

⁵³ It was an agenda item in 1988.

states should fulfil their obligation to international cooperation as provided for in Article I of the OST.⁵⁴ The outcome was the 1996 Declaration on Space Benefits⁵⁵ which was totally contrary to what the developing countries had been seeking as the declaration postulates almost total freedom of states to choose how to implement the cooperation obligation as stipulated in Article I paragraph 1 of the OST.⁵⁶

It is also in this third phase that the Legal Subcommittee of the UN Committee on the Peaceful Uses of Outer Space acknowledged the challenges being encountered as regards making progress in international space legislation, that it proposed that member states start formulating their own national space laws due to technological advancements and the increase in private space activities as a result of the growing commercialisation of space activities.⁵⁷ To date quite a number of countries have enacted space laws at national level in line with Article VI of the OST which obligates states to authorise and supervise private space activities.

Given these dynamics, it is imperative that the United Nations General Assembly puts in place more authoritative interpretations of the key notions of international space law.⁵⁸ Otherwise these will be eclipsed by the national space laws of states, contrary to the spirit of the OST and customary international space law. It is very critical for the national laws to be established within the international space law framework. Some scholarly writers⁵⁹ have stated that the two major components in ensuring the sustainable use of outer space and the equitable access for developing countries to the benefits obtained from the exploration of outer space, are international cooperation done in good faith particularly in the development and implementation of space laws and the UN General Assembly has reaffirmed this

⁵⁴S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).5.

⁵⁵United Nations General Assembly Resolution 34/121 of 13 December (1996).

⁵⁶S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993)5

⁵⁷S.Hobe, *The International Legal Order for Outer Space Activities: An Introduction*, (1993).5

⁵⁸M, S, Islam. *The Sustainable Use of Outer Space: Complications and Legal Challenges to the Peaceful Uses and Benefit of Humankind*. *Beijing Law Review*, (2018) 9, 235-254.

⁵⁹ M, S, Islam. *The Sustainable Use of Outer Space: Complications and Legal Challenges to the Peaceful Uses and Benefit of Humankind*. *Beijing Law Review*, (2018) 9, 235-254.

position by their resolution of 2016, “*Reaffirming the importance of international cooperation in the exploration and peaceful uses of outer space*”.⁶⁰

1.6 Customary Space Law

Customary international law refers to international obligations arising from established international practices, as opposed to obligations arising from formal written conventions and treaties.⁶¹ Article 38 paragraph 1 of the Statute of the International Court of Justice defines customary international law as an expression of common use recognised as law. It postulates that two key elements are required for a practice to qualify as a customary law and these are *state practice* and *opinion juris*.⁶² There has been a general consensus that certain principles contained in the current international space legislation, are already part of the customary international space laws, for example, the non-appropriation of outer space and other celestial bodies; the freedom for exploration and use; principle of international responsibility and liability for space activities; the principle of jurisdiction and control.⁶³ It should be noted that these principles are binding to all states, including those that have not ratified any of the related conventions or treaties, thus making them customary international space law.

1.7 International Telecommunications Law

Given the focus of this mini-dissertation, it would be important to zero in on International law of Telecommunications. It should be noted that the international legal framework for outer space activities is based on the Convention of the International Telecommunications Union and among the major tasks of the Union, is the assignment of spectrum (frequencies) and slots in the geostationary satellite orbit. The Radio Frequency Spectrum encompasses the entire spectrum of electromagnetic frequencies used for communication. Radio frequency (RF) refers to the rate of oscillation of electromagnetic radio waves in the range of 3 kHz to 300

⁶⁰UNOOSA. Space Law Treaties and Principles (2016).

⁶¹Wex Website- Cornell Law School, CIVICS International Law wex Definitions.

⁶²Art 38 of the International Court of Justice. (1945).

⁶³S.Hobe, The International Legal Order for Outer Space Activities: An Introduction, (1993).

GHz, as well as the alternating currents carrying the radio signals. Radio frequency is being used in a lot of fields, but in the context of information and communications technology it refers to the frequency band at which wireless telecommunications signals are being transmitted and broadcast.⁶⁴ The frequency band is being divided into different parts, which are then assigned to different technology industries.⁶⁵ Radio Frequency Spectrum Management is the analytical, procedural, and policy approach to planning and managing the use of the electromagnetic spectrum⁶⁶. The GSO and the frequency spectrum associated with it are regarded as an integral part of the outer space and therefore are governed by the provisions of the Outer Space Treaty including the freedom of use and non-appropriation principles enshrined therein.⁶⁷

Outer space and the moon have been acknowledged as regions that are to be discovered for the value of mankind and this acknowledgement has been further clarified to mean that there must be equal opportunity accorded to all nations for them to explore and enjoy the right to explore this resource.⁶⁸ However, it is at this point that challenge is realised. The natural limitation is that the GSO is approximately 36,000km above the equator in a three dimensional circle and only a limited portion is useful to a country as the satellite must be positioned specifically to cover the intended territory, therefore, only certain portions of the GSO can be used effectively by a particular country.⁶⁹ It can be noted that this is problematic for developing countries since developed countries have already engaged the most tactical positions.

These treaties and resolutions discussed above constitute the principal body of international space law and will certainly continue to provide throughout the twenty-first century, an operative framework for the further development and increasingly

⁶⁴ Anon. Radio Frequency. Retrieved from Technopedia. (2014).

⁶⁵ The Free Encyclopedia (2018).

⁶⁶ Mitre. Radio Frequency Spectrum Management. Retrieved from Mitre. (2018).

⁶⁷ Mitre. Radio Frequency Spectrum Management. Retrieved from Mitre. (2018)

⁶⁸ S.Hobe, The International Legal Order for Outer Space Activities: An Introduction, (1993).

⁶⁹ S.Hobe, The International Legal Order for Outer Space Activities: An Introduction, (1993).

complex tasks aimed at the exploration and use of outer space for peaceful purposes.⁷⁰ In the wake of discussions relating to outer space property rights and balancing that with the notion of outer space being a province of all mankind and further managing the role of non-spacefaring nations to benefit from the use and exploration of outer space. There is urgent need for appropriate regulation for the emerging private players in outer space both at national level as well as at international level.⁷¹

⁷⁰D, P. Simonetta, Director United Nations Office for Outer Space Affairs: International Space Law: United Nations Instruments. (2019).

⁷¹M, S, Islam. The Sustainable Use of Outer Space: Complications and Legal Challenges to the Peaceful Uses and Benefit of Humankind. Beijing Law Review, (2018) 9, 235-254.

CHAPTER 2

Functions of ITU in relation to Spectrum Allocation and Management

2.1 The International Telecommunications Union (ITU)

The ITU was formed in 1865 in Paris at the International Telegraph Convention and it became a United Nations specialised agency in 1947.⁷² Hence, the International Telecommunication Union (ITU) is an agent of the United Nations (UN) whose purpose is to coordinate telecommunication operations and services throughout the world.⁷³ ITU consist of three sectors which include Radio communication (ITU-R) which ensures optimal, fair and rational use of the radio frequency (RF) spectrum.⁷⁴ ITU's Radio communication Sector (ITU-R) organizes this growing array of radio communication services, as well as the international management of the radio-frequency spectrum and satellite orbits.⁷⁵

2.2 Legal Instruments that Established the ITU

Until the mid-19th century, single inter-governmental agreements were cast-off to control several characteristics in combination with telecommunication, the groundwork of contemporary telecommunication.⁷⁶ Out of the need to discover and raise international standard and to offer required practical aid, the International Telegraphic Union the forerunner of ITU was created as an expert organisation in 1865.⁷⁷ In 1932 it changed its name to the current one and was later made an agency under the UN umbrella in 1947.⁷⁸, holding its specific personality until today.

⁷²C, Malamud. Exploring the Internet: A Technical Travelogue. (1992). 384.

⁷³International Telecommunication Union standardization Sector of ITU. World Telecommunication Standardization Assembly Dubai, 20-29 (2012).

⁷⁴ ITU-R. Recommendation ITU-R F.1520-3(2011).

⁷⁵J, A, Stine and D, L, Portigal. An Introduction to Spectrum Management. (2004).

⁷⁶J, Hinrlcher. The Law Making of the International Telecommunication Union (ITU)-Providing a New Source of International Law? (2004).

⁷⁷ITU Report. ITU's 150 Years of Innovation. (2015).

⁷⁸ITU Report. ITU's 150 Years of Innovation. (2015).

Article 4, the International Telecommunication Union Constitution lays down the instruments of the ITU.⁷⁹ as follows;

- the Constitution of the International Telecommunication Union
- the Convention of the International Telecommunication Union and
- the Administrative Regulations.

