THE UNIVERSITY of EDINBURGH
Edinburgh Law School

1. **Exam number:** B102051
2. **Module code and title:** LAWS11184 – LLM Dissertation
3. **Question number (where applicable):** N/A
4. **Word count:** 10,000

Regulation of the communications sector:

What Ghana can learn from the UK

Dissertation Outline

Abstract

1.0 Introduction
- 1.1 Importance of communications and communications regulation
- 1.2 Need to improve Ghana's communications regulation identified
- 1.3 Focus of the research and presentation outline of the dissertation
- 1.4 The regulatory influence of UK over Ghana
- 1.5 Differentiation of telecommunication and communication

2.0 Brief history of communications regulation
- 2.1 Global
- 2.2 UK
- 2.3 Ghana

3.0 Communications regulation in the UK
- 3.1 General thrust of communications regulation policy in the UK
- 3.2 The strengths and challenges of communication policies in the UK
- 3.3 Approaches to addressing communication policy challenges in the UK
- 3.4 Future thrust of communications regulation in the UK

4.0 Communications regulation in Ghana
- 4.1 General thrust of communications regulation policy in Ghana
- 4.2 The strengths and challenges of communication policies in Ghana
- 4.3 Approaches to addressing communication policy challenges in Ghana

5.0 Lessons from UK's communications regulation for Ghana

6.0 Recommendations

7.0 Summary and Conclusion

Bibliography

Regulation of the communications sector:
What Ghana can learn from the UK

Abstract

No society develops without communications. Communications regulation which guide achievement of the socio-economic goals of communication policies must therefore be done right. Beginning in the 1980s, many nations, including the UK, reformed their communications regimes – ended monopoly, created independent regulator and liberalised the sector. Judging from up-to-date stellar performance of the sector, UK's regulatory reforms are hailed as exemplary success. Ghana undertook similar reforms in the 1990s. While Ghana's current mobile phone penetration is 132% (with 68% mobile internet access), baseline fixed-line telephone penetration is 1.08%, fixed broadband internet access is 0.36%, and overall national internet capacity uptake is below 5%. This work researched the question: 'are there lessons Ghana can learn from UK's regulatory practices to improve overall communications sector performance?' The question is answered in the affirmative. Implementable recommendations derived from the identified lessons have therefore been presented. These include ensuring the independence of Ghana's regulator, discontinue using regulatory fines as source of revenue, adopt convergent regulation, adopt authorisation regime to replace Ghana's present licensing regime, and involve providers in the regulatory process through self- and co-regulation. Already registering double-digit growth, improving regulation with lessons from UK will make Ghana's communications sector catalyse higher contributions to GDP growth.

Regulation of the communications sector:
What Ghana can learn from the UK

1.0 Introduction

1.1 Olga Batura notes that "all information, knowledge and skills are received by way of communicating with other people." That, "[w]ithout communication with others, development and personal growth are impossible."[1]

Telecommunication is "an engine of growth", and considered "an essential component in the development process which can raise productivity and efficiency in other sectors."[2] Access by the whole population is therefore essential to reduce poverty.[3] A 10% increase in phone penetration rate has, for instance, been shown to increase economic growth by 1.5% in 21 OECD countries.[4]

Regulation, defined as the use of legal instruments, backed by threat of sanctions, to pursue socio-economic policy goals,[5] is vital for society's realisation of the benefits of communications.

Communications regulation is however criticised by some as "rent-seeking" tools of governments.[6] Some have therefore rather preferred a reliance on market competition.[7] For wireless spectrum regulation for instance, some advocate for a market-determined exhaustive ownership of frequencies through private property

[1] Batura O, 'Universal Service in WTO and EU law. Liberalisation and Social Regulation in Telecommunications'. Springer 2016, Asser Press. At 1, Chapter 1.
[2] ITU, 'The Missing Link' (The Maitland Report) – Report of the Independent Commission for World Wide Telecommunications Development. Geneva, December 1984. 1 130 at 3, 8. Available at handle.itu.int/11.1004/020.1000/12.5.57.en.100 (accessed 21-Jul-2017).
[3] Rovalo A R, Barroso J L G, González C F, 'Service Universalisation in Latin America: Network Evolution and Strategies', in Governance of Communication Networks: Connecting Societies and Markets with IT, (eds) Preissl, Brigitte ; Müller, Jürgen; Physica-Verlag HD, Heidelberg ;2006, 149 164 at 150.
[4] Aker, J C and Mbiti, I M, "*Mobile Phones and Economic Development in Africa*", Journal of Economic Perspectives, 2010, Vol. 24(3), 207 232 at 224.
[5] Stone M, "*The evolution of the telecommunications industry — What can we learn from it?"* Journal of Direct, Data and Digital Marketing Practice, 2015, Vol.16(3), 157 165 at 164.
[6] Noam E M, *"Beyond liberalization: From the network of networks to the system of systems*", Telecommunications Policy, 1994, Vol.18(4), 286 294 at 289.
[7] Spyrelli C, "*Regulating the Regulators? An Assessment of Institutional Structures and Procedural Rules of National Regulatory Authorities*", International Journal of Communications Law and Policy, Issue 8, 2003/2004, 1 57 at 56.

rights rather than regulation,[8] while others advocate for "open wireless networks", an ownerless infrastructure, also called "wireless commons".[9]

However, regulations' important function as "designer tools" for projecting society's expectations of technology[10] cannot be easily dismissed. Communications regulation manages the "transition from monopolistic regimes",[11] addresses market failures, and controls market power,[12] mostly via *ex ante* rules.[13] Regulation manages radio spectrum, which is scarce, to avoid interference between users and safeguard the interests of the public.[14] Regulation in liberalised markets, has been useful through the instrument of "universal service" by ensuring nationwide availability, accessibility and affordability of communications services.[15]

The United Kingdom (UK) achieves communications service ubiquity by using the regulatory tool of 'universal service' to provide voice and Internet access over baseline narrowband technology.[16] (Traditional baseline 'narrowband' is fixed-line telecommunication[17] using copper lines which feed into public telephone

[8] Coase R H, "*The Federal Communications Commission*" (reprinted from 1959), The Journal of Law and Economics, Nov, 2013, Vol. 56(4), 879 915 at 904, 910, 914.
[9] Benkler Y, "*Some economics of wireless communications*", Harvard Journal of Law & Technology, Fall, 2002, Vol.16(1), 25 83 at 76.
[10] Batura O, 'Towards an International Regime of Regulating Electronic Communications', in M. Krajewski (ed.), Services of General Interest Beyond the Single Market: External and International Law Dimensions; T.M.C. Asser Press 2015; 301 323 at 303.
[11] Preissl B, 'Introduction', in Governance of Communication Networks: Connecting Societies and Markets with IT, (eds) Preissl, Brigitte ; Müller, Jürgen; Physica-Verlag HD, Heidelberg ;2006. 1 8 at 2.
[12] Lang J T, 'European competition policy and regulation: differences, overlaps, and constraints', in H. Shelanski and F. Leveque (eds.), Antitrust and Regulation in the EU and US, Cheltenham; Edward Elgar Publishing 2009, Chapter 2, 20 73 at 28.
[13] Bourreau M and Doğan P, "*Regulation and innovation in the telecommunications industry*", Telecommunications Policy, 2001, Vol. 25(3), 167 184 at 169.
[14] Akalu R, "*EU spectrum reform and the Wireless Access Policy for Electronic Communications Services (WAPECS) concept*", info, 2006, Vol. 8, Iss 6, 31 50 at 32.
[15] See Note 1 Above at 39, 55, Chapter 2 (Batura O, 'Universal Service in WTO and EU law').
[16] Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*", 12(4) Computer and Telecommunications Law Review, 2006, 114 139 at 120.
[17] Ofcom, '*Consolidated Version Of General Conditions as at 28 May 2015'*, 1 109 at 20, 90. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0026/86273/CONSOLIDATED_VERSION_OF_GENERAL_CONDITIONS_AS_AT_28_MAY_2015-1.pdf (accessed 1-July-2017).

exchanges.[18]) This regulatory policy of the UK is a world-wide practice, and confirmed by European Union (EU) law[19] and jurisprudence.[20]

1.2 UK reformed its communications regulation in the 1980s by instituting an independent regulator, ended monopoly, and liberalised the sector. Ghana did same, by reforming its communications regime in the 1990s.

At the start of regulatory reforms in the UK in 1980, fixed-line (narrowband) penetration was 33.1 main lines per every hundred inhabitants.[21] Updated data for UK for 2015 show 84% for fixed-line penetration, 93% for mobile phones (adults), and 80% for broadband Internet (adults).[22]

Comparatively, at the start of regulatory reforms in Ghana in 1992, fixed-line (narrowband) penetration was 0.32 main line per every hundred inhabitants.[23] Updated data for 2016 show a fixed-line penetration of 1.08%, and 132% for mobile phones.[24]

Although Ghana has high mobile phone penetration, the abysmally low 1.08% fixed-line (narrowband) penetration seems largely responsible for the present

[18] Morel C, 'Turnkey solutions for concept to profit – Solutions that enhance the revenue generating potential of telecom in developing countries', 261 270 at 263, Section 3.1.5, in Telecom Development Summit – Speakers' Book, International Telecommunication Union, 1999. Available at www.itu.int/itudoc/telecom/tlc99/sp_book.pdf (accessed 21-June-2017).
[19] The EU Universal Service Directive (Directive 2002/22/EC of 7 March 2002) in Recital 8 and Article 4 mandates the provision of phone, fax and data communication services in all Member States with a requirement that is "limited to a single narrowband network connection" to the "public telephone network at a fixed location."
[20] In the case of *Base Company NV and Mobistar NV* v *Ministerraad*, C-1/14, judgment of 11.6.2015, the European Court of Justice ruled that universal service under Directive 2002/22/EC was restricted to the use of fixed-location telephone [technology] connected to the public communications network; that the Belgian government could not expand the list of universal services to include provision of telephone and internet subscription using mobile phone [technology].
[21] Thatcher M, 'The politics of telecommunication. National institutions, convergence and change'. Oxford: Oxford University Press, 1999. At 269, Chapter 11 (Table 5).
[22] OfCom, *'Annual Report and Accounts For the period 1 April 2015 to 31 March 2016',* 1 122 at 12. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0033/81789/ofcom_annual_report_2015-2016.pdf (accessed 10-May-2017).
[23] Johnson G, Dymond A, Kien L L, 'Mechanisms for promoting teledensity in liberalised emerging markets', 123 132 at 128 in Telecom Development Summit – Speakers' Book, International Telecommunication Union, 1999. Available at www.itu.int/itudoc/telecom/tlc99/sp_book.pdf (accessed 21-June-2017).
[24] *National Communications Authority, Ghana, 'Industry Information', August 2016.* https://nca.org.gh/media-and-news/news/industry-information-august-2016/ *(accessed 14-June-2017).*

lower than 5%[25] uptake of the total 15 tbps (terabits per second) of landed undersea fibre Internet bandwidth capacity in Ghana.

Although Ghana has followed UK's pattern of regulatory reforms, Ghana is presently doing very poorly on the baseline narrowband parameters of fixed-line telephony and internet access penetration. These are 'universal service' requirements for maximising the population's access to communication services to help catalyse economic growth. The need is therefore identified to improve Ghana's regulatory framework to uncover more benefits of its communications infrastructure and potentials.

1.3 The focus of this research has therefore been to understand the communications regulatory practices of UK and Ghana, and inquire into how Ghana may improve its current regime with lessons from the UK regime.

To understand the regulatory practices of both countries, the global and country-specific historical backgrounds of communications regulation are first explored. This helps to place the practices of both countries in the proper historical and cultural contexts.

The regulatory regimes of both countries are then presented next. The presentation follows the path of examining the general policy thrusts of the respective regimes, the strengths, challenges, and the approaches employed to address the challenges. (The challenges and future thrusts of UK's regime are examined, not with the aim of addressing any UK issues, but to extract lessons Ghana may derive in how UK addresses such issues.)

Finally, lessons and recommendations that Ghana may adopt are proposed for improving Ghana's communications regulation environment.

[25] National Communications Authority (Ghana), 'Public Consultation on the Licensing of Frequency in the 800mhz Band (i.e. Digital Dividend) For Mobile Services', May 2015. 1 38 at 8. Available at *http://www.nca.org.gh/assets/Uploads/NCA-Public-Consultation-on-800MHz-band-2.pdf* (accessed 9-June-2017).

1.4 It is acknowledged that UK (developed) and Ghana (developing) have unique histories and circumstances that may inhibit the transfer of some regulatory practices of UK. However, communication service issues and challenges posed by new generation networks have been noted to impact developed and developing countries alike.[26] Moreover, since Ghana was a British colony until 1957, its pre-independence telecommunication administration was a branch or affiliate of the British Post Office (BPO).[27] Also, BPO provided trainers for Ghana's telecommunication industry as far back as 1948.[28] Ghana and UK therefore have some common history that may make it easier to adopt some UK solutions. This work therefore engages in what Ghana may appropriately learn from the UK. The areas of engagement include regulatory independence, convergent regulation, the authorisation regime, privatisation of regulation, use of fines, and dispute resolution. It is emphasised that the aim of this work is not to compare communications regulation performances of Ghana and UK. It is only to discuss and make recommendations using lessons that Ghana may appropriately derive from regulatory practices of the UK.

1.5 The terms telecommunications (or telecoms) and communications are sometimes [inaccurately] used interchangeably in the literature. In this work, telecommunications (also called electronic communications) are generally to be understood as specific instances of communications when conveyed electronically, but exclude content services such as information and entertainment. Communications is to be understood as the generic term comprising telecommunications, media,[29] postal services and broadcasting.[30]

---

[26] ITU, 'Trends in Telecommunication Reform 2013: Transnational Aspects of Regulation in a Networked Society', Geneva Switzerland, 2013. 1 204 at 184. Available at www.onu.org.br/img/2013/04/Trends2013_FULL-press-e.pdf (accessed 19-June-2017).

[27] Drake W J, 'The rise and decline of the international telecommunications regime', Part II, Chpt 8, 124 177 at 129, in Marsden, Christopher T. (ed.), Regulating the global information society, London: Routledge. 2000.

[28] Allotey F. K. A., Akorli F. K., 'Telecommunications in Ghana', in Telecommunications in Africa, (ed) Eli M. Noam, Oxford University Press, 1999. 178 192 at 182.

[29] Latzer defines communications to be understood in terms of the sum of telecommunications and media. See Latzer M, "*Convergence Revisited. Toward a Modified Pattern of Communications Governance".* Convergence: The International Journal of Research into New Media Technologies. Vol 15(4), 2009. 411 426 at 413.

[30] The meanings of communications, electronic communications and telecommunications in this work were derived from both UK and Ghana law: Sections 261(2),(13), 262(2) of the Investigatory Powers Act 2016 (UK); Section 32(1) of the Communications Act 2003 (UK); Section 101 of the Electronic Communications Act, 2008 Act 775 (Ghana); and also from: Ofcom, "*The General Authorisation*

2.0 Brief history of communications regulation: Global, UK, Ghana

2.1 A brief global history of telecommunication regulation

The natural monopoly era

Upon the discovery of the telegraph in 1837, some European nations came together through the Paris Treaty of 1865 (after earlier efforts such as the Dresden Treaty of 1850) to form the International Telegraph Union, through which international telegraphy was regulated.[31] With more members, the Union transformed into the International Telecommunications Union (ITU) in 1932, to regulate international telecommunications. The ITU came under the United Nations in 1947.[32] Until 1980, nearly all member-nations (except North America), used state monopolies as telecommunications providers.[33] This was because telecommunication was a "natural monopoly in which competition was bound to be inefficient."[34]

Telegraphy/telephony were historically classified as telecommunications, while the press/broadcasting were classified as media. Technologies and enterprises differed for these sub-sectors and their regulatory models were therefore different and separate.[35]

Regime", Available at https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-authorisation-regime (accessed 1-July-2017).