The requirements of the Constitution and the Convention are more accompanied by those of the Administrative Regulations.⁸⁰ This Administrative Regulations include the;

- ITU International Telecommunication Regulations (ITR), and
- ITU Radio Regulations (RR) and are binding on all ITU member states as well.⁸¹

The ITU is established on fixed treaties since 1865 that have mandatory power in international law, the ITU Constitution and Convention, the Radio Regulations, and the International Telecommunication Regulations as well as resolutions, recommendations and other non-binding instruments adopted by its conferences.⁸² Through its survival the simple ITU document was of the several materializations of a single instrument, the International Telecommunication Convention. Now the basic documentation has been divided into a Constitution (CS) and a Convention (CV).⁸³ The Constitution encompasses constitutional provisions less likely to be modified by succeeding presiding conferences.⁸⁴ ITU has operated adequately in other of the UN family of Agencies, remarkably in the Universal Postal Union, permitting additional organised and logical conversation of change at conferences as element and principle are kept separate.⁸⁵

⁷⁹Review of Management and Administration in The International Telecommunication Union (ITU). (2016)1.

⁸⁰Constitution and Convention of the International Telecommunication Union (1992).

⁸¹WSIS. ITU. Administrative Regulations Collection. (2019).

⁸²ITU Report. Collection of the basic texts adopted by the Plenipotentiary Conference. (2015).

⁸³Internet Society Background Paper on ITU Plenipotentiary (2018).

⁸⁴F, Lyall, Communications Regulation: The Role of the International Telecommunication Union. Journal of Information Law and Technology. (1997) 3.

⁸⁵ F, Lyall, Communications Regulation: The Role of the International Telecommunication Union. Journal of Information Law and Technology. (1997) 3.

2.3 Scope of powers, Rights and Duties of ITU

The international legal framework for outer space activities is based on the Convention of the International Telecommunication Union. One of the major tasks of this international organisation is the assignment of frequencies and slots in the geostationary satellite orbit.⁸⁶ This is a critical task, as only a limited number of frequencies and slots in the geostationary satellite orbit is available. The International Telecommunications union is responsible for the international regulation of telecommunications.⁸⁷ ITU was made in the 19th century and one of its role over time has been to guarantee that radio spectrum users do not impede each other in dangerous means.⁸⁸ The ITU was also formed for standardisation with regards to usage and manipulation of technologies by member states.⁸⁹ It can be noted that this manipulation and standardisation occurs in the radio frequency spectrum. Manipulation of this resource requires financial, intellectual as well as human resources.⁹⁰ This is where developing countries are found wanting as the developed countries or multinational corporates then capitalise on this area of weakness. Completely, the ITU in overall is not a weak or dull organisation.⁹¹ Article 1 of the ITU Constitution postulates that the Union strives to uphold and spread collaboration amongst member states for the upgrading and coherent use of telecommunications of all kinds.⁹²

It is the responsibility of the ITU to regulate the telecommunications technologies, services and operations. The ITU distributes regulations appropriate to automated communication and dissemination technology of all types comprising radio, television, satellite, telephone and internet.⁹³ ITU is authorised to assign radio

⁸⁶Spectrum and the paradox of the ITU. Research ICT. Africa. (2014).

⁸⁷J, J. Moylan. The Role of the International Telecommunications Union for the Promotion of Peace through Communication Satellites. Case Western Reserve Journal of International Law. (1971) Vol 4.1.

⁸⁸Spectrum and the paradox of the ITU. Research ICT. Africa. (2014).

⁸⁹Spectrum and the paradox of the ITU. Research ICT. Africa. (2014).

⁹⁰J, Hinlcher. The Law-Making of the International Telecommunication Union (ITU) Providing a New Source of International Law. (2004).

⁹¹J, Hinlcher. The Law-Making of the International Telecommunication Union (ITU) Providing a New Source of International Law. (2004).

⁹²Constitution of the International telecommunication Union. (2002).

⁹³M, Rouse. Definition of International Telecommunication Union. (2010).

frequency bands to different services and organizing and registering frequency assignments and satellite orbital positions so as to avoid harmful interference between different radio stations.⁹⁴ ITU also support and offer technical assistance to developing countries in the field of telecommunications.⁹⁵ The Union therefore endorses the development of telecommunications infrastructure and services. It is the duty of ITU to raise international assistance and harmony in the provision of technical aid to the developing countries.⁹⁶ It is the duty of ITU to promote and facilitate peaceful relations and to harmonize the actions of Member States towards a constructive cooperation and partnership.⁹⁷ This implies that the ITU acts as a catalytic agent in promoting team work among member states of the world in order to encourage their participation in a global communication satellite system.⁹⁸

The ITU is also responsible for conducting work parties, study groups, and meetings to address current and future issues and resolve disputes.⁹⁹ ITU is mandated to embark on studies, make protocols, embrace resolutions, formulate recommendations and opinions, accumulate and distribute information concerning telecommunication matters.¹⁰⁰ It is therefore the duty of the Union to help in the change and coordination of all-inclusive technical principles. Sands (2001) states that ITU Telecom organizes major events for the world's ICT community. ITU has the right to hold an exhibition and forum known as the Global TELECOM every four years. ITU regularly monitors the digital divide each year, including the gender digital divide, to assess and track who has access to Information and Communication Technologies (ICTs) and telecommunication networks with a view to “connecting the world”, the mission statement of ITU. ITU has the responsibility to

⁹⁴E, D. Alholz. WARC 1985: The Effects of an Equitable Access Regime on Satellite Telecommunications Services. (1986). Issue 1.

⁹⁵ Constitution of the International Telecommunication Union. (2002).

⁹⁶ Constitution of the International Telecommunication Union. (2002).

⁹⁷Reinsch. The Conventions on the Privileges and Immunities of the United Nations. Oxford University press. (2016).

⁹⁸ J, J. Moylan. The Role of the International Telecommunications Union for the Promotion of Peace through Communication Satellites. Case Western Reserve Journal of International Law. (1971) Vol 4.1.

⁹⁹ The ITU World Telecommunication/ICT Development Report (2006). Measuring ICT for Social and Economic Development.

¹⁰⁰Constitution of the International Telecommunication Union. (2002).

monitor environmental sustainability and climate change.¹⁰¹ Information communication technologies such as mobile phones or the Internet, perform a crucial role in solving the major challenges associated with climate change and sustainable development.¹⁰²

2.4 Limitations of the regulatory powers of ITU

There are several limitations to the ITU's regulatory powers and in this section the pertinent ones shall be discussed. Apart from the issue of dealing with spectrum as a limited resource posing a challenge for the ITU, there is also the issue of enforcement powers of the ITU. Observation of State practice in recent years clearly indicates that there is problem of enforcement of violations of international agreements directly concerned with radio usage. To date, violations of international agreements have been committed by several countries, especially in space radio activities; arguably, these actions are based upon national security interests and necessity.¹⁰³ The current system of legal regulation of international radio spectrum is ineffective with regard to sanctioning violations.¹⁰⁴ Urs Gasser the executive director for Internet and Society at Harvard University is quoted as saying that "*it is not only about constraining behaviour, but regulation, especially in this area, can have a very important enabling and supporting function, particularly when we try to foster the Sustainable Development Goals.*"¹⁰⁵ The old ways of regulatory procedures and solutions are no longer sufficient if we take into consideration the advancement of technology versus population group and sustainability. The role of the regulator is changing and according to Dalsie Green Baniala, there is a need for new fit for purpose regulatory solutions that expand into new areas.¹⁰⁶

¹⁰¹The World Bank Group. Environment Strategy Analytical Background Papers. (2010).

¹⁰²H, Creech. ICTs for Climate Change adaptation in Africa.eTransform Africa. (2012).

¹⁰³N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

¹⁰⁴N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

¹⁰⁵U, Gasser, Internet and Society at Harvard University. (2019).

¹⁰⁶D, G, Baniala, Telecommunications and Radio communications, Vanuatu. (2017).

The ineffectiveness of the ITU's legal and regulatory process becomes more evident when one reviews Article 3 of the Radio Regulations.¹⁰⁷ which define the general rules for the assignment and use of frequencies. Section 3 of Article 3 states that "*Administration of the members and associate members of the Union, shall not assign to a station any frequency in derogation of either the table of frequency allocations given in this chapter or the other provisions of these regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provision of the convention and these regulations.*" "Harmful interference" is defined in Articles 1-93.¹⁰⁸ as "*Any emission, radiation or induction which endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radio communication service operating in accordance with these regulations.*"

These radio regulations are not, therefore, intended to prevent the sharing of duly allocated, assigned and registered frequencies by other stations which do not cause harmful interference.¹⁰⁹ And even where alleged harmful interference has occurred, the matter is to be settled primarily between the two States concerned. If the matter cannot be settled by direct agreement between the States concerned.¹¹⁰ it may be reported to the IFRB.¹¹¹ whose powers, however, consist merely in investigating the dispute and issuing "*a report containing its findings and recommendations for the solution of the problem.*"¹¹² In the event that the affected States disagree with the findings and recommendations of the Board, Article 9, Section 7, paragraph 46, then states that "*In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these*

¹⁰⁷ Radio Regulations (RR) No31 of the ITU constitution.

¹⁰⁸ Radio Regulations Annexed to ITU Convention.

¹⁰⁹ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

¹¹⁰ Radio Regulations (RR) No31 of the ITU constitution.

¹¹¹ International Frequency Registration Board (IFRB).