[31] ITU, *'*50 Years of Excellence: CCITT/ITU-T 1956-2006*'*, July 2006. 1 20 at 6. Available at https://www.itu.int/ITU-T/50/docs/ITU-T_50.pdf (accessed 12-May-2017).

[32] See Note 27 Above at 125, 126 (Drake W J, 'The rise and decline of the international telecommunications regime').

[33] Wallsten S, *'*Does Sequencing Matter? Regulation and Privatization in Telecommunications Reforms', World Bank Policy Research Working Paper 2817, 2002. 1 21 at 5.Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/14813/multi0page.pdf?sequence=1 (accessed 9-May-2017)

[34] World Bank, 'Regionalizing Telecommunications Reform in West Africa', Report No. 40142-AFR, June 2007 at 33. Available at http://documents.worldbank.org/curated/en/125301468009942364/401420ESW0P0910ON0OF0TELECOMS0Final.doc (accessed 19-June-2017).

[35] Latzer M, "*Convergence Revisited. Toward a Modified Pattern of Communications Governance".* Convergence: The International Journal of Research into New Media Technologies. Vol 15(4), 2009. 411 426 at 412.

Convergence and wave of liberalisation

However, advancements in technology in the period 1976-1986 led to a "massive change over to digital techniques".[36] This brought about convergence of electronic communications – same content could be transmitted over multiple infrastructure (wireless, wireline, satellite), and differing content (voice, data, image, video) could be transmitted over single infrastructure. Convergence thereby necessitated a global re-examination of the basis of regulation.[37] The internet started to be a public phenomenon, and the traditional separation of telecommunications, broadcasting and computers began to blur. Also, telecommunications technology emerged as a tradeable product on its own at the Uruguay Round trade negotiations in the 1990s.[38]

The effect of these was that the natural monopoly appeal of telecommunications began to wane in the 1980s, and a wave of regulatory liberalisation began to sweep across the globe.[39] The ITU describes the 1980s and 1990s as a period with:

> "rapid evolution of telecommunication technologies and a dynamic, changing environment characterised by buzz-words like liberalization, privatization, competition, globalization and regionalization..."[40]

[36] See Note 31 Above at 11 (ITU, '50 Years of Excellence: CCITT/ITU-T 1956-2006').
[37] Blackman C R, *"Convergence between telecommunications and other media: How should regulation adapt?"* Telecommunications Policy, 1998, Vol. 22(3), 163 170 at 169.
[38] See Note 1 Above at 28, Chapter 2 (Batura O, 'Universal Service in WTO and EU law…').
[39] Flanagan A, 'Authorisation and licensing', Chpt 6, 277 355 at 279, in Ian Walden (ed.), Telecommunications Law and Regulation (4th ed.), Oxford, UK: Oxford University Press 2012
[40] ITU, Theodore Irmer, "*From Melbourne to Helsinki*", ITU Telecommunication Journal, Volume 60 – No. III, March 1993 Page 101: Available at http://historicjournals.itu.int/viewer/630/?return=1&css-name=include#page=7&viewer=picture (accessed 16-July-2017).

2.2 A brief regulatory history of UK

Telecommunications monopoly

For reasons attributed to "national security, economic, social, and conceptual justifications", the International Telegraph Union of 1865-1932 had nationalisation or total control over national telegraph networks as an unwritten requirement to gain membership.[41] Britain therefore created a national monopoly for its telegraph services to qualify for membership in 1871.[42] The British Post Office, a government department, eventually became UK's telecommunications monopoly,[43] its jurisdiction having been extended from posts and telegraphs to include telephones, through the decision in *AG v Edison Telephone Company of London*.[44]

Start of liberalisation

However, by the 1960s, Britain's telecommunications monopoly experienced pressures from constrained investment, high tariffs, and long consumer wait-lists.[45] Lagging behind operators such as in the US and Germany also questioned Britain's regulatory model.[46] Although it had "no supranational legislation to relate to",[47] UK became one of the early adopters of telecom privatisation and liberalisation [with Japan and Canada] in the early 1980s, "in the hope of energizing their markets."[48] Prior to the European Commissions' market liberalisation directives of the 1990s[49] with

---

[41] See Note 27 Above at 129 (Drake W J, '*The rise and decline of the international telecommunications regime*"').
[42] See Note 31 Above at 7. (ITU, *'50 Years of Excellence: CCITT/ITU-T 1956-2006*').
[43] See Note 21 Above at 32, Chapter 2 (Thatcher M, 'The politics of telecommunication…')
[44] *The Attorney-General v The Edison Telephone Company of London (Limited),* 1880, 6 Q.B.D. 244.
[45] See Note 21 Above at 45, Chapter 2 (Thatcher M, 'The politics of telecommunication…')
[46] See Note 21 Above at 70, Chapter 3 (Thatcher M, 'The politics of telecommunication…')
[47] Eliassen K A and From J, "*Deregulation, privatization, and public service delivery: Universal service in telecommunications in Europe*", 27 Policy & Society (2009) 239 248 at 244.
[48] See Note 27 Above at 146 (Drake W J, "*The rise and decline of the international telecommunications regime*").
[49] Notably the full competition and licensing directives in the telecommunications markets, which included: Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets; Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets; and Directive 97/13/EC of the European Parliament and of the Council of 10 April 1997 on a common framework for general authorizations and individual licences in the field of telecommunications services.

a "single Community-wide market"[50] objective, UK had already commenced liberalisation through the creation and privatisation of British Telecom (BT), respectively, under the 1981[51] and 1984[52] Telecommunications Acts.[53] (UK continued to lead privatisation in Europe by being, for instance, in 2000, the first in Europe to auction radio frequencies for a universal mobile telecommunication system (UMTS).[54])

As a cause for full liberalisation, UK identified two weaknesses of BT:[55]

i. Inefficiencies due to government control – to be addressed with privatisation.
ii. Poor performance due to monopoly – to be addressed with competition.

The three regulatory phases

UK's first phase regulatory liberalisation was therefore privatisation through fifty-one percent sale of BT shares,[56] and the creation of a duopoly. The duopoly policy of 1984 to 1991 saw the licensing of Mercury to compete with BT.[57] By 1993, one hundred percent of BT's shares had been sold.[58]

A second phase liberalisation was embarked upon when UK decided to end the duopoly in a 1991 review. New regulatory policies were introduced that resulted in the issue of about 150 licences. These entrants provided

[50] Scherer J, 'Electronic Communication Law and Policy of the European Union', Part 1.1, Section 1.2, in J. Scherer et al, Telecommunication Laws in Europe; London: Bloomsbury, 2013 (6th ed).
[51] British Telecommunications Act 1981 c.38 (UK).
[52] Telecommunications Act 1984 c.12 (UK).
[53] See Note 21 Above at 144, 148, Chapter 7 (Thatcher M, 'The politics of telecommunication…')
[54] Basili M, Fontini F, "*The option value of the UK 3G telecom licenses*", Info : the Journal of Policy, Regulation and Strategy for Telecommunications, Information and Media, 2003, Vol.5(3), 48 52 at 48.
[55] Pye R, "*The UK duopoly review: Status and issues",* Telecommunications Policy, 1990, Vol.14(2), 99 104 at 101.
[56] Coen D, "*Managing the Political Life Cycle of Regulation in the UK and German Telecommunication Sectors"*, Annals of Public and Cooperative Economics, March 2005, Vol.76(1), 59 84 at 67.
[57] Cave M, "*The evolution of telecommunications regulation in the UK*", European Economic Review, 1997, Vol.41(3), 691 699 at 692.
[58] See Note 56 Above at 67 (Coen D, "*Managing the Political Life Cycle of Regulation in the UK)*.

competing voice and data telecommunication services in local, long distance and international resale markets.[59]

UK's regulatory policies of the 1980s and 1990s have been considered as "more, rather than less, pervasive" due to the effect of the progressive "tightening of overall cap on BT's retail prices."[60] For instance, in the area of interconnection arrangements with its competitors, regulatory policies 'silently encouraged' BT either "to reduce its retail leased line prices or watch its competitors steadily convert business customers to cheaper access offerings using its own infrastructure."[61]

A third phase of liberalisation was therefore considered necessary as a period of regulatory 'normalisation.'[62] This was began with the 2003 Communications Act.

The regulation transitions

UK's regulation therefore transitioned from the period of the first post-liberalisation regulator, Office of Telecommunications (Oftel), considered as the period of pervasive regulation, to the present Office of Communications (Ofcom) period, considered as a period of less intrusive regulation.

Regulation has also transitioned from under the 1984 Telecommunications Act, when four major parties were involved (the Department of Trade and Industry, Oftel, the Monopolies and Mergers Commission, and the Director General of Fair Trading),[63] to the present regime under the 2003 Communications Act, when Ofcom, a unitary body, is responsible for regulating communications in the UK. This new "single converged regulator"[64] approach is expected to "promote greater clarity and certainty,

[59] See Note 57 Above at 693 (Cave M, "*The evolution of telecommunications regulation).*
[60] *Ibid*.
[61] Scales I, "*End of the lease.(telecommunications regulation in the UK)*", Communications International. May, 2001. 11 12 at 11.
[62] See Note 57 Above at 693 (Cave M, "*The evolution of telecommunications regulation).*
[63] Beesley M E, Laidlaw B, Gist P, *"Prices and Competition on Voice Telephony in the UK*", Telecommunications Policy, Sep 1987, Vol.11(3), 230 236 at 230.
[64] Scraggs E et al., *"Ofcom: The effectiveness of converged regulation",* 2012. Rand Technical Report. 1 95 at 1. Available at http://www.rand.org/pubs/technical_reports/TR860.html (accessed 9-May-2017).

and avoid the inefficiencies associated with the jurisdictional overlap of multiple regulators."[65]

2.3 A brief regulatory history of Ghana

Ghana is a country located on the coast of West Africa with the Atlantic Ocean and Gulf of Guinea to its south. It is bordered to the west by Côte d'Ivoire, east by Togo and north by Burkina Faso.[66] Its 2016 population estimate is 28,308,301.[67]

The telegraph as a tool for colonisation and governance

Formerly called Gold Coast, historical contacts with Europeans – Portuguese, Danes, Dutch and English – from trading, dates back to the fifteenth century.[68] Formal relation with the British government was however not developed until 1821.[69] Then upon the departure of the Portuguese, Danes and Dutch, and the successful suppression of indigenous resistances[70], the British formally commenced the colonisation of modern day Ghana in July 1874.[71]

Transport and telecommunication were necessary tools for the suppression of indigenes' resistances to colonisation.[72] The first telegraph line was therefore laid as a ten mile link in 1881 in the south of the country, and

[65] Doyle G, Vick D W, "*The Communications Act 2003: A New Regulatory Framework in the UK*", Convergence: The International Journal of Research into New Media Technologies, 08/01/2005, Vol.11(3), 75 94 at 76.
[66] http://www.fao.org/nr/water/aquastat/countries_regions/gha/GHA-CP_eng.pdf (accessed 17-June-2017.
[67] http://www.statsghana.gov.gh/ (accessed 17-June-2017).
[68] Adu Boahen K, 'The Impact of European Presence on Slavery in the Sixteenth to Eighteenth-Century Gold Coast', Transactions of the Historical Society of Ghana, 1 January 2012, Issue 14, 165 199 at 169.
[69] Goldschmidt J E, National and Indigenous Constitutional Law in Ghana, Leiden 1981, at 86.
[70] Adu Boahen A, 'Africa under Colonial Domination 1880-1935', in General History of Africa VII, (ed) A Adu Boahen, UNESCO. London : Heinemann ;1985 at 3.
[71] Adu Boahen A, 'Ghana: Evolution and Change in the Nineteenth and Twentieth Centuries', Sankofa Educational Publishers Ltd. 2000, Accra, at 34.
[72] Rodney W, 'The Colonial Economy', in General History of Africa VII, (ed) A Adu Boahen, UNESCO. London : Heinemann ;1985 at 332.

extended to the middle and northern territories by 1886.[73] Superstitiously seen as the "magic" the British used to win wars,[74] unguarded telegraph poles and cables were pulled down by indigenes opposed to colonisation.[75]

Upon stabilisation of the colony, the British administration, by 1912, expanded the telecommunication infrastructure to forty-eight locations in the country to facilitate social, economic and political governance.[76]

Early management

From inception, the colonial government placed management of the telegraph network under the Public Works Department.[77] Management was however transferred to the Post Office, as the monopoly operator,[78] in line with the practice in Britain at the time. Telegraph poles and cables were entrusted into the hands of local chiefs, in 1886, to guard against indigenes who pulled them down because they saw them as tools for colonisation.

Post-independence regulation

Upon attaining independence in 1957, administration of Ghana's telecommunication network, which comprised of about 16,000 fixed-line subscribers by 1963 (against a population exceeding 6.7 million[79]), remained with the Post Office.[80] Administration was later transferred to the Post and Telecommunications Department (P&T) in 1974, after making it a public corporation,[81] under the Ministry of Transport and Communications for policy and control.[82]

[73] See Note 28 Above at 178 (Allotey F. K. A., Akorli F. K.)
[74] *Ibid*.
[75] See Note 72 Above (Rodney W).
[76] See Note 28 Above at 179 (Allotey F. K. A., Akorli F. K.).
[77] *Ibid*.
[78] Post Office Ordinance, 1886 (Ghana).
[79] https://tradingeconomics.com/ghana/population (accessed 18-June-2017).
[80] See Note 28 Above at 179 (Allotey F. K. A., Akorli F. K.).
[81] National Redemption Council Decree No. 311 (Ghana).
[82] See Note 28 Above at 179 (Allotey F. K. A., Akorli F. K.).

De-facto regulator

The P&T's regulatory functions included the assignment of communication frequencies. The military government in 1977 however reassigned this function to a newly formed Ghana Frequency Registration and Control Board (GFRCB).[83] Chaired by the head of state and advised by the National Security Council, the GFRCB became the *de-facto* communications regulator.[84] On the pain of possible imprisonment, no one could establish, install, operate, sell, manufacture, assemble or use any telecommunication device without licensing from the GFRCB.[85]

Start of deregulation

P&T remained as the monopoly operator until regulations were relaxed in 1987 under another military government. Private companies began to receive licences to install and use communication equipment compatible with P&T's equipment. About forty private companies, including a mobile and paging company, received licences by 1992.[86]

Regulatory reforms of the 1990s

Telephone penetration rate in Ghana was an abysmal 0.32 for every one hundred inhabitants by 1992.[87] (Penetration rate in the UK was between 45.5 (1990) and 50 (1995)).[88]

Scanty communication infrastructure, poor quality of service by the monopoly operator,[89] public sector and economic structural reform pressures from the World Bank,[90] global liberalisation negotiations of basic

[83] Frequency Registration Decree, 1977 (Ghana).
[84] See Note 28 Above at 181 (Allotey F. K. A., Akorli F. K.).
[85] See Note 83 Above (Frequency Registration Decree).
[86] See Note 28 Above at 187 (Allotey F. K. A., Akorli F. K.).
[87] See Note 23 Above (Johnson G, Dymond A, Kien L L, "*Mechanisms for promoting teledensity…*").
[88] See Note 21 Above at 269, Chapter 11 (Table 5) (Thatcher M, 'The politics of…')
[89] See Note 34 Above at 1 (World Bank, "*Regionalizing Telecommunications Reform"*).
[90] Tsikata Y. M., 'Successful Reformers: Ghana', in Aid & Reform in Africa, (editors) Shantayanan Devarajan, David R. Dollar, Torgny Holmgren, The World Bank, Washington, D.C. 2001. 1 696 at 78. Available at *documents.worldbank.org/curated/en/110381468751519166/pdf/multi0page.pdf* (accessed 19-June-2017).

telecommunication market under the Uruguay Round trade negotiations,[91] and the 1980s' global wave of regulatory reforms[92] all contributed to create a compelling environment for regulatory reforms in Ghana.

Reforms commenced in 1992 when a cellular phone operator, on *ad-hoc* basis,[93] was allowed entry. Policy objectives of regulatory reforms embarked on in the 1990s partially privatised the national operator by separating the telecommunication division of P&T[94] [to create Ghana Telecom]; introduced a second national operator – Westel – in 1997 to create a five-year duopoly, and created a new regulatory body[95] – the National Communications Authority (NCA), through a new [1996] Act.[96]

By undergoing these regulatory reforms, Ghana achieved that which is said to be rarely attempted in the developing world and "impossible in Africa", because of Africa's weak institutional setting.[97]

[91] Tobbin P, "*Understanding the Ghanaian Telecom Reform: An Institutional Theory Perspective*", 21st European Regional ITS Conference, Copenhagen, September 2010, Center for Multimedia and Information Technologies, Aalborg University, Denmark, 1 16 at 13. Available at *www.econstor.eu/obitstream/10419/44437/1/45_tobbin.pdf* (accessed 20-June-2017).
[92] Frempong G, "Telecommunication Reforms – Ghana's Experience", Institute for World Economics and International Management, Andreas Knorr, Alfons Lemper, Axel Sell, Karl Wohlmuth (Hrsg.), Berichte aus dem Weltwirtschaftlichen Colloquium der Universität Bremen, Nr. 78, April 2002. 1 53 at 1. Available at *www.iwim.uni-bremen.de/publikationen/pdf/b078.pdf* (accessed 20-June-2017).
[93] Haggarty L, Shirley M M, Wallsten S, 'Telecommunication Reform in Ghana', (November 2002). World Bank Policy Research Working Paper No. 2983, 1 40 at 19. Available at SSRN: https://ssrn.com/abstract=636345 (Accessed 22-June-2017).
[94] Statutory Corporations (Conversion to Companies) Act, 1993 (Act 461) (Ghana).
[95] See Note 34 Above at 65 – Ghana-Overview (World Bank, "*Regionalizing Telecommunications Reform"*).
[96] National Communications Authority Act, 1996 (Act 524) (Ghana).
[97] See Note 93 Above at 3 (Haggarty L, Shirley M M, Wallsten S).

3.0 Communications regulation in the UK

Established under the Office of Communications Act 2002,[98] Ofcom is the body which regulates communications in the UK.[99] Ofcom operates mainly under the Communications Act 2003,[100] enacted under EU Directives which include the Access,[101] Authorisation,[102] Framework,[103] and Universal Service[104] Directives. Ofcom is also guided by the Competition Act 1998,[105] and the Enterprise Act 2002.[106]

Other legislation that Ofcom operates under include the Broadcasting Acts 1990[107] and 1996,[108] Wireless Telegraphy Act 2006,[109] Postal Services Act 2011[110] and Digital Economy Acts 2010[111] and 2017.[112]

Ofcom regulates radio, television, video-on-demand, mobile and fixed line telecommunications, postal services and wireless device frequencies.[113] Beginning this year (2017), Ofcom is also to regulate the BBC per the Digital Economy Act 2017.[114]

---

[98] Office of Communications Act 2002, c.11 (UK).
[99] Section 2, Office of Communications Act 2002 (UK).
[100] Communications Act 2003, c.21 (UK).
[101] Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).
[102] Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive).
[103] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive).
[104] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).
[105] Competition Act 1998 c.41 (UK).
[106] Enterprise Act 2002 c.40 (UK).
[107] Broadcasting Act 1990 c.42 (UK).
[108] Broadcasting Act 1996 c.55 (UK).
[109] Wireless Telegraphy Act 2006 c.36 (UK).
[110] Postal Services Act 2011 c.5 (UK).
[111] Digital Economy Act 2010 c.24 (UK).
[112] Digital Economy Act 2017 c.30 (UK).
[113] Ofcom, "*What is Ofcom?*" Available at https://www.ofcom.org.uk/about-ofcom/what-is-ofcom (accessed 10-May-2017).
[114] Section 198(1), Communications Act 2003 (as amended by Section 88(3), Digital Economy Act 2017) (UK).

Derived from these laws, Ofcom's main functions are as depicted in Figure 1 below.

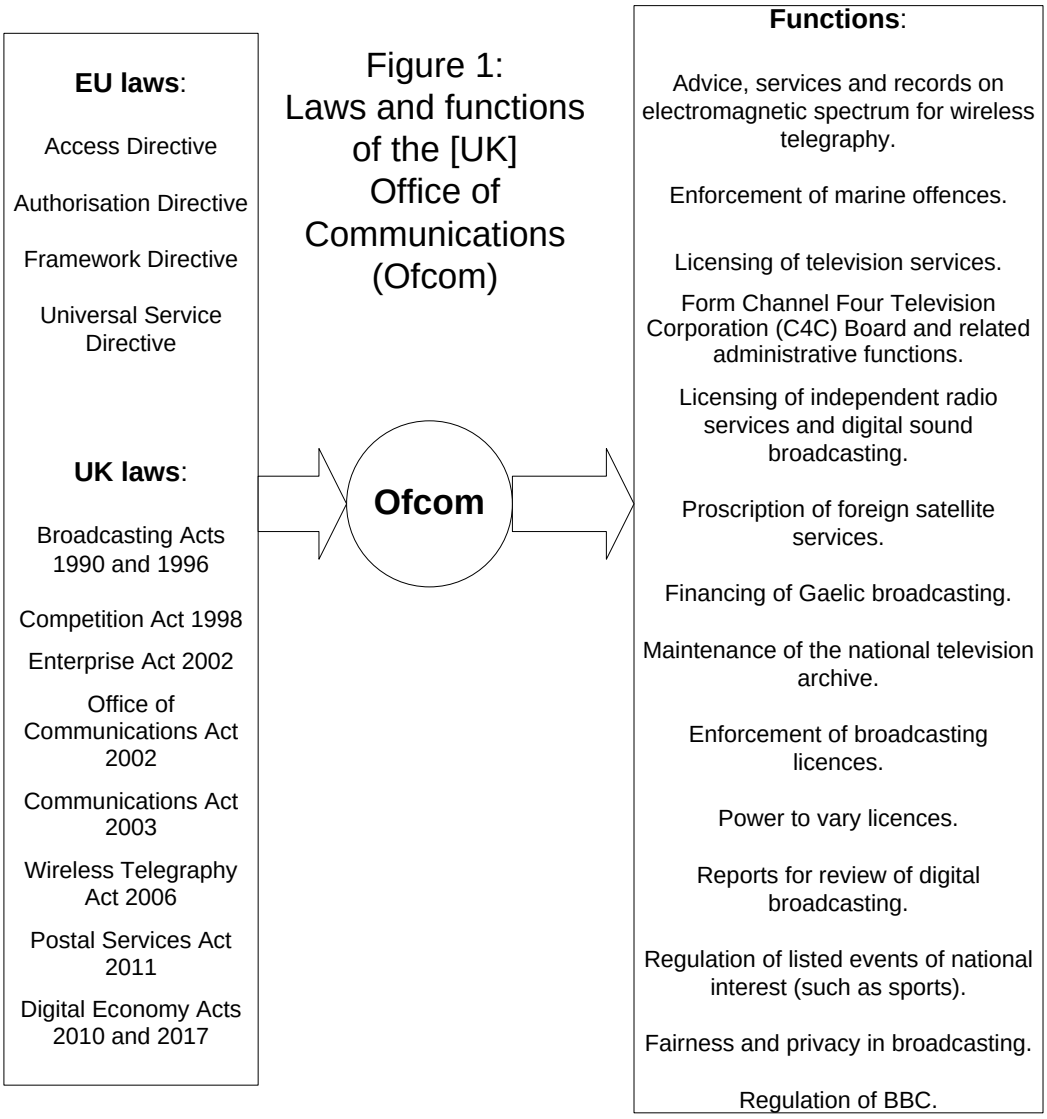

Figure 1: Laws and functions of the [UK] Office of Communications (Ofcom)

Key communications regulation policies of the UK

i. Ofcom is responsible for the economic, cultural and technical regulation of all electronic communications. It took over the functions of five legacy regulators for telecommunication and mass media, namely, Oftel (telecommunication), Radiocommunications Agency (wireless spectrum), Independent Television Commission (commercial television), Radio Authority (commercial radio), and the Broadcasting Standards Commission (broadcasting content).[115]

[115] See Note 65 Above (Doyle G, Vick D W, "*The Communications Act 2003).*

ii. Derived from the Communications Act[116] and the Framework Directive,[117] Ofcom also exercises powers to promote competition in the provision of electronic communications networks and services.

iii. Ofcom is governed by a Board accountable to Parliament,[118] and does not exercise its mandate on behalf of the British Crown.[119] Six out of its present nine members (including the chairman) are appointed by the government.[120] The Board appoints its executive members (including the chief executive), and employs its own officers and staff.[121]

iv. Government is precluded from giving directions to Ofcom with regard to its regulatory functions, except when it concerns national security, public safety and health or foreign relations.[122]

v. Market entry is by general authorisation[123] (as opposed to licensing) through a General Conditions of Entitlement[124] applicable to all communications providers in accordance with the Communications Act[125] and EU law.[126] Specific conditions apply to specific operators, such as those with significant market power with universal service and other specific obligations.

Notes on communications regulation in the UK

It may be observed from the above that Ofcom is a convergent regulator due to its technical and content regulatory functions. It also has the needed statutory protection to operate as an independent regulator over the entire communications industry in the UK. It is also to be noted that through the policy of authorisation, the bar to market entry in the communications industry is low and uncontrolled.

---

[116] Section 4, Communications Act 2003 (UK).
[117] Article 8, Directive 2002/21/EC (Framework Directive).
[118] See Note 113 Above (Ofcom, "*What is Ofcom?*").
[119] Section 1(9), Office of Communications Act 2002 (UK).
[120] See Note 65 Above (Doyle G, Vick D W, "*The Communications Act 2003).*
[121] Section 5 of Schedule, Office of Communications Act 2002 (UK).
[122] Section 5(3), Communications Act 2003 (UK).
[123] Ofcom, 'The General Authorisation Regime', Available at https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-authorisation-regime (accessed 1-July-2017).
[124] Ofcom, 'Consolidated Version Of General Conditions as at 28 May 2015', Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0026/86273/CONSOLIDATED_VERSION_OF_GENERAL_CONDITIONS_AS_AT_28_MAY_2015-1.pdf (accessed 1-July-2017).
[125] Section 45, Communications Act 2003 (UK).
[126] Articles 3(2), 5(1), Directive 2002/20/EC (Authorisation Directive).

3.1 General thrust of communications regulation policy in the UK

As stated in the Ofcom 2016[127] and 2017[128] annual reports to Parliament, the principal duty of regulation in the UK is to "further citizen and consumer interests."

i. The thrust of citizen and consumer interests

Unambiguously driven by statute,[129] the thrust of UK's communications regulation policy may be said to be the interlocking duty of balancing end-user needs in the short term, with the long term need to promote competition.[130]

ii. Bias against intervention

Ofcom recognises that citizen and consumer interests are furthered best with open markets – where "new entrants can compete against incumbents, investment is encouraged and innovation flourishes."[131] It further recognises regulations' potential to reduce competition. Therefore, to achieve the dual-goal of furthering end-user needs and promoting competition, Ofcom adopts a bias against [regulatory] intervention, but with a "willingness to intervene firmly, promptly and effectively where required",[132] with least intrusive mechanisms. Ofcom therefore has the inclination to encourage self-regulation and co-regulation, in preference to "imposition of direct regulatory obligations."[133]

---

[127] See Note 22 Above at 4 (OfCom, *'*Annual Report and Accounts For the period 1 April 2015 to 31 March 2016*')*.
[128] OfCom, *'*Annual Report and Accounts For the period 1 April 2016 to 31 March 2017*',* 1 129 at 1. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0021/104358/annual-report-2016-accessible.pdf (accessed 1-Aug-2017).
[129] Section 3(1), Communications Act 2003 (UK).
[130] See Note 16 Above at 121 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*").
[131] Ofcom, 'Better policy making - Ofcom's approach to impact assessment', July 2005. 1 23 at 3. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0029/45596/condoc.pdf (accessed 10-May-2017).
[132] See Note 113 Above (Ofcom, "*What is Ofcom?*").
[133] See Note 16 Above at 120 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*").

3.2 The strengths and challenges of communications policies in the UK

Regulatory strengths

UK's communications regulatory system has been hailed as a world leader.[134] It has strengths that include regulator independence, regulator 'appetite', dispute resolution, strong investor response, high consumer satisfaction and high service take-up rate.

i. Regulator independence

The degree of regulator independence granted and exercised by Ofcom is distinguishing.[135] Linked to liberalisation and privatisation, Ofcom has achieved striking successes in the UK – user needs have been well catered for, the "range and quality of services have been greatly improved", and prices have been well contained.[136] Coen has attributed the regulator independence of Ofcom to factors that include its "informational and expertise advantages", and legitimacy derived from the EU.[137]

ii. Regulator 'appetite'

Ofcom's "appetite for the task", "intellectual flexibility and originality", and "desire to affect genuine change",[138] are driving-strengths for its regulatory successes.

iii. Dispute resolution

UK's regulatory system has over the years developed robust and successful procedures to resolve end-user and inter-operator conflicts and disputes.[139]

---

[134] Brisby P, "*Dispute Resolution in Telecoms--The Regulatory Perspective*" [2005]. Computer and Telecommunications Law Review. 11(1) 4 9 at 9.
[135] Wigglesworth B and Barnes F, "*UK policies and regulations*", Telecommunications Policy, 1992. Vol.16(9), 721 725 at 721.
[136] *Ibid* at 725.
[137] See Note 56 Above at 78 (Coen D, "*Managing the Political Life Cycle of Regulation in the UK)*.
[138] See Note 16 Above at 133 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*")
[139] See Note 134 Above at 9 (Brisby P, "*Dispute Resolution in Telecoms).*

iv. Investor response

Investor responses to regulatory measures are reportedly very strong. The direct result is the availability of 30mbps ('superfast') broadband to 89% of UK premises in 2016;[140] among BT, G.FAST and Virgin Media, fiber-to-the-premises (FTTP) will, by 2020, be delivered to over twelve million premises;[141] and per the 2016 Autumn Statement, government is facilitating the investment of over £1 billion by 2021 to support the rollout of "full-fibre connections and future 5G communications."[142]

v. Consumer satisfaction

Covering the 2016 calendar year, customer satisfaction with services received was very high. They were 92% of mobile users, 89% of landline users and 87% of Internet broadband users.[143]

vi. Service take-up rate

The following telecom service take-up data for 2015 give strong indications of the strength and progress of UK regulatory policies: 84% for landlines, 93% for mobile phones (adults), 61% for mobile data (adults), 80% for broadband internet (adults), and 46% premises coverage for broadband internet speed in excess of 100 mbps.[144] The number of fixed landlines (with ISDN) is 33.2 million.[145] It is also estimated that 98% of households will receive indoor 4G signal before the end of 2017.[146]