¹¹² Radio Regulations (RR) No31 of the ITU constitution.

administrations within a period of thirty days, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study". This effectively means that the matter remains unsolved due to the absence of the enforcement mechanism of the ITU where they have noted violations.

It should be noted that Annex 3 of the ITU Convention allows, in principle, for arbitration, however, the arbitral procedure can be affected by the unwillingness of the other party to appoint an arbitrator.¹¹³ It should also be noted that neither Article 28 of the ITU Convention nor Annex 3 rules out the possibility of submitting disputes directly to the International Court of Justice. The ITU itself could request an advisory opinion from the Court, with the proviso of informing the ECOSOC of the request.¹¹⁴ Although dispute resolution processes are provided for in the ITU Convention and the Radio Regulations, it is necessary to note that these processes have not been utilized by the States in the international control of radio spectrum. In disputes in which a country might conceivably claim a right as against another country, under the terms of the Regulations, there has been no resort to arbitrations or juridical process.¹¹⁵ By and large, settlements have been affected practically and technically and the reservation that members retain their entire freedom with regard to military radio installations of their army, naval and air forces always seem to be upheld and maintained.¹¹⁶ The ITU imposes no sanctions for violations in the use of radio spectrum in outer space. The writer is of the opinion that clear absence of sanctions or consequences for inappropriate behavior by member States in the use of radios renders the dispute resolution procedures, as provided for in the ITU Convention and Radio Regulations quite ineffective.

¹¹³N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

¹¹⁴ Art 7 (4). Of ITU (1947).

¹¹⁵N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

¹¹⁶ITU Constitution. (1947).

A case in point is the Tongasat Case.¹¹⁷ In 1990 the Tongan Government filed for 16 GSO positions with the ITU, ultimately acquiring only 6 the following year, without a specific and realistic plan of launching its own satellites.¹¹⁸ In fact, the Tongan Government had no intention of actually launching satellites into orbit. Instead, Tongasat, a satellite company set up by an American businessman specifically to handle Tonga's satellite positions, proceeded to rent an allotment of slots to Unicorn, a Colorado-based company, and afterwards auctioned off its remaining slots for \$2 million per year.¹¹⁹ Tonga's actions led to immediate reactions from other states and satellite operators.¹²⁰

INTELSAT claimed that Tongasat's actions amounted to financial speculation in the GSO, which is in breach of the ITU Radio Regulations.¹²¹ Colombia claimed that Tongasat's practice amounted to laying claim on orbital resources, which is in violation of the fundamental principle of equitable access to orbits and frequencies.¹²² What is interesting to observe is that Tongasat never denied its plans to lease or sell its slots in the future. Rimsat Ltd., which leased a slot from Tongasat, accused Colombia of acting in an anticompetitive manner.¹²³ There were even accusations that Indonesia attempted to interfere with the signal of one satellite placed in a leased Tongasat slot, although Indonesia denied such accusations.¹²⁴ The issue was raised at the WRC-95.¹²⁵ However, the only action

¹¹⁷ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹¹⁸ A, V, Fossen, Globalization, Stateless Capitalism, and the International Political Economy of Tonga's Satellite Venture, 22 *Pacific Studies*, no.2 (1999), 2.

¹¹⁹ J, C. Thompson, Space for Rent: The International Telecommunications Union, Space Law and Orbit/Spectrum Leasing, 62 *J. Air L. & Commerce* (1996), 281.

¹²⁰ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹²¹ J, C. Thompson, Space for Rent: The International Telecommunications Union, Space Law and Orbit/Spectrum Leasing, 62 *J. Air L. & Commerce* (1996), 281.

¹²² Art 4.8. ITU Radio Regulations, (2016).

¹²³ J, C. Thompson, Space for Rent: The International Telecommunications Union, Space Law and Orbit/Spectrum Leasing, 62 *J. Air L. & Commerce* (1996), 281.

¹²⁴ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹²⁵ World Radio Communication Conferences (WRC) are held every three to four years. During these conferences, the ITU Member States review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits. These revisions are made on the basis of an ITU Council determined agenda, which takes into account recommendations made by previous WRCs. See Radio Communication Sector (ITU-R).

taken by the ITU was to approve a plan whereby the ITU staff reviewed the existing procedures and reported on slot allocations by 1997.¹²⁶ To this day there are no reports of Tongasat incurring any repercussions for its practices. In conclusion, Tongasat managed to use the system to its own advantage, in blatant violation of the principles governing exploration and use of outer space.¹²⁷

Tongasat's action was not explicitly against the relevant provisions of the RR, but it was widely considered against the spirit of international space law, particularly the OST.¹²⁸ and the ITU Convention and Constitution.¹²⁹ Therefore, it can be concluded that this developing state proved that the spirit of the ITU could be circumvented by strictly following the procedures it had set out.¹³⁰ One then questions the overall effectiveness of the ITU in the management and allocation of spectrum for the benefit of all mankind in the absence of enforcement mechanisms.

In addition to lack of sanctions for violations by member States, there are other reasons that oblige one to conclude that the present system utilized by ITU to manage spectrum allocation and management is either outdated or in need of reorganization. This view is supported by Nandasiri Jasentuliyana, when he states that the incorporation of radio-communication services into the Geneva revisions of the Radio Regulations placed the space telecommunication services automatically within the existing scheme of spectrum management applied by the ITU.¹³¹ It appears that while there have been several complete revisions of the law-making treaties of the ITU in the past several decades, the permanent organic structures of the Union have remained unchanged through these years.¹³²

¹²⁶ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹²⁷ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹²⁸ Articles I and II of the Outer Space Treaty. (1967).

¹²⁹ When Tonga filed for GSO slots with the ITU, the 1982 ITU Convention (Nairobi) was effective, which was superseded by the 1994 ITU Constitution (Kyoto).

¹³⁰ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018)

¹³¹ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

¹³² N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

Further, Radio-communication services and frequency allocations for States are negotiated within the framework of ITU Administrative Radio Conferences which are held at set intervals of four years. The services and frequency allocation plans so negotiated are then inserted in the ITU Radio Regulations which in turn are forwarded to each member of the Union for approval or ratification, a practice consuming additional years. Actual assignment to radio-communication stations of specific frequencies within approved ITU allocation remains the exclusive prerogative of each signatory. At the times revised Radio Regulations are negotiated, each signatory is free to append to them an array of conditions or reservations which it unilaterally declares and imposes. Even the simplest type of amendment the Radio Regulations, which, Nandasiri Jasentuliyana has termed 'a complex of detail', can only be effected through the cumbersome treaty-making process of convening a full-blown administrative radio conference and waiting through the years to collect signatures on documents. Nandasiri further postulates that it is clear that the cardinal problems currently existing and looming for the foreseeable future, which involve the rational use of the radio frequency spectrum, can no longer be solved by the expedient means available in the years past of simply inserting designations for new space radio communication services with frequency allocations for them into the ITU Radio Regulations.¹³³

Increased demand due to rapid technological advancements, spectrum scarcity, recognition of the high economic value of spectrum, and the important changes taking place due to the need for international agreements on harmonized allocations, are sufficient reasons to warrant review of the ITU's role in the management of spectrum allocations. Particularly in light of the needs also arising from the developing economies. The harmonisation of spectrum use has clearly become an ongoing challenge for the ITU and the question is what the best way

¹³³ N, Katzeribach, Science Astronautics, 87th Cong., 1st Sess (1961). 716-720.

forward in addressing this issue is. The ITU hardly ever leaves out into the fame of public consideration yet it compacts with importance issues.¹³⁴

Financially, activities of ITU are sponsored from a free optimal scheme from member states who wish to make a contribution.¹³⁵ This is so that member states do not partake equal rights, especially the right to vote.¹³⁶ The fees paid by companions are segments of the worth of a part member, reproducing their extra incomplete rights to partake in ITU events.¹³⁷ In adding to membership fees, the ITU originates important incomes from the transaction of publications and other cost recovery accomplishments.¹³⁸

The governing powers of ITU cannot avoid the Kessler syndrome.¹³⁹ The Kessler Syndrome is well-defined as a case where two crashing matters in space produce more remains that then crashes with other items, constructing even more shrapnel and disorder until the whole of LEO is an treacherous collection of fantastic rapid stuff.¹⁴⁰ The regulatory powers of ITU are not able to prevent this syndrome in the outer space.¹⁴¹ There is no rejecting of the fact that space debris is speedily accumulative and intimidates the workable use of space by all. The suggestions of amplified debris in space will be more severe for those countries, like the United States, that heavily depend upon space for their economic and strategic purposes.¹⁴²

¹³⁴ J, Hinrlcher. The Law-Making of the International Telecommunication Union (ITU) Providing a New Source of International Law. (2004).

¹³⁵ ITU (2003). Collection of the Basic Texts of the International Telecommunication Union adopted by the Plenipotentiary Conference.

¹³⁶ ITU. World Information Society Report (2006).

¹³⁷ ITU. World Information Society Report (2006).

¹³⁸ ITU. Collection of the Basic Texts of the International Telecommunication Union adopted by the Plenipotentiary Conference.(2004).

¹³⁹ K, Jarl. Handbook on amateur and amateur satellite services. Radio communication Bureau. (2014).