---

[140] Ofcom, 'Connected Nations 2016', 16 December 2016, Available at https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2016. (Google archive of 29-June-2017; accessed 1-July-2017).
[141] Ofcom, 'Annual Plan 2017/18', 1 61 at 6. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0027/99621/Annual-Plan-2017-18.pdf (accessed 10-May-2017).
[142] GOV.UK – HM Treasury, 'Policy paper: Autumn Statement 2016', 23 November 2016. Available at https://www.gov.uk/government/publications/autumn-statement-2016-documents/autumn-statement-2016 (accessed 4-July-2017).
[143] Ofcom, 'Service quality of telecoms providers revealed', 27 April 2017, Available at https://www.ofcom.org.uk/about-ofcom/latest/media/media- releases/2017/service-quality-telecoms-providers (accessed 10-May-2017); see also Note 128 Above at 16 (OfCom, *"Annual Report and Accounts For the period 1 April 2016 to 31 March 2017").*
[144] See Note 22 Above (OfCom, 'Annual Report and Accounts For the period 1 April 2015 to 31 March 2016'*).*
[145] Ofcom, 'Facts & figures 2016', Available at https://www.ofcom.org.uk/about-ofcom/latest/media/facts (accessed 10-May-2017).
[146] See Note 22 Above at 9 (OfCom, *'*Annual Report and Accounts For the period 1 April 2015 to 31 March 2016'*).*

Regulatory challenges

The successes of the UK regulatory system is not a universally rosy picture. Challenges range from effective access to broadband, to the unsuitability of the present law for future technologies:

i. Effective access to broadband

Despite the high levels of investments, Ofcom reports that 5% of UK households presently cannot effectively access the internet because of lower than 10mbps broadband speed. This poses a risk of creating a 'digital divide'.[147]

ii. Barriers to effective access to services

The provision of fixed broadband, coverage for mobiles and postal services to meet consumer needs in rural and remote locations also pose challenges due to the economic geography of such areas.[148]

iii. Consolidation

Ofcom considers consolidation (through mergers and acquisitions) in the communications market as a challenge to regulation. This is because of consolidation's potential to weaken competition, with probable adverse effects on prices and service quality.[149]

iv. Unsuitability of present law for future technologies

Another regulatory challenge faced by Ofcom is the unsuitability of the Communications Act 2003 (as the basis of the present regulatory framework) for the regulation of next generation networks (NGNs). The 2003 regulatory framework depends on data obtained from existing markets to apply or forbear regulatory measures. The 2003 framework is for regulation today; it does not regulate the future. It is therefore right to conclude that the present framework "has a bias against the regulation of developing markets."[150]

---

[147] See Note 141 Above at 7 (Ofcom, '*Annual Plan 2017/18*').
[148] See Note 141 Above at 13 (Ofcom, '*Annual Plan 2017/18*').
[149] See Note 22 Above at 29 (OfCom, *'Annual Report and Accounts For the period 1 April 2015 to 31 March 2016').*
[150] See Note 16 Above at 130 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*").

3.3 Approaches to addressing communications policy challenges in the UK

Following are some of the approaches that Ofcom has adopted in addressing challenges faced in communications regulation:

i. Use of consultations, self- and co-regulation

An approach Ofcom has used with astounding success in addressing regulatory challenges is the use of broad consultations about its functions and issues of uncertainty.

Ofcom in 2003 inherited a regulatory system that for twenty years, had relied on "intrusive micro-management" methods, and had failed to keep pace with the industry.[151] The market was fragmented in several parts; access to capital was difficult; new entrants could not overcome sunk costs and economies of scale bottlenecks; barriers to investment and competition existed from inequality of access to crucial parts of a fixed telecom market dominated by BT.[152] Ofcom also faced the challenge of the unsuitability of the 2003 regulatory framework for the regulation of future telecom technologies, such as BT's intention to deploy a next generation network which they called 21CN (21st Century Network), an end-to-end Internet Protocol (IP) network.

Ofcom kicked off wide-ranging industry consultations and reviews in 2004, called the Telecommunication Strategic Review (TSR). It was the first in thirteen years.[153] Issues consulted on included finding the "key attributes of a well-functioning telecoms market in serving the interests of citizen-consumers", and the significance of emerging and evolutionary technologies for "future

[151] Ofcom, 'Strategic Review of Telecommunications Phase 2 Proposals', November 2004. Available at https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2004/strategic-review-of-telecommunications-phase-2-proposals (accessed 5-July-2017).
[152] See Note 16 Above at 131 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*").
[153] Ofcom, 'Strategic Review of Telecommunications Phase 1', April 2004. Available at https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2004/ofcom-publishes-strategic-review-of-telecommunications-phase-1-consultation (accessed 5-July-2017).

regulatory strategy."[154] The conclusions of the TSR led to a "fundamental change in regulation" in the UK, with "substantial benefits."[155]

Ofcom's traditional regulatory options upon concluding the consultations, included the intrusive measure of referring BT to the Competition Commission under the Enterprise Act[156] for a possible forced breakup. Rather than accept such a reference, BT made voluntary (but legally binding) undertakings permitted by the Enterprise Act[157] which Ofcom accepted. BT's 'Undertakings'[158] were self-regulatory measures that satisfactorily provided solutions to Ofcom's competition concerns, and also resolved Ofcom's challenge of how to regulate NGNs. Additionally, Ofcom resorted to the creation of a new co-regulatory body for the regulation of NGNs.

Ofcom, thus adopted the approach of consultations, self-regulation and co-regulation to address the challenges encountered with BT's network dominance. The same approach addressed the regulatory framework's non-suitability for the regulation of future technologies.

Ofcom has also been noted to use the approach of co-regulation to great success in the resolution of industry disputes.[159]

ii. Additional coverage obligations imposed on operators

To address the challenge of lack of total network coverage, Ofcom uses the approach of imposing "further coverage obligations on new spectrum" when awarding additional frequencies. This would include broadband universal

---

[154] *Ibid*.
[155] Ofcom, 'Impact of the Strategic Review of Telecoms -- Implementation review', 29 May 2009, Sections 1.3, 1.4. Available at https://stakeholders.ofcom.org.uk/binaries/telecoms/policy/bt/impact_srt_fulldoc.pdf (accessed 10-May-2017).
[156] Section 131, Enterprise Act 2002 (UK).
[157] Section 154, Enterprise Act 2002 (UK).
[158] British Telecom, 'Undertakings given to Ofcom by BT Pursuant to the Enterprise Act 2002', 26 July 2016. Available at https://www.btplc.com/UKDigitalFuture/TheOffer/ConsolidatedUndertakings.pdf (Google archive accessed 10-May-2017).
[159] See Note 134 Above at 8 (Brisby P, "*Dispute Resolution in Telecoms).*

service obligations.[160] The frequencies released by government, [which Ofcom is planning to award,] include 2.3GHz and 3.4GHz,[161] and the 700MHz bands.[162] 26GHz and 3.6-3.8GHz are also earmarked to be awarded for next generation 5G mobiles.[163]

Also, "to meet growing and competing demand for spectrum",[164] Ofcom has adopted the additional approach of spectrum sharing.[165] This is to enable network and service providers to share spectrum to improve network coverage.

iii. Using consumer information to raise industry standards

To address challenges of service quality standards and to further competition, Ofcom has adopted the approach of providing an interactive web tool. It informs consumers of the comparative performance of service providers. The data are sourced from research and consumer complaints.

This approach incentivises service providers to "improve their service quality and fix recurring problems." It also informs "consumers who are shopping around for a new provider."[166]

3.4 Future thrust of communications regulation in the UK

Under the Communications Act 2003, the future thrust of communications regulation is expected to remain focused on furthering citizen-consumers' interests, and promoting competition. Major changes in the underlying technologies of communications and governance policies are however

[160] See Note 141 Above at 13 (Ofcom, '*Annual Plan 2017/18*').
[161] See Note 141 Above at 9, 29 (Ofcom, '*Annual Plan 2017/18*').
[162] Ofcom, 'Moving Freeview to make more airwaves available for mobile – the '700 MHz clearance'', February 2017. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0026/97361/700MHz-clearance-update-08022017.pdf (accessed 10-May-2017).
[163] See Note 141 Above at 33 (Ofcom, "*Annual Plan 2017/18*").
[164] Ofcom, 'A framework for spectrum sharing', July 2015. 1 40 at 3. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0032/79385/spectrum-sharing-framework.pdf (accessed 5-July-2017).
[165] Ofcom, "*Spectrum management*". May 2016. Available at https://www.ofcom.org.uk/spectrum/spectrum-management (accessed 10-May-2017).
[166] See Note 143 Above (Ofcom, "*Service quality of telecoms providers revealed*").

expected to elicit new and nuanced emphases from Ofcom in their regulatory methodologies. Areas that are expected to require regulatory responses in the future include NGNs, user and operator disputes, and communication policy implications of Brexit:

i. Next Generation Networks (NGNs)

(While the ITU defines NGN using IP,[167] Ofcom's definition is based on network speed.[168] In this work, I have combined both ITU and Ofcom definitions. Therefore, with 5G providing speeds of up to forty times the speed of 4G,[169] I have included 5G mobiles, in addition to fibre cable links which use IP technology, in the definition of NGN.)

As networks move to end-to-end IP through NGNs, the future thrust of communications regulation is expected to identify new strategies for ensuring continued consumer satisfaction and promote competition.

Ofcom, in future, expects a shift in "traditional sources of market power", as increasing migration to IP easily "allows new types of suppliers into the market". This has implications, for instance, for "different kinds of competition in voice services", with possible changes in the overall scope of competition and regulation of end-user device controls.[170]

In view of the unsuitability of the present framework for regulating NGNs, Ofcom has created a co-regulatory group called NGN UK, to facilitate the regulation of this much anticipated future.

ii. Dispute resolution

With Ofcom's present successful approach to dispute resolution through the use of co-regulatory methods, it is envisaged that future regulation will rely on

[167] ITU, 'What is NGN*?'* Available at http://www.itu.int/ITU-D/treg/publications/trends07.html (accessed 3-July-2017).
[168] See Note 64 Above at 10 (Scraggs E et al., *"Ofcom: The effectiveness of converged regulation").*
[169] See Note 141 Above at 7 (Ofcom, "*Annual Plan 2017/18*").
[170] See Note 153 Above (Ofcom, "*Strategic Review of Telecommunications Phase 1").*

a greater role for Alternate Dispute Resolution (ADR) as a dispute resolution mechanism.[171]

iii. Brexit

The UK, having voted on 23rd June, 2016, to leave the EU,[172] formally notified the European Commission of this intention on 29th March, 2017.[173] UK and EU have therefore begun exit negotiations. Brexit means a definite change in the political governance policies of the UK, upon her exit from the EU, with implications for future regulatory policies.

Ofcom, in their 2017/2018 Annual plan has indicated that the impact of Brexit on the future of UK's communications market cannot be determined now, as it will "depend on arrangements yet to be negotiated."[174]

4.0 Communications regulation in Ghana

Communications regulation in Ghana is effected through government policies, Parliamentary Acts and Regulations.

Following the regulatory reforms of the 1990s, communications regulation in Ghana has been driven by two main policies:[175] a 2003 Information Communication Technology Accelerated Development policy (ICT4AD),[176] and a 2005

[171] See Note 134 Above at 9 (Brisby P, "*Dispute Resolution in Telecoms).*
[172] Alex Hunt and Brian Wheeler, *"Brexit: All you need to know about the UK leaving the EU"*, BBC News, 27 June 2017. Available at http://www.bbc.com/news/uk-politics-32810887 (accessed 6-July-2017).
[173] European Commission, "*Brexit negotiations*", Available at https://ec.europa.eu/commission/brexit-negotiations_en (accessed 6-July-2017).
[174] See Note 141 Above at 8 (Ofcom, "*Annual Plan 2017/18*").
[175] Frempong G K, "*Telecommunications Sector Performance Review -- Ghana*", Science and Technology Policy Research Institute, Accra, Ghana. 2007. 1 57 at 15. Available at https://www.researchictafrica.net/publications/Telecommunications_Sector_Performance_Reviews_2007/Ghana%20Telecommunications%20Sector%20Performance%20Review%202007.pdf (accessed 20-June-2017).
[176] Government of Ghana -- Ministry of Communications, "The Ghana ICT for Accelerated Development (ICT4AD) Policy", 2003. Available at http://www.moc.gov.gh/sites/default/files/downloads/Ghana-ICTAD%20Policy-Master-final-2.pdf (accessed 23-June-2017).

telecommunication policy (NTP'05)[177]. Flowing from these policies, the 1996 NCA Act[178] was replaced with the 2008 NCA Act,[179] NCA Regulations,[180] and the Electronic Communications Act.[181]

Derived from these policies and laws, the main functions of the NCA, are as depicted in Figure 2 below.

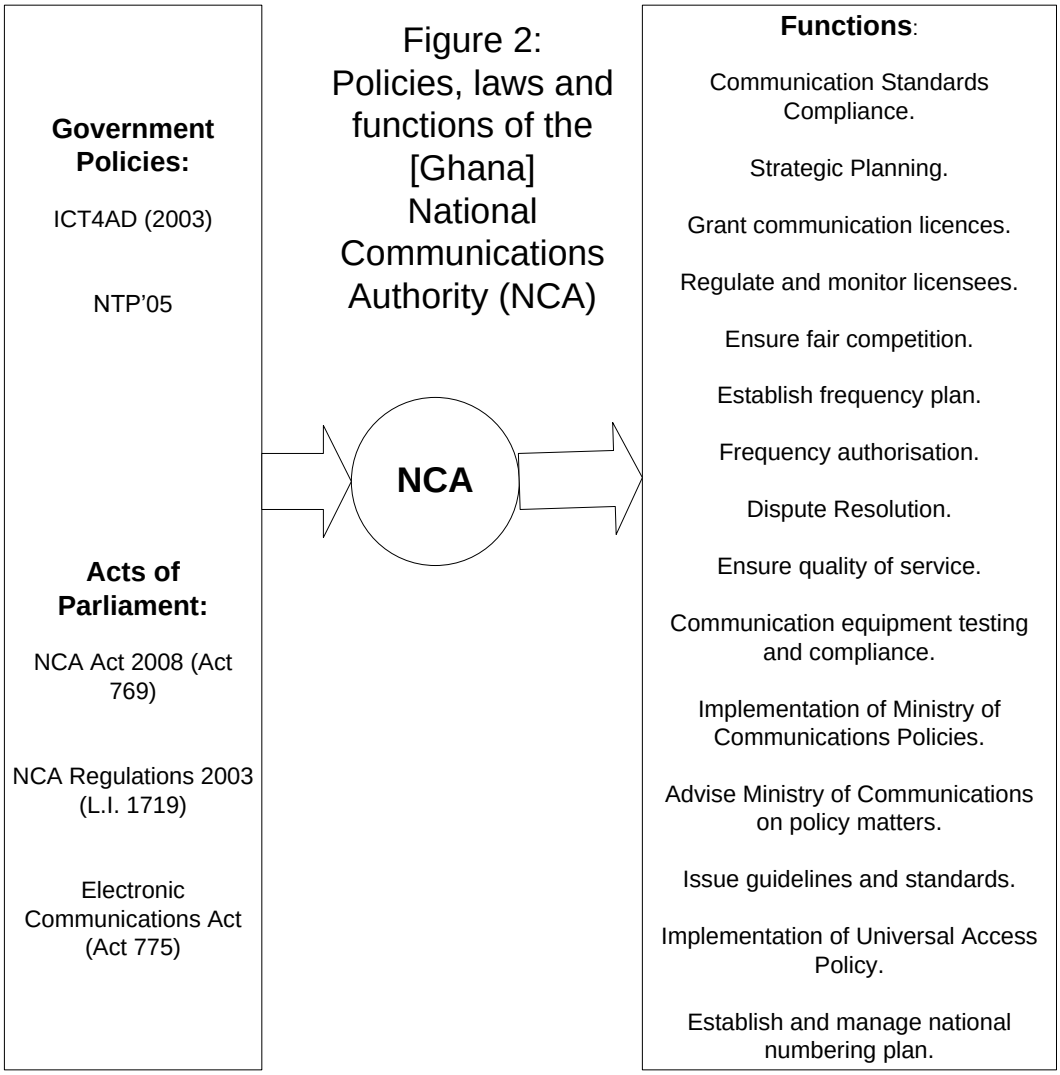

Figure 2: Policies, laws and functions of the [Ghana] National Communications Authority (NCA)

[177] Government of Ghana -- Ministry of Communications, "National Telecommunications Policy", 2005 (NTP'05). 1 33. Available at http://www.nca.org.gh/assets/Uploads/Ghana-Telecom-Policy-2005.pdf (accessed 12-June-2017).
[178] National Communications Authority Act, 1996 (Act 524) (Ghana).
[179] National Communications Authority Act, 2008 (Act 769) (Ghana).
[180] National Communications Regulations, 2003 (L.I. 1719) (Ghana).
[181] Electronic Communications Act, 2008 (Act 775) (Ghana).