¹⁴⁰ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁴¹ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁴² B, L. Triezenberg. Dissertation Detering Space War an Exploratory Analysis Incorporating Prospect Theory into a Game Theoretic Model of Space Warfare. (2017).

The ITU is not able to control objects they have been launched into outer space as per United Nations Outer Space Treaty of 1967.¹⁴³ The regulatory powers lack incentive to review underused spectrum or orbital position. The internal organization of the ITU has not adapted to its space age problems. Its formal control measures for regulation are, at best, incomplete.¹⁴⁴ The ITU is unwilling to use even its minimum enforcement powers against a nation. Further, the Union obeys an outdated corresponding voting system which basically causes disparity to broad-minded ruling of these new, highly cultured communications systems. The ITU has lost a great deal of its effectiveness and credibility in the international telecommunications arena. It remains to be seen if the ITU can adapt itself organizationally to cope with this latest mode of international telecommunication.

¹⁴³D, MacLean. "Sovereign Right and the Dynamics of Power in the ITU: Lessons in the Quest for Inclusive Global Governance". In Drake, W. and Wilson, E. (Eds.), *Governing Global Electronic Networks*. Cambridge, MA: MIT Press. (2017).

¹⁴⁴J, J. Moylan. The Role of the International Telecommunications Union for the Promotion of Peace through Communication Satellites. *Case Western Reserve Journal of International Law*. (1971) Vol 4.1.

CHAPTER 3

ITU Space Regulation: Access to and the Use of Radio Frequencies at National Level

3.1 Brief Overview

Radio Frequency regulation at national level is fundamentally concerned with aligning the various interests of frequency users within a particular state ensuring efficient and interference free use of the limited resource.¹⁴⁵ As radio frequencies are a limited resource, efficient use of this resource is indispensable for the functioning of modern communication societies, therefore, most national legislation pertaining to spectrum management includes a direct mandate for the body responsible for frequency management to take appropriate measures in order to ensure efficient and interference-free use of radio frequencies.¹⁴⁶ The use of all frequency resources is harmonised at the international level at the ITU World Radio communication Conferences in order to ensure efficient and interference-free use of the frequency spectrum.¹⁴⁷ The decisions of the World Radio communication Conferences and related harmonisation efforts at the global level (ITU) are ultimately expressed in various international bodies that deal with spectrum management such as the European Conference of Postal and Telecommunications Administrations (CEPT) and the African Telecommunications Union, etc. It is this international harmonisation that then determines the national frequency allocation frameworks for the various countries across the world.¹⁴⁸

¹⁴⁵Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

¹⁴⁶ Article 25 paragraph 1 of the Telecommunications Act of Switzerland (Chapter 784.20). (1997).

¹⁴⁷The respective decisions of the World Radio Communication Conferences are stipulated in the Radio Regulations. (1995).

¹⁴⁸Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

3.2 Radio Frequency Distribution by ITU for National Use

The general legal principle with respect to the international management of radio frequencies and the orbital positions is contained in the provisions of Article 44 of the ITU Constitution, which was originally adopted by the 1973 Plenipotentiary Conference where various proposals were put forward with respect to the ITU's role in the distribution of scarce natural resources. At that Conference, developing countries stressed that the ITU "*should be given the means of ensuring the fair distribution of such limited resources as the frequency spectrum or the geostationary orbit, to avoid a situation in which the first-comer rich countries would monopolise the best services*".¹⁴⁹ While no definition of "*equitable access*" may be found in the Constitution,¹⁵⁰ Convention,¹⁵¹ and the Radio Regulations,¹⁵² two provisos which qualify the term make its meaning clear that countries may have equitable access only in conformity with the Radio Regulations; and the special needs of the developing countries and the geographical situation of particular countries must be taken into account while making use of the spectrum/orbit resource.¹⁵³

Article 44 of the ITU Constitution emphasises the obligation to use the orbit/spectrum resource "*efficiently*" and "*economically*", but does not define these terms. It is left to the discretion of each ITU member State to interpret what efficient and economic use is. Jakhu,¹⁵⁴ in his writings, postulates that Article 44 of the ITU Constitution introduced the concept of equity or equitable access, which relates to the principles of justice and fairness with respect to the use or for the sharing of the spectrum/orbit resource. Giving effect to this concept, the ITU has a priori distributed geostationary orbital positions and

¹⁴⁹R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁵⁰Constitution of the International Telecommunications Union. (1989).

¹⁵¹Convention of the International Telecommunications Union. (1989).

¹⁵²Radio Regulations of the International Telecommunications Union. (2015).

¹⁵³Article 44 of the ITU Constitution. (1989).

¹⁵⁴R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

associated radio frequencies among its members.¹⁵⁵ However, it has been done, so far, only in the case of a limited number of allotment plans, therefore, Article 44 of the ITU Constitution remains a general principle without much practical effect and an imbalance in the actual control of the radio frequency spectrum, continues posing the question of the effectiveness of ITU in today' era of rapid technological advancements.

Since the ITU Constitution and Convention contain very broad and general principles relating to Radio communication.¹⁵⁶ Numerous ITU Radio communication Conferences have adopted more specific and detailed decisions in the form of Radio Regulations. The ITU Radio Regulations allocate particular bands of radio frequencies to each specifically defined Radio communication service.¹⁵⁷ The decisions of such a WRC are included as "allotment plans" in the ITU Radio Regulations. However, it has been done, so far, only in the case of allotment plans for very limited services and bands. The rarity of such plans has been attributed by some scholars to the unwillingness of major ITU member States to accept any restrictions on their freedom of action in the use of the radio frequency spectrum and to a largely ineffective participation and influence by the developing countries in the decision-making process in the ITU.¹⁵⁸

The ITU Radio Regulations contain detailed procedures relating to the notification and registration of radio frequency assignments. Before the registration of the notified radio frequency assignment, the Radio communication Bureau examines its conformity with the relevant provisions of the Constitution, Convention, and Radio Regulations, with the Table of Frequency Allocations, with the co-ordination procedures with other States, with the probability of causing harmful interference, and with an applicable world or regional allotment

¹⁵⁵ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁵⁶ Article 44 of the ITU Constitution. (1989).

¹⁵⁷ Radio Regulations of the ITU. (2015).

¹⁵⁸ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

plan.¹⁵⁹ If this examination leads to a favourable finding, it will be registered in the Master Register. From the date of notification, the notifying country becomes legally entitled to use the notified radio frequency and to an international right against harmful interference from late comers.¹⁶⁰

If the Radio Communication Bureau finds the information unfavourable, the assignment could be registered with a symbol indicating that it will not cause harmful interference to previously registered radio frequency assignments. If harmful interference is anyway caused, the Radio Regulations indicate that the late State will "*immediately eliminate this harmful interference.*"¹⁶¹ The Radio communication Bureau lacks the right of action in the settlement of interference disputes.¹⁶² The Radio Regulations only states that all countries shall co-operate in the resolution of interference problems. Also, the only actions that the Bureau is supposed to take are: the request for co-operation of the concerned States, the analysis of the situation, and the adoption of conclusions with a recommended action for the parties involved.¹⁶³ According to Jakhu, taking this timid intervention of the Radio communication Bureau into account, it should not be surprising to notice a lack of confidence in the ITU as an organisation and as an international manager of the radio frequency spectrum. The writer is of the view that this absence of muscle in the ITU relating to dispute settlements causes serious violations of the OST principles and this an issue that needs immediate address.

The process of co-ordination is more a bilateral negotiation between the concerned States than an ITU process. If, after the publication of the Weekly Circular, any State observes that its system could be affected by the one that is

¹⁵⁹Radio Regulations of the ITU. (2015).

¹⁶⁰Radio Regulations of the ITU. (2015).

¹⁶¹Radio Regulations of the ITU. (2015).

¹⁶²R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁶³R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

being planned to be established, that State will send its comments to the publishing State.¹⁶⁴ Afterwards, both States will try "*to co-operate in joint efforts to resolve any difficulties, with the assistance of the Radio communication Bureau, if so requested.*"¹⁶⁵ Therefore, the intervention of the Radio communication Bureau is not automatic. It is informed of the problem by the States and will participate if this is requested by either of the parties. Therefore, the ITU's Radio communication Bureau does not have much authority, and at the end, the principle of "first come, first served" regulates the problem, that is the State which registered its radio frequencies first has the right against interference from late comers and is under no legal obligation to accommodate the later comers nor to coordinate with them.¹⁶⁶

3.3 Equitable Use and Access to Radio Spectrum by States

The 'first come first served' approach in spectrum allocation and the fact that the ITU lacks an effective procedure in determining use of spectrum allocated to States to ensure the benefit of all mankind, poses great challenges. When a slot is artificially reserved by a state and the position becomes blocked it means that this paper satellite is hindering the use of the GSO by states that have the capability to place a satellite in orbit, and secondly, it unnecessarily complicates the ITU coordination system.¹⁶⁷ A State can retain a slot for 7 years without bringing it into use.¹⁶⁸ and the lengthy coordination procedure encourages developing states to bypass the system and lease or sell the already allocated orbital spot that was granted to developing states under Article 44 of the ITU constitution. It should also be noted that there is no provision in the ITU instruments that requires a state to return an orbital position after the end of the

¹⁶⁴R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁶⁵Radio Regulations of the ITU. (2015).