Key communications regulation policies of Ghana

i. The Ministry of Communications is responsible for policy,[182] while the National Communications Authority (NCA) implements regulatory policies and laws for the provision of electronic communications and broadcasting services in Ghana.[183] [184]
ii. Services involving the military, security agencies and other branches of government are excluded by the Act.[185]
iii. The NCA is not concerned with the regulation of media content for mass communication; this is the responsibility of the National Media Commission.[186]
iv. Market entry for regulated entities is via a prior licence granted by the NCA.[187]
v. The NCA is governed by a Board,[188] by which it takes its decisions through simple majority voting.[189]
vi. All members of the Board are appointed by the President of Ghana,[190] who may also revoke such appointments at any time.[191]
vii. The President also appoints the Director General, his deputies, and other officers and staff of the regulator on terms and conditions determined by the President.[192]
viii. The Board is bound to comply with written policy directives of the Minister of Communications.[193]

Notes on communications regulation in Ghana

It may be observed from the above that the NCA is tightly controlled by the President of Ghana through the appointments of its entire Board, officers and staff. NCA cannot therefore be regarded as an independent regulator. It is also to be noted that the power of the President to appoint the Board was exercised in such a way that the NCA for

[182] Section 3.1, page 13, National Telecommunication Policy 2005; Section 14(1), National Communications Authority Act, 2008 (Act 769) (Ghana).
[183] Section 3.2, page 13, National Telecommunication Policy 2005; Section 2, National Communications Authority Act, 2008 (Act 769) (Ghana).
[184] National Communications Authority (Ghana), *"What We Do"*. Available at http://www.nca.org.gh/the-nca/what-we-do/ (accessed 13-June-2017).
[185] Section 1, Electronic Communications Act, 2008 (Act 775) (Ghana).
[186] Section 2, National Media Commission Act, 1993 (Act 449) (Ghana).
[187] Section 3(1), Electronic Communications Act, 2008 (Act 775) (Ghana).
[188] Section 6, National Communications Authority Act, 2008 (Act 769) (Ghana).
[189] Section 9(5), National Communications Authority Act, 2008 (Act 769) (Ghana).
[190] Section 6(3), National Communications Authority Act, 2008 (Act 769) (Ghana).
[191] Section 8(5), National Communications Authority Act, 2008 (Act 769) (Ghana).
[192] Sections 16-19, National Communications Authority Act, 2008 (Act 769) (Ghana).
[193] Section 14(1), National Communications Authority Act, 2008 (Act 769) (Ghana).

most part from its inception (in 1996) until May 2003 had no Board; or the Minister of Communications was the chairman of the Board.[194]

4.1 General thrust of communications regulation policy in Ghana

Ghana's communications regulatory reforms, as commenced in the 1990s, may be said to have two main thrusts, namely, rapid increase in teledensity (the number of telephone users per every hundred inhabitants), and source of revenue for government.

i. Teledensity

Describing Ghana's general economic reforms in the 1990s, the World Bank hails the nation as a star reformer.[195] Ghana's regulatory reforms of the 1990s were touted as an African success story,[196] partly due to an over 200% increase in fixed-line teledensity. This achievement, if we may call it so, was a direct result from the privatisation of Ghana Telecom, and creation of the 1997 duopoly. In real terms however, Ghana's fixed-line teledensity increased from 0.32 for every 100 inhabitants[197] at the beginning of the reforms in 1992, to the present meagre value of 1.08 [August 2016.][198]

Teledensity was therefore a sticking problem the nation faced at the start of the reforms. Unsurprisingly, teledensity became the main thrust of Ghana's telecom regulation policy. This was evidenced by the regulator setting high targets for "network expansion and quality of service" in the licences of the duopoly, with "no universal service obligations."[199]

---

[194] See Note 34 Above at 9 (World Bank, "*Regionalizing Telecommunications Reform"*).
[195] See Note 90 Above at 11, 14 (Tsikata Y. M., "*Successful Reformers: Ghana).*
[196] See Note 34 Above at 33 (World Bank, "*Regionalizing Telecommunications Reform"*).
[197] See Note 23 Above (Johnson G, Dymond A, Kien L L, "*Mechanisms for promoting teledensity…"*).
[198] See Note 24 Above (*National Communications Authority, Ghana, "Industry Information").*
[199] See Note 93 Above at 20 (Haggarty L, Shirley M M, Wallsten S).

Also, a key regulatory practice is the obligation imposed on operators, by policy[200] and by law,[201] to share "to the greatest extent possible" any private facilities such as towers and other "physical support structures".[202] This policy is obviously calculated to, *inter alia*, reduce cost to operators in order to rapidly increase teledensity.

ii. Source of government revenue

The regulatory reforms of the 1990s were embarked upon at a time when Ghana was undergoing "severe economic and political crises"[203] which started in the 1980s. The nation was again under military rule and inflation exceeded 100% in 1983.[204] It was a period when the nation was undergoing economic structural reforms under the supervision of the World Bank and International Monetary Fund (IMF).

Liberalisation of the telecom sector and privatisation of the state-owned telecom monopoly were therefore to bring in much needed funds for the government.

Besides a brief respite in the early 1990s, Ghana continued in its economic crises through the 2000s. At a debt-to-GDP (gross domestic product) ratio of 77% in 2001,[205] Ghana accepted the classification status of 'highly indebted poor country' (HIPC) by the World Bank and IMF.[206] After the initial 1996 partial privatisation, a decision was taken for full privatisation of Ghana

[200] Section 4.5, page 21, National Telecommunication Policy 2005.
[201] Regulation 110, National Communications Regulations, 2003 (L.I. 1719) (Ghana).
[202] See Note 200 Above (National Telecommunication Policy 2005).
[203] See Note 90 Above at 5 (Tsikata Y. M., "*Successful Reformers: Ghana).*
[204] See Note 90 Above at 7,8 (Tsikata Y. M., "*Successful Reformers: Ghana).*
[205] International Monetary Fund and International Development Association, 'Ghana -- Enhanced Heavily Indebted Poor Countries (HIPC) Initiative – Preliminary Document', June 2001, 1 26 at 7 (paragraph 20). Available at https://www.imf.org/external/np/hipc/2001/gha/ghapd.pdf *(*accessed 24-June-2017*).*
[206] *Ibid.* at 1 (paragraph 2).

Telecom in 2008[207] to raise much needed funds to meet critical debt challenges of the government.[208]

Ghana did set high targets in 1995 for the fixed-line duopoly operators which required about US$500 million, in total investments, to meet.[209] Upon failure to meet the duopoly targets in 2002, the two operators were fined a total of US$140.5 million[210] as revenue for government. Indeed, network operators in Ghana have collectively had cause to recently complain about the NCA's practise of using regulatory sanctions "as a revenue source."[211]

4.2 The strengths and challenges of communications policies in Ghana

Regulatory strengths

Ghana's communications regulation is seen to show strengths mainly in the areas of mobile telephony investments, mobile data subsector and overall contribution to Ghana's GDP growth.

i. Mobile telephony investment

Africa, with its "frail political systems", is generally considered a high risk destination for investment.[212] With a US$1,370 per capita GDP,[213] and ranked 174th in the world [out of 230 countries] on "purchasing power parity basis",[214] Ghana rightly fits into the African risk profile. In spite of this condition, Ghana's regulatory policies have succeeded in attracting six

[207] Mike Elliott and Kwasi Kpodo, "*Vodafone acquires 70 pct stake in Ghana Telecom*", REUTERS -- Market News, Jul 3, 2008, London/Accra. Available *at http://www.reuters.com/article/us-vodafone-ghana-idUSL0358252520080703* (accessed 24-June-2017).
[208] Famous Kwesi Atitsogbe, "*I will sell Ghana Telecom a hundred times over- Kufuor*", Ghana -- JoyNews TV, 11 August, 2014. Available at *http://www.myjoyonline.com/news/2014/august-11th/-i-will-sell-ghana-telecom-a-hundred-times-over-kufuor.php* (accessed 24-June-2017).
[209] See Note 93 Above at 20 (Haggarty L, Shirley M M, Wallsten S).
[210] See Note 93 Above at 30 (Haggarty L, Shirley M M, Wallsten S).
[211] Samuel Dowuona, "*Telcos expect reforms as new NCA director takes office*", Adom News, 3 February 2017. Available at *http://www.myjoyonline.com/business/2017/february-3rd/telcos-expect-reforms-as-new-nca-director-takes-office.php* (accessed 20-June-2017).
[212] See Note 93 Above at 3 (Haggarty L, Shirley M M, Wallsten S).
[213] *http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=GH* (accessed 24-June-2017).
[214] *https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html* (accessed 24-June-2017).

mobile phone operators, four wireless broadband licensees and fifty-two Internet Service Providers (ISPs).[215]

Reflecting the success of partial liberalisation and privatisation of the phone sector, mobile phone subscribers were 36,912,019 as of August 2016, representing a penetration rate of 132%; with a mobile data penetration rate of 68%.[216]

ii. Data subsector

The internet and data communication sector has been fully liberalised.[217] This has reflected in the attraction of fifty-two Internet Service Providers and the high mobile data penetration rate of 68% referenced above.

iii. Overall contribution to GDP growth

At a 2013 growth rate of 24.7%[218] and 2016 growth rate of 21.7%,[219] the information and communications sector has continued to post the highest subsector growth rate in contributing to Ghana's GDP.

Telecom policy reforms and regulation may therefore be said to have positioned the sector as a potential major contributor to Ghana's GDP.

---

[215] See Note 25 Above at 6 (National Communications Authority (Ghana), "Public Consultation…").
[216] See Note 24 Above (*National Communications Authority, Ghana, "Industry Information").*
[217] National Communications Authority (Ghana), 'Broadband Wireless Access (BWA) Licenses in the 2500mhz – 2690mhz Band', October 2011. 1 43 at 3. Available at *http://www.nca.org.gh/assets/Uploads/Wireless-Broadband-Access-Request-for-Applications-Rev-26-10-2011.pdf* (accessed 9-June-2017).
[218] Ghana Statistical Service, 'Gross Domestic Product 2014', April 2014. 1 9 at 3. Available at *www.statsghana.gov.gh/docfiles/GDP/GDP_2014.pdf* (accessed 24-June-2017) (accessed 24-June-2017).
[219] Ghana Statistical Service, 'Provisional 2016 Annual Gross Domestic Product', April 2017. 1 16 at 3. Available at *http://www.statsghana.gov.gh/docfiles/GDP/GDP2017/April/Annual_2016_GDP_April%202017_Edition.pdf* (accessed 24-June-2017).

Regulatory challenges

Communications regulation in Ghana face a number of challenges that include an endemic lack of regulator independence, lack of expertise, last mile and cost bottlenecks, and a perceived high risk environment for investment.

i. Regulator Independence

As noted in **section 2.3** above, the first reason and use of telegraph lines laid by the colonial government in 1881, was for the suppression of indigenes' resistances to colonisation. Telecommunication infrastructure was therefore owned, managed and controlled by the British colonial government. Natives on the other hand perceived this infrastructure as something to be destroyed in order to defeat the colonisers.

After independence in 1957, the mentality of government-control of telecommunication infrastructure persisted. The institutional regulatory structures laid down to achieve the aims of the colonial Gold Coast government, have therefore been continued by post-independence governments of Ghana.[220]

Also noted in **section 2.3** above was a period in Ghana's communication regulatory history when the head of state himself chaired the *de-facto* regulatory board. Again, noted in **section 4.0** above, was the period from 1996 until May 2003 when either the NCA had no Board, or the President appointed his Minister of Communications as chair of the Board. The present law empowers the President to appoint all executive and non-executive members of the Board, the Director-General and his deputies, the officers and staff of the NCA.

The tight-fist control of the government over the regulator undermines its independence.

[220] See Note 91 Above at 7 (Tobbin P, "*Understanding the Ghanaian Telecom Reform*).

An obvious outcome of such governmental control is that communications operators in Ghana then do align themselves with "politically powerful champions" for dispute resolution, rather than resorting to court.[221] [222] This renders the NCA weak in dispute resolution. Indeed, it has been observed that most regulatory disputes [between operators] are only resolved through intervention by the Communications Minister.[223]

ii. Lack of expertise

It is trivial to note that Ghana, as a young developing country, lacks expert manpower in the required numbers at most levels of its economy. This affects NCA and regulated operators alike as they tend to share the same talent pool.[224] The NCA is noted to operate "without the full complement of trained professionals necessary to carry out its responsibilities."[225] Lack of the adequate numbers of expertise locally, would obviously cause networks to suffer "technical problems that result in congestion and poor quality of service."[226] This, no doubt, would pose regulatory challenges.

iii. Last mile access and cost-to-consumer bottlenecks for data usage

May 2015 data from the NCA put landed undersea fibre internet bandwidth capacity in Ghana at fifteen terabits per second, but with a consumer uptake of less than five percent.[227] (It is noted that the high 132% mobile phone

[221] See Note 93 Above at 3 (Haggarty L, Shirley M M, Wallsten S).
[222] It is to be noted that while a casual legal database search on regulatory disputes involving Ofcom reveals hundreds of cases handled by UK courts since Ofcom was established, a comparable search at the legal department at the NCA Headquarters in Accra, Ghana, as part of this research, revealed only one regulatory dispute (***Kweku Kwarteng & 2 Ors v NCA & 7 Ors. Suit No.: HRCM/239/15 (Pending at Human Rights Court 1, Accra***). This suit seeks to challenge the lawfulness of an NCA decision in 2015 to install interconnect clearing house facilities for electronic communications. I was however informed during my search at the NCA that the case had stalled and will certainly be withdrawn from court because it is receiving a political solution.
[223] See Note 92 Above at 33 (Frempong G, "Telecommunication Reforms – Ghana's Experience").
[224] Wardhaugh B, *"Developing regimes and mobile telecoms regulation in the twenty-first century: who makes the call?",* European Journal of Law and Technology, Vol 6, No 3, 2015. 1 24 at 9.
[225] See Note 93 Above at 24 (Haggarty L, Shirley M M, Wallsten S).
[226] See Note 34 Above at 65 – Ghana-Overview (World Bank, "*Regionalizing Telecommunications Reform in West Africa"*).
[227] See Note 25 Above at 8 (National Communications Authority (Ghana), "Public Consultation…").

penetration seems to have negligible impact on broadband Internet capacity uptake).

Nationwide internet diffusion is a key regulatory policy and objective.[228] Low internet bandwidth uptake is therefore a threat to the success of Ghana's communications regulation. Some of the reasons attributed to this challenge are last mile connectivity and access cost bottlenecks.

Although mobile voice phone penetration is very high at 132% (with a mobile data penetration rate of 68%), fixed line penetration is however negligible, at 1.08%, and broadband wireless access penetration is 0.36% (as at August 2016).[229] The essential last mile connectivity solutions of fixed-line and broadband wireless are therefore gravely lacking in the country.

In addition to one-time equipment cost ranging between US$100 and US$10,000[230] for internet access, the monthly subscription cost for 2mbps access averages US$1,174 per month.[231] Such a monthly subscription charge is extremely expensive in a country with an annual per capita GDP of US$1,370.

For the above reasons, it therefore comes as no surprise that fixed-line internet penetration is non-existent, and wireless broadband penetration is 0.36%. This very poor state of internet penetration poses a huge challenge to the success of Ghana's communications regulatory policies.

iv. Lack of investment affecting network quality

Another challenge faced by the Ghanaian regulator is network operators' access to credit and investment. In spite of Ghana's success in attracting multiple telecommunication operators after regulatory reforms, the country is unable to escape the perceived 'high-risk for investment' profile as an

[228] See Note 177 Above at 2 (Government of Ghana -- Ministry of Communications, "National Telecommunications Policy")
[229] See Note 24 Above (*National Communications Authority, Ghana, "Industry Information").*
[230] See Note 217 Above at 4 (National Communications Authority (Ghana), *"Broadband Wireless Access…")*
[231] See Note 25 Above at 9 (National Communications Authority (Ghana), "Public Consultation…").

African country. Operators are therefore unable to attract the requisite investments into network rollout and improvements. It has already been noted above that the fixed-line duopoly operators were unable to raise the required US$500 million for network expansion, hence the present low fixed-line teledensity. And some operators are reportedly "teetering on the edge of dissolution."[232] Operators in the country have recently complained about how they are unable to raise funds to buy additional auctioned frequencies.[233]

Operators' difficulty in raising additional investment funds certainly poses a challenge to the regulator, as operators are unable to meet network rollout and quality of service targets. As already noted above, the networks would consequently suffer technical challenges with quality of service consequences.

4.3 Approaches to addressing communications policy challenges in Ghana

The Ghanaian regulator has adopted a number of approaches to address some of the challenges identified above.

i. Lack of investment affecting performance

The NCA has used its power of sanctions against operators who have been unable to meet their licence obligations. The fixed-line duopoly operators were, for instance, fined US$140.5 million in 2002, for their inability to raise the needed investment to meet their rollout obligations.

ii. Lack of expertise

As noted above, network operators also suffer from the lack of expertise in the country which, among other causes, affect quality of their network

[232] See Note 93 Above at 25 (Haggarty L, Shirley M M, Wallsten S).
[233] See Note 211 Above (Samuel Dowuona, "*Telcos expect reforms … office*").

services. The NCA has responded to service quality failures with fines. Some of the fines reported are:

GH¢1.2 million (US$300,000) imposed on five out of six operators for November 2011; GH¢250,000 (US$62,500) imposed on all operators for the month of February 2012; GH¢250,000 (US$62,500) imposed on three operators for the month of March 2012;[234] GH¢1 million (US$250,000) imposed on all six operators for March and April, 2013.[235]

All the fines were imposed for quality of service reasons, namely, "call congestion and call setup time."[236] These network performance challenges are largely due to difficulty in finding investment and expertise, as already noted above.

iii. Last mile and cost-to-consumer bottlenecks

In assigning reasons for auctioning off additional frequencies in the 800MHz band, the NCA stated that "[l]ast mile connectivity appears to be the remaining bottleneck in expanding access to broadband services."[237] The NCA therefore rightly identified the last mile bottleneck against nationwide internet access, and adopted the approach of auctioning off additional frequencies as a solution.

Ironically, at a price tag of US$67.5 million, only one operator could afford one block of frequencies; the remaining five operators complained they could not afford it, even at half the price.[238] This solution is therefore

[234] Ekow Quandzie, "*Ghana's NCA fines MTN, Vodafone, Tigo again for poor quality of service*", Ghana Business News, June 18, 2012. Available at *https://www.ghanabusinessnews.com/2012/06/18/ghanas-nca-fines-mtn-vodafone-tigo-again-for-poor-quality-of-service/* (accessed 25-June-2017).
[235] Samuel K. Obour, "*NCA fines telcos GH¢1 million*", Graphic Online, 25 July 2013. Available at http://www.graphic.com.gh/business/business-news/nca-fines-telcos-gh-1-million.html (accessed 25-June-2017).
[236] *Ibid*.
[237] See Note 25 Above at 9 (National Communications Authority (Ghana), "Public Consultation…").
[238] See Note 211 Above (Samuel Dowuona, "*Telcos expect reforms as new NCA director takes office*").

obviously ineffective. It also threatens fair competition as it puts the operator which is able to afford the high spectrum fee ahead of all other operators.

With cost-to-consumer bottleneck, NCA has adopted the approach of regulating fixed-line telephone charges; all other communication service charges are unregulated.[239] This approach has obviously not produced the desired results. While mobile voice phones have achieved 132% penetration, fixed-line penetration is at 1.08% and fixed broadband internet access is at 0.36%.[240]

iv. Low fixed-line penetration

Taking after the examples of India and Chile, and on the premise that more operators in an area facilitates accelerated penetration, the NCA, in 2006, adopted the approach of 'zoning' to address the problem of low fixed-line penetration.[241] The nation was zoned into five sub-areas. Two fixed-line licences were to be issued for each area. The zoning approach was criticised for having no market analysis basis. It was stopped however by the Minister in order to maximise revenue to government from the sale of Ghana Telecom in 2008.[242] Interference from government therefore denied the NCA the opportunity to refine and implement this concept.

v. Consumer complaints

The approach for resolving consumer complaints is per the following procedure:[243] consumer is to first lodge a complaint with the service provider. If not satisfied, the consumer is to repeat the complaint with the NCA. The consumer may proceed to court as a final resort if not satisfied with NCA's handling.

---

[239] See Note 175 Above at 41 (Frempong G K, "*Telecommunications Sector Performance Review -- Ghana*").
[240] See Note 24 Above (*National Communications Authority, Ghana, "Industry Information").*
[241] See Note 175 Above at 31 (Frempong G K, "*Telecommunications Sector Performance Review -- Ghana*").
[242] *Ibid*. at 32.
[243] https://nca.org.gh/consumer-center/consumer-complaints/complaints-procedure/ (accessed 3-July-2017).

This dispute handling procedure is likely to be ineffective as it relies on the network provider being a judge in its own cause. It also has the potential to overload the regulator with complaints if consumers choose to depend more on the regulator to resolve disputes.

5.0 Lessons from UK's communications regulation for Ghana

It has been discussed in this work that although Ghana, in the 1990s, followed the regulatory reform steps that the UK adopted in the 1980s, Ghana's communications framework has however achieved far less than it could to support the nation's economic growth. Although Ghana has recorded high mobile phone penetration, traditional fixed-line narrowband and internet access penetration have performed very poorly. It is suggested in this part that there are some areas of regulation that Ghana may learn from the UK to improve its communications framework towards correcting the areas of poor communications performance. The areas discussed below range from regulatory independence to dispute resolution:

i. Regulatory independence

Regulatory independence (Gilardi uses the broader term 'regulatory capitalism' as opposed to monopolistic or 'welfare capitalism') is evidenced by the successful delegation of a state's powers of regulation to a body that is "partly independent from direct political control."[244]

As concluded in **sections 4.0 and 4.2**, Ghana's communications regulator cannot be said to be independent with the level of direct political control that the government exercises over its Board (or regulators), officers and staff through the NCA Act 2008 (Act 769). In a regulatory environment where attraction of investment is a goal, then such direct political control robs a state's regulatory commitments of vitally needed credibility.[245] Ghana's communication regulation framework therefore lacks the valuable political asset of 'credibility' as it continues

[244] Gilardi F, "*The Institutional Foundations of Regulatory Capitalism: The Diffusion of Independent Regulatory Agencies in Western Europe*", 598 Annals of the American Academy of Political and Social Science, 2005 84 101 at 85.
[245] *Ibid* at 90, 91.

to operate under a legal regime that grants the government so much political power and direct control over the regulator.

Ghana may cure this situation by learning from the way the UK appoints Ofcom's regulators as discussed in **sections 3.0 and 3.2.** Ghana may do this by amending the 2008 NCA Act such that the President may appoint only the non-executive members of the Board. The non-executive members would in turn appoint the executive members to form the full complement of regulators. The full Board will then engage its own staff and officers. The amendment should also remove the power of the President to remove all regulators at will and at a go. [246]

UK's communications regime has achieved the reputation of being "strong independent regulation."[247] The gist of the UK approach in appointing regulators is to "seek to achieve independence by giving more authority to civil servants."[248] It is certainly worth learning from this approach to achieve regulatory independence.

ii. Regulatory convergence

As already noted, digitalisation technologies of the 1980s led to convergence in the communications industry. The traditional separation of telecommunications, computers, broadcasting and media therefore no longer exists. Nations are therefore moving away from regulation models that are based on this separation. Responding to the new *modus vivendi*, UK has adopted the approach of convergent regulation through Ofcom, which is a single multi-sector regulator. Ghana may learn from this also. The "single industry-specific regulator," which Ghana's regulator is, has been rendered anachronistic.[249] Convergent regulation has the potential to bring about better policy coherence, clarity and certainty in regulation, and reduce institutional conflicts.

---

[246] Portions of the law requiring amendment would be Sections 6, 8, 16-19 of the National Communications Authority Act, 2008 (Act 769) (Ghana).
[247] See Note 135 Above at 725 (Wigglesworth B and Barnes F, "*UK policies and regulations*").
[248] See Note 34 Above at 37 (World Bank, "*Regionalizing Telecommunications Reform"*).
[249] See Note 175 Above at 53 (Frempong G K, "*Telecommunications Sector Performance Review -- Ghana*").

iii. Authorisation regime

The pan-European regime of Authorisation which the UK has implemented, is a replacement of what was formerly known as 'Licensing'. Authorisation operates on the principle of the regulator not controlling market entry.[250] UK, under Authorisation, lowers the market entry bar for providers, making them subject only to the General Conditions[251] which apply to the whole market. Providers which seek to use scarce resources, such as wireless spectrum, then apply for licences which have provider-specific conditions. Convergent technology has made it easy for enterprises to enter the communications market with IP solutions. Ghana, which still practices the Licensing regime, may therefore learn from the UK Authorisation regime practice to lower the regulatory bar of market entry. This would entail Ghana discontinuing the present licensing regime. All entrants into the industry would be admitted, making them subject only to general conditions, similar to that of the UK, except enterprises that require access to specific scarce resources, or enterprises judged to have significant market power. Such enterprises would then be made subject to additional specific conditions.

iv. Privatisation of regulation

In a changing role of the state in regulation, Ofcom, through self- and co-regulation schemes (alternative regulatory forms), hands over parts of the regulatory process to private actors.[252] This allows [private] regulated enterprises to regulate themselves, and each other, without a direct role of the state regulator. Through the 'Undertakings'[253] for instance, Ofcom permitted BT to self-regulate to avoid a possible break-up under competition rules. In the area of next generation networks, Ofcom has also allowed providers to make their own rules through co-regulatory bodies. This solved the problem of the deficiency in the Communications Act 2003 to provide for the regulation of future technologies. Through co-regulation, Ofcom also allowed providers to administer their own dispute handling procedures through Ofcom-approved ADR schemes.

---

[250] See Note 16 Above at 134 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*").
[251] See Note 17 Above (Ofcom, "*Consolidated Version Of General Conditions as at 28 May 2015*").
[252] See Note 35 At 422 (Latzer M, "*Convergence Revisited. Toward a Modified Pattern of Communications Governance".)*
[253] See Note 158 (British Telecom, 'Undertakings given to Ofcom by BT Pursuant to the Enterprise Act 2002').

These alternative regulatory forms are innovative schemes which help to cut through some of the complex issues that regulators face. Privatisation of regulation, through self- and co-regulation, is therefore another area Ghana may learn from the UK to improve the efficiency of regulation and lessen the burden of regulation by the state. It will make regulated bodies assume ownership of regulatory rules which they help to formulate, and also reduce regulatory intrusiveness by the state.

v. Use of fines

Ghana uses the tool of fines against network operators when they fall short of network rollout or network performance obligations. As noted already, the causes of lack of investment and lack of local expert manpower are largely responsible for operators' inability to meet these obligations. These causes have a lot to do with Ghana being a developing African country, than the direct default of the operators. The application of the power of fines is therefore problematic and counter-productive. It only serves to deepen the financial woes of operators, cause further poor network performance, and increase cost to consumers. The approach, while serving as source of revenue for government, has certainly contributed to the present state of development of 1.08% fixed-line penetration and 0.36% wireless broadband access, notwithstanding a high mobile phone penetration.

UK's Communications Act 2003, empowers Ofcom to punish unlawful conduct or operators' breach of regulatory requirements. However, in its 2015 guidelines on penalties, Ofcom states that the "central objective of imposing a penalty is deterrence."[254] The considerations Ofcom takes into account for imposing fines include the harm caused by a breach, and the financial benefits that operators derive.

Instances of Ofcom fines during the 2016/2017 financial year against regulated enterprises are summed into "mis-selling, inaccurate billing and poor complaints-

[254] Ofcom, 'Penalty Guidelines', 03 December 2015. Available at https://www.ofcom.org.uk/about-ofcom/policies-and-guidelines/penalty-guidelines (accessed 7-Aug-2017).

handling procedures."[255] Ofcom's imposition of fines thus takes the approach of "consumer-protection enforcement action"[256] which Ghana may learn from, rather than the present 'rent-seeking' approach.

vi. Handling network performance breaches

On regulatory handling of network performance breaches, Ofcom uses the approach of informing consumers on "prices and quality of service" to assist and advise consumers on choosing between "different offers and suppliers."[257] I believe this is a better approach than Ghana's use of fines to punish poor network performance, when such performance stems from the economic environment of the country. Ghana, in learning from this approach of using consumer information, may then reserve the tool of fines for extreme cases of "poor behaviour" of operators in '[serious and sustained] breaches of consumer protection rules'[258] as Ofcom does.

On breach of network rollout obligations, Ofcom, for instance, in December 2014, secured a legally binding penalty agreement with mobile operators which "committed them to extend their geographic network coverage (voice and text) of the United Kingdom to 90% by the end of 2017."[259] Thereafter, legislation was introduced through the Digital Economy Act 2017[260] to enforce this agreement. This approach of first securing agreement with operators is more likely to set realistic targets that avoid punishing operators for causes they cannot control.

---

[255] See Note 128 Above at 24 (OfCom, *"Annual Report and Accounts For the period 1 April 2016 to 31 March 2017").*
[256] Steyn E, *"Ofcom's revised guidelines on fines - a new emphasis on deterrence.(United Kingdom)*", Entertainment Law Review, 2016, Vol. 27(4), 150 153 at 151.
[257] See Note 175 Above at 53 (Frempong G K, "*Telecommunications Sector Performance Review -- Ghana*").
[258] See Note 128 Above at 7, 24 (OfCom, *"Annual Report and Accounts For the period 1 April 2016 to 31 March 2017").*
[259] Mark Jackson, "*New Powers Allow Ofcom to Fine Mobile Operators for Poor Coverage*", ISP News, ISPreview, September 17th, 2016. Available at http://www.ispreview.co.uk/index.php/2016/09/new-powers-allow-ofcom-fine-mobile-operators-poor-coverage.html (accessed 8-Aug-2017).
[260] Section 53F, Digital Economy Act 2017 c.30 (UK).

vii. Dispute resolution

Through the General Conditions,[261] communications providers in the UK are mandated to have Ofcom-approved complaints code of practice which allows consumers to access dispute resolution procedures of providers. Ofcom has made it a requirement for providers to belong to approved alternate dispute resolution (ADR) schemes for their code of practice to be approved.[262] Ghana's approach to dispute resolution is unlikely to be effective, as already noted above. This is because it trusts providers to be fair judges in their own cause, and could also easily overload the regulator with complaints. The UK approach seems superior and a better process that Ghana may learn from.