¹⁶⁶ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁶⁷R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁶⁸Radio Regulations of the ITU. (2015).

operating life of the satellite.¹⁶⁹ Further, there is “no time limit.”¹⁷⁰ during which a satellite can occupy a GSO slot after receiving authorization from the ITU. The average life span of a satellite is around 15 years.¹⁷¹ but as there is no binding obligation for States to return the slot, the GSO becomes artificially congested, making it harder to allocate and coordinate orbital positions in the future, even though some satellites do not even exist in their registered position.¹⁷²This greatly affects equitable access and use of the limited resource by all states, contrary to Article 44 of the ITU Constitution.

Another aspect that is inconsistent with free and equitable access is the leasing of orbit resources. Although the ITU is aware of this practice and does not explicitly endorse it, it acknowledges it as common practice between states in order to ensure usage.¹⁷³ According to the 2015 chairman of the ITU, when engaging in leasing activities, states must make sure to follow the provisions of Article 18.1.¹⁷⁴ of the Radio Regulations, which address the right to use a satellite licensed by another state.¹⁷⁵ However, leasing slots to the highest bidder favours the technologically advanced, wealthy states.¹⁷⁶

Over the years certain countries have introduced trade mechanisms, such as auctions, in the use of radio frequency spectrum.¹⁷⁷ For example, in March 1995, the United States started auctioning radio frequencies for Personal Communications Services. The United Kingdom used auctions for national and regional services but only in more congested areas. Canada followed the U.K. example and charged the fees according to the demand, meaning that the more

¹⁶⁹ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹⁷⁰ C, G, Gomez, The Equitable Access to the GEO for Developing Countries: A Pending Challenge, (2017).

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¹⁷¹ Regulation of Global Broadband Satellite Communications, Broadband Series, Telecommunication Development Sector, (2012) 4.

¹⁷² L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹⁷³ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

¹⁷⁴ Art 18. Radio Regulations, (2015).

¹⁷⁵ Radio Regulations for smart use of radio spectrum, ITU News (2015).

¹⁷⁶ Radio Regulations for smart use of radio spectrum, ITU News (2015).

¹⁷⁷ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

congested or more used parts should bring-in more money.¹⁷⁸ It is believed that the introduction of radio spectrum pricing would have the effect of making users more aware of the scarcity of this resource and also dissuading them from hoarding radiofrequencies without actually using them.¹⁷⁹ The argument against the introduction of market principles is that the warehousing and leasing of these radio frequencies favour their acquisition by the wealthiest or the most technologically advanced countries or companies.¹⁸⁰ Other ways to avoid this market treatment could be to guarantee equitable access to radio frequencies by adopting more flexible allotment plans, especially for the most congested radio frequency bands and by vesting the ITU with property rights over the orbital slots and radio frequencies and entitling it to charge utilisation fees.¹⁸¹ These measures, it could be argued, would lead to the further politicisation of the ITU management process, however, by all means the process of managing radio frequencies is already politicised.¹⁸² Is then the ITU still effectively managing equal access to and the use of radio frequencies by States? By taking all these facts into consideration, the failure by ITU to adequately manage the allocation of spectrum, is hindering both the right of free use of outer space, and also the sound development of radio communications.¹⁸³ This issue seems to arise mainly from ITU procedure, however, it has been stated that it is difficult to balance considerations of economy and efficiency with those of equity.¹⁸⁴

¹⁷⁸R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁷⁹R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁸⁰R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁸¹R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁸²R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁸³ It has been recognized by the ITU that, although the practice of overfilling is "completely economically rational", it blocks access to spectrum and orbital resources and wastes unused portions of the orbit. See Scrambling for Space in Space, ITU Plenipotentiary to Tackle 'Paper Satellite' Problem.

¹⁸⁴J, C. Thompson, Space for Rent: The International Telecommunications Union, Space Law and Orbit/Spectrum Leasing, 62 J. Air L. & Commerce (1996), 299.

Once the ITU has allocated spectrum to the specific countries, the countries then assign radio frequencies to their particular entities in accordance with their national frequency allocation plans, which are required to be in conformity with the ITU Radio Regulations. If the allocation is an international process by nature, the assignment is a national process.¹⁸⁵

3.4 Spectrum Use and Regulation at National Level: The European Union Case

In Europe, the National Frequency Allocation Plan (NFAP) serves as a binding basis for the Federal Administration organisational units responsible for frequency assignment to fulfil their responsibilities in relation to frequency assignment and this includes the allocation of the frequency spectrum to the various radio services categories in accordance with the Radio Regulations (CC 0.784.403.1) of the ITU.¹⁸⁶ The European Union member states are members of the regional organisation called European Conference of Postal and Telecommunications Administrations (CEPT), which brings together forty-eight European countries¹⁸⁷ covering almost the entire geographical area of Europe. The CEPT Electronic Communications Committee (ECC) provides an operating framework within which administrations; industry and the sector stakeholders, can develop provisions and conditions under which spectrum use can be harmonised, taking into account market demands and technological developments in each respective country.¹⁸⁸ These activities specifically lead to

¹⁸⁵ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

¹⁸⁶ Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

¹⁸⁷ Current members of the CEPT are: Albania, Andorra, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, The former Yugoslav Republic of Macedonia, Malta, Moldova, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom and Vatican. This information is publicly available on the CEPT website.

¹⁸⁸ Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

consensus resolutions made by the member states, however, it should be noted that compliance is voluntary.¹⁸⁹

The European Commission (EC) is the primary institution in the European Union that is responsible for promoting harmonisation of radio spectrum use across the EU member states. It is supported by two EU bodies namely the Radio Spectrum Policy Group (RSPG) and the Radio Spectrum Committee (RSC). The CEPT established a specialised Conference Preparatory Group (CPG) which is tasked to prepare the so-called European Common proposals (ECPs) for WRCs (World Radio Congress). ECPs contain common proposals for amendments to the ITU Radio Regulations and these are adopted with the support of ten CEPT members and the opposition of not more than six CEPT members. ECPs are then discussed at WRCs, together with other proposals for modification of the RR (Radio Regulations).¹⁹⁰The tabled requirements are then examined by individual project groups and this International planning and harmonisation work within the CEPT and the ITU results in “resolutions” and “recommendations”, which are then set forth in “final acts”. With the adoption of the final acts by the EU member states, the countries commit themselves to comply with the new provisions of international law, which takes precedence over national law. The results of both ITU World Conferences and resolutions endorsed by member states within the CEPT therefore periodically affect the National Frequency Allocation Plans for the member states.¹⁹¹These jointly developed principles then serve to allow European-wide and internationally harmonised use of frequency resources and participation in the relevant international working groups is therefore indispensable in order to influence and shape frequency use. The activity of these working groups is usually limited to civil frequency

¹⁸⁹Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

¹⁹⁰M,Massaro, *Radio Spectrum Regulation in the European Union*. Gothenburg, Sweden: Chalmers (2017). University of Technology.

¹⁹¹Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

use.¹⁹²The writer notes that the EU is at an advanced state of evolution with regards to regulation in the area of radio spectrum at national level and the author observed, during the research, that the ITU played a very peripheral role with regards to how the EU regulates radio spectrum at national level.

3.5 Spectrum Use and Regulation at National Level: The Case of Africa

Africa is a recent player on the global field with reference to spectrum management not to mention outer space and the moon.¹⁹³As a continental block Africa is represented by the African Telecommunications Union (ATU). It was founded in 1977 as a specialised agency of the Organisation of African Unity, now the African Union, in the field of telecommunications, the African Telecommunications Union (ATU) took its present name in 1999. This led to the transformation of the agency into a partnership between public and private stakeholders in the information and communication technology (ICT) sector. ATU provides a forum for stakeholders involved in ICT to formulate effective policies and strategies aimed at improving access to information infrastructure and services. In addition, the Union represents the interests of its members at global decision-making conferences and promotes initiatives aimed at integrating regional markets, attracting investment into ICT infrastructure, and building institutional and human capacity. ATU currently has 44 Member States and 16 Associate Members, comprising fixed and mobile telecommunications operators.¹⁹⁴

Generally, spectrum management at a national level is governed in terms of the national Telecommunications Act or such other relevant law; then there is generally a national Spectrum Policy and the National Frequency Allocation table. These instruments generally govern the spectrum management at

¹⁹²Principles of spectrum management Swiss National Frequency Allocation Plan, Federal Department of the Environment Transport, Energy and Communications DETEC, Federal Office of Communications OFCOM Licences and Frequency Management / Frequency Planning (2019).

¹⁹³O,N,JOHN. National Space Law And Regulation In Africa: A Case Study Of Nigeria And South Africa. Beijing: Faculty of Law, Obafemi Awolowo University, Nigeria.(2012).

¹⁹⁴African Telecommunications Union. *History*. Retrieved from ATU. (2018).

national level.¹⁹⁵ Spectrum management at national level involves defining the use of different bands, providing direction and cohesion in support of policy formulation and future actions to achieve optimal spectrum use. It also involves monitoring major trends and developments in technology which require frequency spectrum.¹⁹⁶ Spectrum management at national level also entails licensing and assigning specific frequencies to users, allotting certain frequency bands or sub-bands to specific users under certain specified conditions and in accordance with the national and international table of frequency allocations.¹⁹⁷ It also entails enforcement mechanisms that should be used to verify the use of spectrum in conformity with the terms of one's license and encompasses the monitoring of the use of the radio spectrum and the implementation of measures to control unauthorized use.¹⁹⁸

To ensure that the spectrum allocated provides the greatest possible benefit to its countries, given that spectrum is a scarce and valuable resource, African governments and regulators need to urgently address the issue of having the relevant regulatory, commercial and technical aspects of the spectrum allocation process.¹⁹⁹ This includes having in place efficient, transparent and stable spectrum allocation procedures; balancing the fees received from spectrum licences with the need to encourage telecommunications companies to bid for licences and invest in infrastructure; making the most efficient use of spectrum, ensuring spectrum is allocated in commercially viable amounts to those that will make best use of it; liberalising spectrum allocation to ensure operators have the flexibility to make the most efficient use of allocated bandwidth.

¹⁹⁵ A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

¹⁹⁶ A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

¹⁹⁷ A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

¹⁹⁸ A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

¹⁹⁹ Spectrum Management in Africa, The challenges faced by regulators and operators. (2015).

In Africa the two of the most frequently used methods for spectrum allocation at national level include Direct Licencing and Auction.²⁰⁰ Direct Licencing is when the local telecommunications regulator²⁰¹ assigns frequencies to licensed operators. This is a traditional method used for allocating bandwidth for radio and television and it can result in inefficiencies and inflexibility, particularly if the regulator is not in touch with market needs and is unable to respond quickly and appropriately. The second method spectrum auction is where the regulator sells, to the highest bidder(s), a licence to use specific frequencies.²⁰² Though spectrum auctions have been successful in making revenue for the different countries who implement the practise, the auctions can lead to increased prices for end users, the customers, especially where the playing field is not level for all bidders. Further, in Africa another factor to note is that spectrum auctions usually do not consider the interests of non-commercial users, such as educational bodies.²⁰³ In Africa many governments have opted for open and competitive spectrum auctions, but the process is vulnerable to vested interests and political interference, particularly given the significant levels of capital involved.

In Africa, generally the National Table of Frequency Allocation (NTFA), assists countries to divide the portions of all allocable spectrum into number of frequency bands for use and/or reservation for future use.²⁰⁴It defines the Primary, Secondary and Co-Primary usages of band and the bands reserved for specific services. In simple terms, primary basis means spectrum allocation in accordance with the nature of a right granted to the assignee of a particular spectrum (band or spot frequency), the assignee is the only entity permitted to use the identified spectrum and is entitled to protection from harmful interference caused by any other spectrum user who may be authorized to use same

²⁰⁰ Spectrum Management in Africa, The challenges faced by regulators and operators. (2015).

²⁰¹Postal and Telecommunications Act (Chapter 12:05).

²⁰² Spectrum Management in Africa, The challenges faced by regulators and operators. (2015).

²⁰³ Spectrum Management in Africa, The challenges faced by regulators and operators. (2015).

²⁰⁴A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

spectrum on a secondary basis.²⁰⁵ Secondary basis basically means the nature of a right granted to the assignee of a particular spectrum (band or spot frequency) and is subject to the condition that the entity does not cause any harmful interference to, or claim protection from any harmful interference caused by other licensees who have been granted the right to use same frequency bands on primary or co primary basis.²⁰⁶

Lastly, co-primary basis means the nature of the right granted to the assignee of a particular spectrum (band or spot frequency), to use the specified frequency bands is subject to the condition that the entity must coordinate with other co-primary licensees in order to limit harmful interference to existing links and services operating in the relevant frequency bands, and to facilitate the introduction of additional links and services in the relevant frequency bands.²⁰⁷ A Co-primary user must refrain from causing harmful interference to, and may not require protection from operations of other co-primary users in relevant band. Co-primary usage of a band is subject to protection from harmful interference caused by any other spectrum user that may be authorized to use the same spectrum on secondary basis, they are also subject to protection from claims of harmful interference by holders of licenses granting secondary status with respect to frequency bands covered.²⁰⁸

The learning is that Africa and other developing countries should strive to play a more conscientious and intentional role in the activities of the African Telecommunications Union; the International Telecommunications Union, in particular the ITU-R and the WRCs. African countries need to conduct researches and analyse trends and participate in the various working groups

²⁰⁵A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

²⁰⁶A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

²⁰⁷A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

²⁰⁸A, Riaz, ITU- National Spectrum Management & Its Automation, Workshop on Spectrum Management and Harmonized use of Spectrum Resource Nadi. (2017).

with their findings as well as take part in the various debates to ensure that their interests as a country and very well as a continent are also heard and protected. The main aim is to safeguard developing countries interests in the resolutions that are taken at the WRCs.

CHAPTER 4

Effectiveness of ITU in Today's Era

4.1 Current Problems in the Use of Radio Frequencies

The ITU is one of the ancient international organisations which is still operational.²⁰⁹ The ITU's dealings have been ill-treated during recent years because of the rise in loads and competition among applicants.²¹⁰ The ITU Radio Regulations indulge the ITU member States to bound their strains for radio frequencies and orbital slots to the lowest crucial to provide facilities.²¹¹ However, it can be noted that the ITU is not a universal organisation as it cannot impose its regulations over the sovereignty of other states in the international system that form the Union. Since such rules usually stay unenforced, the unbiased of well-organized and justifiable use of assets also stays unfulfilled thereby bargaining the efficiency of ITU with respects to implementation appliances.²¹²

Radio frequency identification is a generic term for technologies that use radio waves to automatically identify individual items.²¹³ Various approaches of recognising matters are present using RFID, but the utmost joint is to store a serial number that recognizes a product on a microchip that is attached to an antenna.²¹⁴ The leasing of radio frequencies is becoming more common as many international consortiums have an interest in leasing these resources because they avoid all the complex processes of international coordination and

²⁰⁹G, Lafferranderie and D, Crowther. Outlook on Space Law over the Next 30 Years. (1997).

²¹⁰I, Henrietta and V, Kopal. An Introduction to Space Law. Kluwer Law International B.V. (2008).

²¹¹R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

²¹²P, K, Mbote, F, M, Odhiambo, M, Muriungi and O, Nyawira. Spectrum Management and regulation in Kenya engendering Inclusive Access to technology and Information. International Environmental Law Research Centre. (2016).

²¹³C, Upfold, and H, Liu. "Radio Frequency Identification (RFID) Adoption in the South African Retail Sector: An Investigation of Perceptions Held by Members of the Retail Sector Regarding the Adoption Constraints" The Electronic Journal Information Systems Evaluation (2010). Vol 13, (1) 87 - 96.

²¹⁴A, K Varma and A, M, Imtiaz. RFID Applications in Libraries. (2006).

registration.²¹⁵ The developing countries can exchange their orbital slots for millions of dollars or for services that they cannot develop. For many of these countries, putting a satellite in orbit is actually an expensive proposition. It has been proposed that perhaps the ITU's allotment system should regulate the leasing of orbital positions, and assure that the members that lease their slots use the obtained funds appropriately in accordance with the ITU's purposes, and that money should not stay in particularly limited hands.²¹⁶

In order to solve the problem of paper satellites, the ITU at its WRC'97 adopted two main measures, namely; the administrative due diligence procedure and charging processing fees for assignment filings. All fixed, mobile and broadcasting satellite systems are subject to an administrative due diligence procedure under which each notifying State is required to provide evidence of seriousness of its intention of establishing a satellite network. ITU is in a position to recover administrative expenses from the users of the radio frequencies and orbital slots. However, there is yet no limitation on the period of use of radio frequencies and orbital slots by States. Once a State starts using a particular radio frequency and orbital position, its use of this resource might practically be perpetual in nature and thus continue hindering the use of same radio frequencies by other States. Thereby violating the principle of equitable access.²¹⁷

²¹⁵ A, K Varma and A, M, Imtiaz. RFID Applications in Libraries. (2006).

²¹⁶ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

²¹⁷ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

There is also the challenge of ensuring equitable access to spectrum for the developing states by ITU. Currently, the world is at a stage where the developed countries are reaching a point of exhausting their “outer space resource” in particular the low orbit space and they have started to capitalise on the unused spectrum of the developing world. This they have done either through government to government partnerships or through commercial agreements between private companies and developing nations.