6.0 Recommendations

A critical look above at the approaches Ghana has adopted to address the challenges of its regulatory regime reveals the fault-lines and ineffectiveness of the approaches discussed. Vis-à-vis the lessons identified above that Ghana may learn from the UK, the recommendations below are made to effect these lessons:

i. Regulator independence

As already noted, lack of regulator independence makes the communications regime lose credibility for its regulatory commitments. This has direct and adverse effect on investment, and consequently upsets the desired targets for network rollout and service quality. It is therefore recommended that Ghana amends the NCA Act 2008 to be in line with the International community to ensure that its communications regulator operates free of direct political control.[263] The amendments to the law should also ensure that changes in political leadership do not necessarily cause "dramatic short-term swings in the composition" and policies of the regulation regime.[264]

---

[261] See Note 17 Above at Section 14.4, 5 (Ofcom, "*Consolidated Version Of General Conditions as at 28 May 2015*").
[262] See Note 16 Above at 120 (Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*").
[263] Portions of the law requiring amendment would be Sections 6, 8, 16-19 of the National Communications Authority Act, 2008 (Act 769) (Ghana).
[264] See Note 34 Above at 37 (World Bank, "*Regionalizing Telecommunications Reform"*).

ii. Availability of local expertise

It is recommended that Ghana prioritises and institute long term training for local expertise in communications technology, management and adjunct practices.

iii. Increasing teledensity and internet penetration

Ghana's thrust for high teledensity and internet usage rate are incongruous with the use of the regulations regime as a major source of revenue for government. It is therefore recommended that:

- Use of fines as a revenue source must be discontinued. Consumer education must rather be adopted to help consumers to stay away from poor performing networks. This will make operators use the money that would have been otherwise collected as fines to improve their networks. Penalties for breaches of network rollout targets must be pre-negotiated with operators in binding contracts. Fines must be reserved for extreme cases of consumer protection abuses and unlawful conduct by operators.
- Policies such as the Ghana government making the 800MHz band available to address the huge last-mile access problem in the country should be decoupled from the revenue goals of the government. In order to truly use such frequency bands to address the last-mile problem, the band should be apportioned to all operators at minimal or no upfront costs. Government can later realise revenue through special operational taxes over incomes the operators realise from using the frequencies. This will put all operators on the same competitive level and also allow the NCA to set high infrastructure rollout targets to address the teledensity and internet penetration problem. This approach will also have a direct effect on bringing down the cost of last-mile connectivity because operators would not have had to spend excessive sums on spectrum acquisition as upfront costs in expanding their networks.

iv. Consumer complaint handling

In the area of consumer complaint handling, it is recommended that Ghana implements the UK-style alternate dispute resolution scheme. This means communications operators will be encouraged to set up co-regulatory bodies that will handle consumer complaints. This approach will separate operators from direct control over complaint handling, increase consumer confidence and avoid loading the regulator with direct consumer complaints.

v. Regulatory convergence

It is recommended that Ghana considers converting its present single-sector regulator to a convergent multi-sector regulator. This would mean transforming the NCA into a regulator of both technology and content. Practically, this would mean transferring the function of media regulation of the present National Media Commission into a seat at the NCA. It would also mean giving Bank of Ghana, the central bank, a seat at the NCA for the regulation of telecommunication companies providing financial services through mobile money transfer and similar services. It would also mean converting the present function (of the Public Utility Regulatory Commission) of regulating utility companies which are providing telecommunication services using their infrastructure, into a seat at the NCA. Creating such a converged multi-sector regulator will create a 'one-stop-shop' for industry participants on all issues of regulation.

vi. Authorisation regime

Consistent with the recommendation for a converged multi-sector regulator, it is recommended that the present licensing regime for industry participants be ended. The Authorisation regime is rather recommended to make it easy for market participants to enter the market and also to easily integrate other vertical and horizontal services into their product lines.

vii. Privatisation of regulation

The use of self- and co-regulation (privatisation of regulation) is also recommended. In a converged, Authorisation regime of regulation, privatisation of regulation is a necessity to reduce the regulatory burden on

the regulator by allowing the industry to introduce its own solutions to issues that would otherwise be a challenge to the regulator. This will also deepen consultation and direct engagement between the regulator and the industry, and increase the participation of industry players in the regulatory process.

7.0 Summary and Conclusion

The importance of communications and communication technologies in every economy cannot be over emphasised. Equally important however, is the regulatory regime – "the norms, their implementation and sanctioning"[265] – that allow the realisation of the socio-economic objectives of a nation's communications policies. Many nations therefore reformed their communications regulations in the global wave of reforms which commenced mainly in the 1980s. The reforms almost invariably followed the pattern of the institutional setup of an independent regulator, liberalisation, privatisation and re-regulation.

UK's communications regulation underwent these reforms in the 1980s; Ghana did same in the 1990s. Up-to-date data show near-perfect improvement in communications access across the UK since the start of the reforms. Comparable data for Ghana show high mobile phone access numbers, but terribly poor access rates for baseline fixed voice and internet. This work has therefore looked at what Ghana may learn from the UK to improve its baseline telecommunication performance through regulation. While it is admitted that not every regulatory practice in the UK may be exported to Ghana, UK is appropriate to learn from due to its stellar performance, leadership in Europe, and the common historical bond with Ghana through colonisation.

This work considered the regulatory regimes of UK and Ghana within the context of the appropriate histories. Major challenges facing Ghana's communications regulation were identified together with the approaches being used to address them. Strengths, trends, challenges, and solutions of UK's regulations were

[265] See Note 35 At 412 (Latzer M, "*Convergence Revisited. Toward a Modified Pattern of Communications Governance".)*

discussed with the sole aim of extracting applicable solutions for the challenges confronting Ghana.

Ghana's regulatory challenges identified in this work include lack of regulator independence, lack of local expertise, low investment and expensive last-mile connectivity solutions. This work demonstrates that Ghana may derive implementable lessons from regulatory practices of the UK. Based on these lessons, recommendations were made for practical adoption by Ghana. These include amendments to Ghana's laws to achieve regulatory independence. A different look and application of regulatory fines have also been proposed. Other recommendations deal with better complaint handling schemes, adoption of regulatory convergence, replacement of the present licensing regime with an Authorisation regime, and the use of self- and co-regulation to deepen consultation and involvement of regulated enterprises in the regulatory process.

This research concludes that present regulatory practices of Ghana have inhibited growth in the areas of fixed-line and internet access; that the translation of 132% mobile phone penetration into substantive long-term socio-economic gains remains to be examined. Haggarty has rightly described Ghana's regulator as weak; and reforms have had little effect on areas outside Accra, the capital.[266]

Even at the current low fixed-line and internet penetration rates, the information and communications sub-sector is presently one of the leading growth areas of Ghana's economy with double-digit growth rates since 2013.[267] There is therefore no doubt that the implementation of practical lessons derived from UK's regulatory experiences will improve Ghana's regulatory framework to encourage rapid growth in the communications sector for the entire economic geography of Ghana.

Further Research

An observation was made in this work about Ghana's attainment of 132% mobile phone penetration and the possible impact on long-term economic growth. Despite

[266] See Note 93 Above at 30, 33 (Haggarty L, Shirley M M, Wallsten S).
[267] See Notes 218 and 219 Above (Ghana Statistical Service).

the high mobile phone penetration rate, Ghana's fixed narrowband penetration is presently 1.08%; fixed broadband access penetration is 0.36%; and total uptake of the national 15 tbps bulk internet capacity is below 5%. This raises the question of whether the 'low hanging fruit' of mobile phone technology can deliver long-term socio-economic gains for Ghana.

Evidence exist for positive correlation between high fixed-line narrowband/internet penetration rates and economic development in OECD countries. But can African countries depend on mobiles to bypass laying down the required infrastructure for fixed telecommunication access and still achieve the promise of long term development through telecommunications? Aker questions: "can mobile phones serve as an engine for economic growth?"[268] Some believe though that developing countries are successfully using mobile phone technology to leapfrog traditional telephone technology.[269] James states that literature on the topic is disappointingly scanty.[270]

The finding in this work suggests that Ghana's investment into mobiles has had negligible impact on fixed access for both voice and data. Further research is therefore called for to address the question of the impact of mobile phone technology on Africa's communications development and macroeconomics.

[268] See Note 4 Above (Aker, J C and Mbiti, I M, "*Mobile Phones and Economic Development in Africa*").
[269] Jim Rogers, "*Blessed are the underdeveloped*", Forbes, Dec 1, 1997, Vol. 160(12), at S29(1). Available at https://global.factiva.com/ga/default.aspx (accessed 10-Aug-2017).
[270] James J, 'The Impact of Mobile Phones on Poverty and Inequality in Developing Countries', Cham: Springer International Publishing 2016. At 1.

Bibliography

Articles

1. Adu-Boahen K, "*The Impact of European Presence on Slavery in the Sixteenth to Eighteenth-Century Gold Coast",* Transactions of the Historical Society of Ghana, 1 January 2012, Issue 14, 165 199.

2. Akalu R, "*EU spectrum reform and the Wireless Access Policy for Electronic Communications Services (WAPECS) concept*", info, 2006, Vol. 8, Iss 6, 31 50.

3. Aker, J C and Mbiti, I M, "*Mobile Phones and Economic Development in Africa*", Journal of Economic Perspectives, 2010, Vol. 24(3), 207 232.

4. Basili M, Fontini F, "*The option value of the UK 3G telecom licenses*", Info : the Journal of Policy, Regulation and Strategy for Telecommunications, Information and Media, 2003, Vol.5(3), 48 52.

5. Beesley M E, Laidlaw B, Gist P, *"Prices and Competition on Voice Telephony in the UK*", Telecommunications Policy, Sep 1987, Vol.11(3), 230 236.

6. Benkler Y, "*Some economics of wireless communications*", Harvard Journal of Law & Technology, Fall, 2002, Vol.16(1), 25 83.

7. Blackman C R, *"Convergence between telecommunications and other media: How should regulation adapt?"* Telecommunications Policy, 1998, Vol. 22(3), 163 170.

8. Bourreau M and Doğan P, "*Regulation and innovation in the telecommunications industry*", Telecommunications Policy, 2001, Vol. 25(3), 167 184.

9. Brisby P, "*Dispute Resolution in Telecoms--The Regulatory Perspective*", 11(1) Computer and Telecommunications Law Review (2005), 4 9.

10. Brisby P, *"The regulation of telecommunications networks and services in the United Kingdom*", 12(4) Computer and Telecommunications Law Review (2006), 114 139.

11. Cave M, "*The evolution of telecommunications regulation in the UK*", European Economic Review, 1997, Vol.41(3), 691 699.

12. Coase R H, "*The Federal Communications Commission*" (reprinted from 1959), The Journal of Law and Economics, Nov, 2013, Vol. 56(4), 879 915.

13. Coen D, "*Managing the Political Life Cycle of Regulation in the UK and German Telecommunication Sectors"*, Annals of Public and Cooperative Economics, March 2005, Vol.76(1), 59 84.

14. Eliassen K A and From J, "*Deregulation, privatization, and public service delivery: Universal service in telecommunications in Europe*", 27 Policy & Society (2009), 239 248.

15. Frempong G, "Telecommunication Reforms – Ghana's Experience", Institute for World Economics and International Management, Andreas Knorr, Alfons Lemper, Axel Sell, Karl Wohlmuth (Hrsg.), Berichte aus dem Weltwirtschaftlichen Colloquium der Universität Bremen, Nr. 78, April 2002. Available at *www.iwim.uni-bremen.de/publikationen/pdf/b078.pdf* (accessed 20-June-2017).

16. Frempong G K, "*Telecommunications Sector Performance Review -- Ghana*", Science and Technology Policy Research Institute, Accra, Ghana. 2007. Available at https://www.researchictafrica.net/publications/Telecommunications_Sector_Performance_Reviews_2007/Ghana%20Telecommunications%20Sector%20Performance%20Review%202007.pdf (accessed 20-June-2017).

17. Gilardi F, "*The Institutional Foundations of Regulatory Capitalism: The Diffusion of Independent Regulatory Agencies in Western Europe*", 598 Annals of the American Academy of Political and Social Science, 2005, 84 101.

18. Haggarty L, Shirley M M, Wallsten S, "*Telecommunication Reform in Ghana*", (November 2002). World Bank Policy Research Working Paper No. 2983. Available at SSRN: https://ssrn.com/abstract=636345 (Accessed 22-June-2017).

19. ITU, *"50 Years of Excellence: CCITT/ITU-T 1956-2006*", July 2006. 1 20. Available at https://www.itu.int/ITU-T/50/docs/ITU-T_50.pdf (accessed 12-May-2017).

20. Latzer M, "*Convergence Revisited. Toward a Modified Pattern of Communications Governance".* Convergence: The International Journal of Research into New Media Technologies, 2009, Vol 15(4), 411 426.

21. Noam E M, *“Beyond liberalization: From the network of networks to the system of systems*”, Telecommunications Policy, 1994, Vol.18(4), 286 294.

22. Pye R, “*The UK duopoly review: Status and Issues”,* Telecommunications Policy, 1990, Vol.14(2), 99 104.

23. Scales I, “*End of the lease.(telecommunications regulation in the UK)*”, Communications International, May, 2001, 11 12.

24. Spyrelli C, “*Regulating the Regulators? An Assessment of Institutional Structures and Procedural Rules of National Regulatory Authorities*”, International Journal of Communications Law and Policy, Issue 8, 2003/2004, 1 57.

25. Steyn E, *“Ofcom's revised guidelines on fines - a new emphasis on deterrence.(United Kingdom)*”, Entertainment Law Review, 2016, Vol. 27(4), 150 153.

26. Stone M, “*The evolution of the telecommunications industry — What can we learn from it?”* Journal of Direct, Data and Digital Marketing Practice, 2015, Vol.16(3), 157 165.

27. Tobbin P, “*Understanding the Ghanaian Telecom Reform: An Institutional Theory Perspective*”, 21st European Regional ITS Conference, Copenhagen, September 2010, Center for Multimedia and Information Technologies, Aalborg University, Denmark. Available at *www.econstor.eu/obitstream/10419/44437/1/45_tobbin.pdf* (accessed 20-June-2017).

28. Wardhaugh B, *"Developing regimes and mobile telecoms regulation in the twenty-first century: who makes the call?",* European Journal of Law and Technology, Vol 6, No 3, 2015.

29. Wigglesworth B and Barnes F, “*UK policies and regulations*”, Telecommunications Policy, 1992. Vol.16(9), 721 725.

Books and Reports

30. Adu Boahen A, ‘Africa under Colonial Domination 1880-1935’, in General History of Africa VII, (ed) A Adu Boahen, UNESCO. London : Heinemann ;1985.

31. Adu Boahen A, ‘Ghana: Evolution and Change in the Nineteenth and Twentieth Centuries’, Sankofa Educational Publishers Ltd. 2000, Accra.

32. Allotey F. K. A., Akorli F. K., ‘Telecommunications in Ghana’, in Telecommunications in Africa, (ed) Eli M. Noam, Oxford University Press, 1999.

33. Batura O, ‘Towards an International Regime of Regulating Electronic Communications’, in M. Krajewski (ed.), *Services of General Interest Beyond the Single Market: External and International Law Dimensions*; T.M.C. Asser Press 2015, 301 323.

34. Batura O, ‘Universal Service in WTO and EU law. Liberalisation and Social Regulation in Telecommunications’. Springer 2016, Asser Press.