The coordination of spectrum use is a continuing trial for the ITU.²¹⁸ Rivalry for spectrum continue to rise and at the same time the ITU is struggling to complement the use of spectrum bands across the planet. Though the developing countries command numerical majority in the ITU, they are the most affected in the disparities that now exist in the allocation and management of spectrum as ITU tries to cope with the increasing demand and the same time ensuring that the Union abides by the regulations that govern it.²¹⁹ The developing countries disadvantages are mainly due to the lack of technical and financial resources which cause them to fail to effectively participate in the decision-making process in the ITU Radio communication Conferences and Radio communication Assemblies. Thus they are often unable to secure an equitable share of the limited resource, radio frequency spectrum, which is indispensable for rapidly increasing wireless services and should be used for the benefit of all mankind without discrimination.²²⁰

It is further expected that threat to the interests of the developing countries could increase due to more active participation in the ITU by private entities. For instance, at the recently held Africa Telecommunications Union (ATU) World Radio Congress (WRC) preparatory meeting held at the Victoria Falls in Zimbabwe, Eutelsat was given a formal platform to speak and was on the

²¹⁸ Spectrum and the paradox of the ITU. (2014).

²¹⁹ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

²²⁰ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

agenda. Not that this was wrong but this was a platform for Africa to decide its spectrum future and they allowed a private company not of African origin to mould their spectrum future. The reverse is not the case when developed countries debate their spectrum future, developing nations will be observers and not necessarily effective participants. It is therefore necessary for the developing countries to make extra efforts to actively and extensively participate in the ITU decision-making at all levels in order to protect and enhance their interests in the equitable sharing of this international resource.²²¹ The privatisation and liberalisation of telecommunications are increasing the number of private companies or service providers in national, international and foreign markets. The ITU has been making significant efforts in strengthening and expanding the role of non-governmental entities in the ITU's affairs. These entities can significantly influence the ITU policies and decisions thereby causing an imbalance to equitable access and benefit to all mankind principles of the Outer Space Treaty.

4.2 International Telecommunications Union Today

The ITU clearly lacks strong and effective management mechanisms and enforcement powers. However, not all countries desire such powers to be vested in this organisation. According to some, the solutions to the problem of radio frequency spectrum and orbital warehousing and trafficking must come from outside the ITU. Some scholars are of the opinion that certain countries must find a means to boycott those countries that act in bad faith and that the ITU must not have more authority because this would lead to the politicisation of the organisation.²²² On the other hand, it has been argued that the ITU should be accorded more freedom and powers to act. The idea of vesting ITU with property rights and more management powers over radio frequencies and orbital slots could be studied from a perspective of analogies with another international

²²¹ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

²²² R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

regime.²²³ For example, the international regime for the deep seabed resources was originally designed under the 1982 United Nations Convention on the Law of the Sea.²²⁴

This regime was modified by the Agreement Relating to the Implementation of Part XI of the Convention on the Law of the Sea, which entered into force on 16 November 1994. Under the new regime, the seabed resources that are declared to be the "common heritage of mankind" would be exploited by an international body in co-operation with the private sector. Perhaps this model could inspire a similar approach that the ITU member States might take by vesting the ITU with more management powers over the radio frequencies (and orbital positions) and by transforming itself into an International Telecommunication Regulatory Authority, somewhat similar to the Federal Communications Commission of the US.²²⁵ From the research conducted it is becoming abundantly clear that when commercial interests are combined with a slow ITU process and a lack of sanctions for breaching ITU provisions, states are only encouraged to abuse the spirit of Article I of the OST and the defy the objectives of the ITU Radio Regulations.

D. Flashman, Directorate of Communications, United States Air Force wrote: *"Under concepts by which the frequency spectrum is now used, it is just not possible to guarantee that any portion of the spectrum will be interference free, regardless of national or international intentions or agreements. Controls which would make this guarantee possible simply do not exist. Without positive control, virtually all our activities in space communications and electronics will be conducted in an atmosphere of calculated risk, subject to the whim of the negligent, inexperienced or inept co-user of the spectrum, within whose power it*

²²³ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

²²⁴ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

²²⁵ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

*is to wreck completely our operations upon which the prestige of an active nation may rest...*²²⁶ It is therefore clear that as far as the ITU's regulatory functions in the field of space communications are concerned, they have been confined to allocation of frequencies, to procedures and standards for their use and to the offering of scientific and engineering advice for those purposes.²²⁷

While the ITU is not overly concerned with the policing of frequencies, a growing number of people have expressed the critical need for just such a function. This is because a satellite equipped with a radio transmitter operating on solar batteries could transmit in orbit for many decades.²²⁸ This continuous transmission could seriously interfere with communications that operate on frequencies on or near the transmission of the satellite.²²⁹ This has already led to the setting aside of specific frequencies for outer space purposes, but has been offset by the constant advance both in quality and quantity of the growing needs for such frequencies and of the increasing importance that such space communications may soon come to play.²³⁰ All of these factors necessitate a re-examination of the type of regulatory functions that ITU might desirably perform.²³¹

However, in the fast-moving technological world we now inhabit, we can see the ITU struggling to maintain its relevance. The ITU's foray in 2012 into the realm of Internet governance is an example of this.

²²⁶ Positive Control of Electromagnetic Spectrum, USAF Signal Magazine (as quoted by Bin Cheng, Current Legal Problems (1961).14.

²²⁷ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

²²⁸ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

²²⁹ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

²³⁰ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

²³¹ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).-

Challenges faced by ITU emerge from three frontier namely digital technologies such as the internet developed outside of the formalised Union structures, and weakened the position of the ITU as a key factor in management and supervision of communications networks.²³² Merging of the technologies which distribute information and allow communication have fundamentally changed the environment. The pace of technological change and convergence of technologies also means that ITU activities must be restructured, with clear objectives for each Sector, transparency of costs and budgets, and clear accountability.²³³ The ubiquitous nature of digital communications networks has made other global institutions to participate in policymaking towards the new information arrangement. Resentment from other actors (specifically the United States of America) in the direction of the ITU as an institution led to a weak determination to keep ITU involvement in the new infrastructure at haven.²³⁴ These challenges have therefore generated arguments on the function and utility of the ITU in dealing with the new international information infrastructure.

The ITU has also had to face challenges from external factors comprised of conflicts between different types of organisations (commercial, governmental, and international organisation) over jurisdiction.²³⁵ Prearranged the ITU's support for the OSI protocols, which were being developed by another international standards body (the ISO) and were considered as the 'intergovernmental organised' alternative to what has emerged as the current Internet standard (TCP/IP), the ITU has lost legitimacy in the area of Internet governance. This was compounded by its unsuccessful dare to collect support from the U.S. Government for the IAHC-MoU, which delivered an unconventional to the Internet governance model ultimately projected by the Americans.

²³² J, Shanin, The International Telecommunication. (2010).

²³³ Report Of The High Level Committee to Review The Structure And Functioning of The international Telecommunication Union (ITU) Tomorrow's ITU: The Challenges Of Change

²³⁴ J, Shanin, The International Telecommunication. (2010).

²³⁵ J, Shanin, The International Telecommunication. (2010).

5G is the next generation of mobile standards being defined by the ITU.²³⁶ IMT-2020 (5G) is a name for the systems, components, and related elements that support enhanced capabilities beyond those offered by IMT-2000 (3G) and IMT-Advanced (4G) systems. The ITU suggests that policy-makers undertake an independent economic benefits assessment since third party estimates are not endorsed by the ITU.²³⁷

²³⁶D, Andreev. Overview of ITU-T activities on 5G/IMT-2020. (2017).

²³⁷K, Campbell "The 5G Economy", IHS economics and IHS technology, (2017).

CHAPTER 5

Conclusions

5.1 Chapter conclusions

The first chapter has provided an overview of the law of outer space by identifying the relevant treaties. The chapter has also explained the purpose and scope of legal principles. It was established that there is a clear understanding of outer space as well as outer space activities. Space law was commonly well-defined as the regulatory framework that controls; governs and regulates the operations of human behaviours in outer space pertaining to space activities.

Legal principles governing outer space have progressed over three phases namely hard law phase (1956-1979); soft law phase (1980-1992) and phase three being (1992 to current phase). The first phase constituted the United Nations General Assembly Treaties (1956-1979). The study found out that the treaties addressed issues of non-appropriation of outer space by one state, arms control, liability for damage by space objects, the rescue of spacecraft and astronauts, the avoidance of harmful activities in the space environment, the registration of space objects, among other issues. The second phase for the governing outer space law was the UN General Assembly Resolutions (1980-1992). This phase saw various discussions which included the matter of broadcasting signals overlap and the possibility of blocking incoming satellite signals of other broadcasting entities giving rise to the 'free flow of information' versus 'prior consent'. The discussions presented an increase to the adoption of the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting. However, it can be noted that this is no longer relevant in today's era due to technological advancement in the international system. The third phase saw the development of space law through

related Resolutions adopted by the United Nations General Assembly. Article 1 of the OST was even re-phrased during this phase.

It was also established that customary international law postulates that two key elements are required for a practice to qualify as a customary law and these are state practice and opinion juris. It was also established that there has been a general consensus that certain principles contained in the current international space legislation, are already part of the customary international space laws, for example, the non-appropriation of outer space and other celestial bodies; the freedom for exploration and use; principle of international responsibility and liability for space activities; the principle of jurisdiction and control.

The study also established that international legal framework for outer space activities are based on the Convention of the International Telecommunications Union. The Convention of the International Telecommunications Union assigns spectrum (frequencies) and slots in the geostationary satellite orbit. Radio Frequency Spectrum Management is the logical, bureaucratic, and policy method to planning and managing the use of the electromagnetic spectrum.