35. BT, ‘Undertakings given to Ofcom by BT Pursuant to the Enterprise Act 2002’, 26 July 2016. Available at https://www.btplc.com/UKDigitalFuture/TheOffer/ConsolidatedUndertakings.pdf (Google archive accessed 10-May-2017).

36. Drake W J, ‘The rise and decline of the international telecommunications regime’, Part II, Chpt 8, 124 177, in Marsden, Christopher T. (ed.), *Regulating the global information society*, London: Routledge. 2000.

37. Flanagan A, ‘Authorisation and licensing’, in Ian Walden (ed.), Telecommunications Law and Regulation (4th ed.), Oxford, UK: Oxford University Press 2012.

38. Ghana Statistical Service, *‘*Gross Domestic Product 2014’, April 2014. 1 9. Available at *www.statsghana.gov.gh/docfiles/GDP/GDP_2014.pdf* (accessed 24-June-2017) (accessed 24-June-2017).

39. Ghana Statistical Service, ‘Provisional 2016 Annual Gross Domestic Product’, April 2017. 1 16. Available at *http://www.statsghana.gov.gh/docfiles/GDP/GDP2017/April/Annual_2016_GDP_April%202017_Edition.pdf* (accessed 24-June-2017).

40. Goldschmidt J E, ‘National and Indigenous Constitutional Law in Ghana’, Leiden 1981.

41. GOV.UK – HM Treasury, ‘Policy paper: Autumn Statement 2016’, 23 November 2016. Available at https://www.gov.uk/government/publications/autumn-statement-2016-documents/autumn-statement-2016 (accessed 4-July-2017).

42. International Monetary Fund and International Development Association, 'Ghana -- Enhanced Heavily Indebted Poor Countries (HIPC) Initiative – Preliminary Document', June 2001, 1 26. Available at https://www.imf.org/external/np/hipc/2001/gha/ghapd.pdf *(*accessed 24-June-2017*).*

43. ITU, 'Trends in Telecommunication Reform 2013: Transnational Aspects of Regulation in a Networked Society', Geneva Switzerland, 2013. 1 204. Available at www.onu.org.br/img/2013/04/Trends2013_FULL-press-e.pdf (accessed 19-June-2017).

44. James J, 'The Impact of Mobile Phones on Poverty and Inequality in Developing Countries', Cham : Springer International Publishing 2016.

45. Johnson G, Dymond A, Kien L L, 'Mechanisms for promoting teledensity in liberalised emerging markets', 123 132, in Telecom Development Summit – Speakers' Book, International Telecommunication Union, 1999. Available at www.itu.int/itudoc/telecom/tlc99/sp_book.pdf (accessed 21-June-2017).

46. Lang J T, 'European competition policy and regulation: differences, overlaps, and constraints', in H. Shelanski and F. Leveque (eds.), Antitrust and Regulation in the EU and US, Cheltenham; Edward Elgar Publishing 2009, Chapter 2, 20 73.

47. Morel C, 'Turnkey solutions for concept to profit – Solutions that enhance the revenue generating potential of telecom in developing countries', 261 270, in Telecom Development Summit – Speakers' Book, International Telecommunication Union, 1999. Available at www.itu.int/itudoc/telecom/tlc99/sp_book.pdf (accessed 21-June-2017).

48. National Communications Authority (Ghana), *'*Broadband Wireless Access (BWA) Licenses in the 2500mhz – 2690mhz Band*'.* October 2011. Available at *http://www.nca.org.gh/assets/Uploads/Wireless-Broadband-Access-Request-for-Applications-Rev-26-10-2011.pdf* (accessed 9-June-2017).

49. National Communications Authority (Ghana), *'*What We Do'. Available at http://www.nca.org.gh/the-nca/what-we-do/ (accessed 13-June-2017).

50. National Communications Authority, Ghana, *'*Industry Information'*,* August 2016. Available at https://nca.org.gh/media-and-news/news/industry-information-august-2016/ *(accessed 14-June-2017).*

51. National Communications Authority (Ghana), 'Public Consultation on the Licensing of Frequency in the 800mhz Band (i.e. Digital Dividend) For Mobile

Services'. May 2015. Available at *http://www.nca.org.gh/assets/Uploads/NCA-Public-Consultation-on-800MHz-band-2.pdf* (accessed 9-June-2017).

52. Ofcom, *'*A framework for spectrum sharing', July 2015. 1 40. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0032/79385/spectrum-sharing-framework.pdf (accessed 5-July-2017).

53. Ofcom, 'Annual Plan 2017/18', 1 61. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0027/99621/Annual-Plan-2017-18.pdf (accessed 10-May-2017).

54. OfCom, *'*Annual Report and Accounts For the period 1 April 2015 to 31 March 2016'. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0033/81789/ofcom_annual_report_2015-2016.pdf (accessed 10-May-2017).

55. OfCom, 'Annual Report and Accounts For the period 1 April 2016 to 31 March 2017'. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0021/104358/annual-report-2016-accessible.pdf (accessed 1-Aug-2017).

56. Ofcom, 'Better policy making - Ofcom's approach to impact assessment', July 2005. 1 23. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0029/45596/condoc.pdf (accessed 10-May-2017).

57. Ofcom, 'Connected Nations 2016', 16 December 2016, Available at https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2016. (Google archive of 29-June-2017; accessed 1-July-2017).

58. Ofcom, 'Consolidated Version Of General Conditions as at 28 May 2015', Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0026/86273/CONSOLIDATED_VERSION_OF_GENERAL_CONDITIONS_AS_AT_28_MAY_2015-1.pdf (accessed 1-July-2017).

59. Ofcom, 'Facts & figures 2016', Available at https://www.ofcom.org.uk/about-ofcom/latest/media/facts (accessed 10-May-2017).

60. Ofcom, 'Impact of the Strategic Review of Telecoms -- Implementation review', 29 May 2009, Available at https://stakeholders.ofcom.org.uk/binaries/telecoms/policy/bt/impact_srt_fulldoc.pdf (accessed 10-May-2017).

61. Ofcom, ‘Moving Freeview to make more airwaves available for mobile – the ‘700 MHz clearance’’, February 2017. Available at https://www.ofcom.org.uk/__data/assets/pdf_file/0026/97361/700MHz-clearance-update-08022017.pdf (accessed 10-May-2017).

62. Ofcom, ‘Penalty Guidelines’, 03 December 2015. Available at https://www.ofcom.org.uk/about-ofcom/policies-and-guidelines/penalty-guidelines (accessed 7-Aug-2017).

63. Ofcom, ‘Service quality of telecoms providers revealed’, 27 April 2017, Available at https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2017/service-quality-telecoms-providers (accessed 10-May-2017).

64. Ofcom, ‘Spectrum management’. May 2016. Available at https://www.ofcom.org.uk/spectrum/spectrum-management (accessed 10-May-2017).

65. Ofcom, ‘Strategic Review of Telecommunications Phase 1’, April 2004. Available at https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2004/ofcom-publishes-strategic-review-of-telecommunications-phase-1-consultation (accessed 5-July-2017).

66. Ofcom, ‘Strategic Review of Telecommunications Phase 2 Proposals’, November 2004. Available at https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2004/strategic-review-of-telecommunications-phase-2-proposals (accessed 5-July-2017).

67. Ofcom, ‘The General Authorisation Regime’, Available at https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-authorisation-regime (accessed 1-July-2017).

68. Preissl B, ‘Introduction’, in Governance of Communication Networks: Connecting Societies and Markets with IT, (eds) Preissl, Brigitte ; Müller, Jürgen; Physica-Verlag HD, Heidelberg ;2006.

69. Rodney W, ‘The Colonial Economy’, in General History of Africa VII, (ed) A Adu Boahen, UNESCO. London : Heinemann ;1985.

70. Rovalo A R, Barroso J L G, González C F, ‘Service Universalisation in Latin America: Network Evolution and Strategies’, in Governance of Communication Networks: Connecting Societies and Markets with IT, (eds) Preissl, Brigitte ; Müller, Jürgen; Physica-Verlag HD, Heidelberg ;2006, 149 164.

71. Scherer J, ‘Electronic Communication Law and Policy of the European Union’, in J. Scherer et al, Telecommunication Laws in Europe; London: Bloomsbury, 2013 (6th ed).

72. Scraggs E et al., ‘Ofcom: The effectiveness of converged regulation’, 2012. Rand Technical Report. 1 95. Available at http://www.rand.org/pubs/technical_reports/TR860.html (accessed 9-May-2017).

73. Thatcher M, ‘The politics of telecommunication. National institutions, convergence and change’. Oxford: Oxford University Press, 1999.

74. Tsikata Y. M., ‘Successful Reformers: Ghana’, in Aid & Reform in Africa, (editors) Shantayanan Devarajan, David R. Dollar, Torgny Holmgren, The World Bank, Washington, D.C. 2001. Available at *documents.worldbank.org/curated/en/110381468751519166/pdf/multi0page.pdf* (accessed 19-June-2017).

75. World Bank, ‘Regionalizing Telecommunications Reform in West Africa’, Report No. 40142-AFR, June 2007. Available at http://documents.worldbank.org/curated/en/125301468009942364/401420ESW0P0910ON0OF0TELECOMS0Final.doc (accessed 19-June-2017).

Cases

76. *Base Company NV and Mobistar NV v Ministerraad*, C-1/14, judgment of 11.6.2015.

77. *Kweku Kwarteng & 2 Ors v NCA & 7 Ors*. Suit No.: HRCM/239/15 (Pending) (Ghana).

78. *The Attorney-General v The Edison Telephone Company of London (Limited*), 1880, 6 Q.B.D. 244.

Internet Sources

79. Alex Hunt and Brian Wheeler, *“Brexit: All you need to know about the UK leaving the EU”*, BBC News, 27 June 2017. Available at http://www.bbc.com/news/uk-politics-32810887 (accessed 6-July-2017).

80. Ekow Quandzie, "*Ghana's NCA fines MTN, Vodafone, Tigo again for poor quality of service*", Ghana Business News, June 18, 2012. Available at https://www.ghanabusinessnews.com/2012/06/18/ghanas-nca-fines-mtn-vodafone-tigo-again-for-poor-quality-of-service/ (accessed 25-June-2017).

81. European Commission, "*Brexit negotiations*", Available at https://ec.europa.eu/commission/brexit-negotiations_en (accessed 6-July-2017).

82. http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=GH (accessed 24-June-2017).

83. http://www.fao.org/nr/water/aquastat/countries_regions/gha/GHA-CP_eng.pdf (accessed 17-June-2017.

84. http://www.statsghana.gov.gh/ (accessed 17-June-2017).

85. https://nca.org.gh/consumer-center/consumer-complaints/complaints-procedure/ (accessed 3-July-2017).

86. https://tradingeconomics.com/ghana/population (accessed 18-June-2017).

87. https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html (accessed 24-June-2017).

88. ITU, "*What is NGN?"* Available at http://www.itu.int/ITU-D/treg/publications/trends07.html (accessed 3-July-2017).

89. Jim Rogers, "*Blessed are the underdeveloped*", Forbes, Dec 1, 1997, Vol. 160(12). Available at https://global.factiva.com/ga/default.aspx (accessed 10-Aug-2017).

90. Mark Jackson, "*New Powers Allow Ofcom to Fine Mobile Operators for Poor Coverage*", ISP News, ISPreview, September 17th, 2016. Available at http://www.ispreview.co.uk/index.php/2016/09/new-powers-allow-ofcom-fine-mobile-operators-poor-coverage.html (accessed 8-Aug-2017).

91. Samuel Dowuona, "*Telcos expect reforms as new NCA director takes office*", Adom News, 3 February 2017. Available at *http://www.myjoyonline.com/business/2017/february-3rd/telcos-expect-reforms-as-new-nca-director-takes-office.php* (accessed 20-June-2017).

92. Samuel K. Obour, “*NCA fines telcos GH¢1 million*”, Graphic Online, 25 July 2013. Available at http://www.graphic.com.gh/business/business-news/nca-fines-telcos-gh-1-million.html (accessed 25-June-2017).

Legislation and Policies

93. Article 4, Directive 2002/22/EC (Universal Service Directive).
94. Article 8, Directive 2002/21/EC (Framework Directive).
95. Articles 3(2), 5(1), Directive 2002/20/EC (Authorisation Directive).
96. British Telecommunications Act 1981 c.38 (UK).
97. Broadcasting Act 1990 c.42 (UK)
98. Broadcasting Act 1996 c.55 (UK).
99. Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets.
100. Communications Act 2003, c.21 (UK).
101. Competition Act 1998 c.41 (UK).
102. Digital Economy Act 2010 c.24 (UK).
103. Digital Economy Act 2017 c.30 (UK).
104. Directive 97/13 /EC of the European Parliament and of the Council of 10 April 1997 on a common framework for general authorizations and individual licences in the field of telecommunications services.
105. Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).
106. Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive).
107. Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive).
108. Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).
109. Electronic Communications Act, 2008 (Act 775) (Ghana).
110. Enterprise Act 2002 c.40 (UK).
111. Frequency Registration Decree, 1977 (Ghana).
112. Government of Ghana -- Ministry of Communications, “National Telecommunications Policy”, 2005. Available at http://www.nca.org.gh/assets/Uploads/Ghana-Telecom-Policy-2005.pdf (accessed 12-June-2017).

113. Government of Ghana -- Ministry of Communications, “The Ghana ICT for Accelerated Development (ICT4AD) Policy”, 2003. Available at http://www.moc.gov.gh/sites/default/files/downloads/Ghana-ICTAD%20Policy-Master-final-2.pdf (accessed 23-June-2017).
114. Investigatory Powers Act 2016 c.25 (UK).
115. National Communications Authority Act, 1996 (Act 524) (Ghana).
116. National Communications Authority Act, 2008 (Act 769) (Ghana).
117. National Communications Regulations, 2003 (L.I. 1719) (Ghana).
118. National Redemption Council Decree No. 311 (Ghana).
119. Office of Communications Act 2002, c.11 (UK).
120. Post Office Ordinance, 1886 (Ghana).
121. Postal Services Act 2011 c.5 (UK).
122. Recital 8, Directive 2002/22/EC (Universal Service Directive).
123. Regulation 110, National Communications Regulations, 2003 (L.I. 1719) (Ghana).
124. Section 1, Electronic Communications Act, 2008 (Act 775).
125. Section 1(9), Office of Communications Act 2002 (UK).
126. Section 2, National Media Commission Act, 1993 (Act 449) (Ghana).
127. Section 2, NCA Act 2008 (Act 769).
128. Section 2, Office of Communications Act 2002 (UK).
129. Section 3(1), Communications Act 2003 (UK).
130. Section 3(1), Electronic Communications Act, 2008 (Act 775) (Ghana).
131. Section 5 of Schedule, Office of Communications Act 2002 (UK).
132. Section 5(3), Communications Act 2003 (UK).
133. Section 6(3), National Communications Authority Act, 2008 (Act 769) (Ghana).
134. Section 8(5), National Communications Authority Act, 2008 (Act 769) (Ghana).
135. Section 9(5), National Communications Authority Act, 2008 (Act 769) (Ghana).
136. Section 14(1), NCA Act 2008 (Act 769).
137. Section 45, Communications Act 2003 (UK).
138. Section 53F, Digital Economy Act 2017 c.30 (UK).
139. Section 131, Enterprise Act 2002 (UK).
140. Section 154, Enterprise Act 2002 (UK).
141. Section 198(1), Communications Act 2003 (as amended by Section 88(3), Digital Economy Act 2017) (UK).
142. Sections 16-19, National Communications Authority Act, 2008 (Act 769) (Ghana).
143. Statutory Corporations (Conversion to Companies) Act, 1993 (Act 461) (Ghana).
144. Telecommunications Act 1984 c.12 (UK).
145. Wireless Telegraphy Act 2006 c.36 (UK).