It can be noted that, it is becoming evident that not all public and commercial operators, particularly developing States, will be able to operate freely their telecommunication systems without competing for, and effectively procuring, the required resources like radio frequencies. This increase in demand is posing new challenges to the ITU's traditional management system.²³⁸The Outer Space Treaty clearly states that outer space is “the province of mankind” which means any activities done in this “province” should benefit all countries without any discrimination and should ensure equitable access to outer space including the GSO and the associated frequencies. The world is currently operating under a

²³⁸ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

‘spectrum rush’ era and outer space activity has significantly gone up over the past few years.

Regulation in the outer space has developed over the years and has gradually settled into what it is today. The uniqueness of Outer Space presents numerous challenges to the International Telecommunication Union. In 2017, there were 1,738 operating satellites orbiting the Earth, while 16 scientific missions currently explore the solar system, the International Space Station has been permanently inhabited since 2000, and new space stations are now under development.²³⁹ More and more private companies are now starting to explore space for commercial gains both jointly and individually. These new companies have developed new technologies for space exploration through Research and Development and are entrepreneurial in their approach to space travel. The challenge for the ITU is ensuring that both the developed and developing states get equitable access in the province of outer space, a role which the ITU is trying to get to grips with.

Further, it is now generally agreed by various scholars that the economic value of GSO is quite obvious in modern day era as evidenced by the ongoing ‘spectrum rush’. No doubt over the years the ITU has played a pivotal role in the allocation and management of radio spectrum to States and more recently private entities. Since the late eighties the ITU has been convening a series of very important conferences in order to reassess its mandate, functioning, organisational structure and regulatory systems and consequently has changed them significantly several times over the years. However, it has also become abundantly clear that balancing efficiency and equity has become a cumbersome task for ITU despite these changes.²⁴⁰

²³⁹C, Doldirina. Outer space laws and legislation: regulating the province of all mankind, (2018).

²⁴⁰L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

The ITU's main obstacles are the lack of enforcement power and its respect towards sovereign states.²⁴¹ The demand for spectrum and thus globalization is increasing every day. ITU ought to be provided more resources than ever so that the Union can carry out its critical function. It is noteworthy that the ITU cannot exercise any real control over how a member state uses its orbit/spectrum assignment.²⁴² The interests of the big countries in the Union are so diverged. This position was clearly demonstrated in the Zohrer cases, in which cases it was clear that the ITU will not challenge a state's notification of bringing a frequency into use, even if it has grounds to believe the case to be different and, therefore, would have to base its decision to delete the registration on other grounds other than those provided for in Article 11.44B of the Radio Regulations.²⁴³ According to Nandasiri Jasentuliyana, the ITU is not adaptable to performing a function for monitoring, policing or regulating outer space communications because the ITU does not possess adequate facilities for engaging in such operations. Moreover, the ITU depends on the cooperation and willingness of its members to conclude formal agreements or recommendations for the development and maintenance of the orderly expansion and operation of international communications. The issue of regulation of activities in outer space seems likely to become an increasingly significant and thorny problem.²⁴⁴ Should a more definitive way of addressing these issues not be identified in the near future by the ITU.

²⁴¹ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

²⁴² S, A. Levy, Institutional Perspectives on the Allocation of Space Orbital Resources: The ITU, Common User Satellite Systems and Beyond, 16 Case W. Res. J. Int'l L. (1984), 186.

²⁴³ L, D, Galeriu, "Paper Satellites" and the Free Use of Outer Space. (2018).

²⁴⁴ N, Jasentuliyana. Regulatory Functions of I.T.U. in the Field of Space Telecommunications- Journal of Air Law and Commerce. (1968).

It has been further observed, in earlier submissions, that the ITU lacks effective dispute settlement authority in cases of harmful interference between two or more States. The ITU Radio Communication Bureau can only intervene in case where a State requires its service. Moreover, the Bureau does not have much authority and plays a timid role. Mostly, interference issues are governed by the principle of "first come, first served". The Radio Regulations Board, composed of 12 part-time members, is also a weaker body than its predecessor, the IFRB. Therefore, there exists a lack of confidence in the ITU as an organisation and as an international manager of the radio frequency spectrum.²⁴⁵

The second chapter has clearly defined the scope and powers of ITU. The legal instrument that have established ITU were also presented. The study established that ITU is the recognized agency to control and manage the frequency bands in the Earth orbits. ITU allocates global radio spectrum and satellite orbits; develop the technical standards that ensure networks and technologies effortlessly interconnect.

It was also established that ITU's first duty is to promote the development of telecommunication networks and access to telecommunication services by fostering cooperation among governments and non-governmental actors that includes network operators, service providers, and equipment manufacturers. The Union also seeks to promote and facilitate peaceful relations and to harmonize the actions of Member States towards a constructive cooperation and partnership.

²⁴⁵ R, S Jakhu and M, T, Ahmad. The Outer Space Treaty and states' obligation to remove space debris: a US perspective. (2017).

Limitations of ITU were also drawn from this study. The ITU and its work are accepted among its 1898 members. The reason for its uniqueness among international organisations partly lies in the fact that it was founded on the principle of co-operation between governments and the private sector, and has led to a rather unique process of decision and law making that is rare and unparalleled within the wider UN family. It can also be noted that radio regulations are not intended to prevent the sharing of duly allocated, assigned and registered frequencies by other stations which do not cause harmful interference. This shows that the ITU itself rarely steps out into the limelight of public attention, yet it should intervene due to the importance of some of the issues it deals with, for example to governments, ITU conferences can see hard bargaining on stage and even attract some public attention.

The third chapter has discussed access to and use of radio frequencies at National level. The study found out that radio frequency regulation at national level is basically concerned with arranging the several benefits of frequency users within a specific state guaranteeing proficient and interference free use of the limited resource. It was also established that use of all frequency resources is harmonised at the international level at the ITU World Radio Communication Conferences for effective and non-interference use of the frequency spectrum.

This chapter also found out that it was at the Plenipotentiary Conference in 1973 where numerous proposals were made towards ITU's role in the sharing of scarce natural resources. Developing countries also indicated that the ITU ought to be given the ways of safeguarding the fair distribution of inadequate resources as the frequency spectrum or the geostationary orbit. This will even ensure that it is not only the rich countries that benefit and monopolise scarce resources. Another aspect found in the study was that there is no reliable free and equitable access in the leasing of orbit resources. Even though the ITU is alert of this practice and does not clearly authorise it, ITU recognizes it as mutual practice among member states in order to ensure usage.

The study also established that the African continent is also signified by the African Telecommunications Union (ATU) established in 1977 as a dedicated agency of the Organisation of African Unity (OAU), currently the African Union (AU), in the arena of telecommunications and the African Telecommunications Union (ATU). ATU offers a medium for stakeholders involved in ICT to articulate operational policies and strategies pointed at refining access to information infrastructure and services. It was also found out that ATU signifies the interests of member states at global decision-making conferences and encourages initiatives directed at assimilating regional markets and human capacity.

The fourth chapter has discussed the relevance of ITU in the 21st century. The chapter has established that ITU's procedures have been abused during recent years due to the increase in demands and competition among applicants. The ITU is not a supranational organisation and cannot enforce its Regulations over the sovereign States that form part of it. It was found out that ITU clearly lacks strong and effective management mechanisms and enforcement powers. However, not all countries desire such powers to be vested in this organisation. The study found out that ITU is a paradox as it is simultaneously an enabler and an obstacle to progress when it comes to radio spectrum. In theory, the ITU is the correct place for spectrum harmonisation to happen. However, in practice, every country has sovereignty over their own spectrum which means they have the liberty to do what they want with their spectrum as long as it does not cause interference for their neighbours.

The study found out that ITU management approaches, regulations and procedures are inadequate and increasingly failing to prevent abuses and inequity in the use of radio frequency spectrum. In addition, a serious concern is gaining momentum as how to protect public interest while telecommunications are being, and will be, provided by private and foreign service providers who would have a single goal of enhancing and protecting their exclusive monetary

interests. It has been submitted by various scholars, and this writer agrees, that in order to address these problems and concerns, it is essential to strengthen the ITU by giving it more enforcement powers regarding the distribution of radio frequencies and improving its decision-making process where equitable participation should be guaranteed to all its member States as opposed to establishing a completely new institution to oversee spectrum management. ITU has made great strides in managing this highly complex scenario, however it can certainly do more once empowered to do so.

The study also established that if telecommunications is going to be a positive force in fostering development, rather than having the unintended result of perpetuating gaps, the ITU will have to sharpen its focus by playing a more clearly-defined catalytic role and by presenting to developing countries the range of policy and structural options that will generate greater resources for telecommunications development. The study found out that ITU is burdened with the ever changing environment and unbalanced playing field. This makes the Union a less perfect organisation to deal with mounting pressure to make more spectrum available and to make more efficient use of spectrum. It was also established that OST must be upheld unequivocally in coming up with the best solution. The primary goal is to have efficient and equitable use of spectrum frequencies for the benefit of all mankind.

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