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Country Profile Ghana

Disclaimer:

The research only represents a country's cybersecurity policy to a limited extent and is not an in-depth or complete analysis or assessment of current policy. In order to adapt the exercises to specific countries, it is important to understand the broader strokes of cybersecurity policies of other countries. Our team, therefore, researches publicly available information on cybersecurity policies of countries to adapt the exercises to country-specific needs. The research is shared with participants as background material in preparation for the exercise. Therefore, the documents have a timestamp and consider policy up until the date of publication. In the interests of non-profitability, we decided to make the background research publicly available. If you are using these materials, please include the disclaimer. Please also do not hesitate to contact us. The country profile was published in July 2022.

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Political System and Socio-Political Background

Key Facts

- Official country name: Republic of Ghana[1]
- Population: 30,832,019 (Population and Housing Census of 2021)[2]
- Official languages: English[3]
- Currency: Cedi (¢)[4]

Political System

Ghana is a presidential democracy.[5] The Constitution, adopted through a referendum in 1992, establishes the separation of the legislative, executive, and judicial branches. According to the Constitution, the President of Ghana serves as Head of State, Head of Government, and Commander-in-Chief of the Armed Forces of Ghana.[6] Since January 2017, the position has been held by Nana Addo Dankwa Akufo-Addo of the New Patriotic Party (NPP).[7] In 2020, he was elected for a second term.[8] The legislative branch consists of a unicameral parliament based on the Westminster model.[9] The highest instance of the judiciary is the Supreme Court.[10]

Socio-Political Context

Ghana is considered an "anchor for stability in West Africa"[11] due to its efforts to strengthen regional integration and economic development.[12] The country reached the lower-middle-income status in 2011 and was the first country in sub-Saharan Africa to meet the Millennium Development Goal of reducing poverty by half, from 52,7 percent in 1990 to 24,2 percent in 2012.[13]

The Covid-19 pandemic temporarily stopped the country's economic growth and poverty reduction. It led to the decrease of the annual GDP growth from 6,2 percent in 2018 to 0,4 percent in 2020 and a poverty increase from 25 percent in 2019 to 25.5 percent in 2020.[14] Although the World Bank predicts a successful economic recovery, Ghana must first overcome several challenges. These, for example, include its looming default on public debt, the rise in prices for key commodities such as food and fuel due to Russia's invasion of Ukraine, and its dependence on commodity exports.[15]

As of 2019, 39 percent of Ghana's adult population are internet users, with internet access primarily through mobile subscriptions, as shown by the number of 137.5 mobile subscriptions per 100 people.[16] In 2021, Ghana's freedom of the net had been considered partially free[17]. According to Freedom House, the use of the Internet is "largely free from technical censorship,"[18], but political parties seek to influence reporting by hiring "commentators to shape opinions on social media."[19]. Further, critical online journalists are threatened with prosecution and other forms of harassment.[20]

The World Economic Forum's 2019 Global Competitiveness Report ranks Ghana 90th out of 141 countries for information and communications technology (ICT) adoption. In the digital skills category, Ghana ranks 69th out of 141 countries.[21] According to Ghana's current government, progressive digitization and the improvement of digital skills are crucial to becoming self-sufficient and independent of international aid.[22] This is illustrated by the Ghana Beyond Aid Strategy released in 2019, which defines strengthening the digital economy as one of the five pillars of economic growth.[23] However, strengthening digital skills among the population has been on the agenda of Ghanian governments for some time. The Ministry of Education thus, for example, adopted the ICT in Education Policy in 2008, which was later renewed in 2015.[24]

Ghana's Cybersecurity Policy

Vulnerability and Threat Landscape

The Global Cybersecurity Index (2020) lists Ghana as 43rd out of 182 countries globally and 3rd out of 43 in Africa.[25] This is a significant improvement from the last edition (2018), which ranked Ghana 89th globally and 11th in Africa.[26] According to the Ghana National Cyber Security Policy & Strategy (for more information, see the section on "Key Documents" below), Ghana faces two significant threats in cyberspace: cyber fraud affecting individuals and cybercrime targeting governmental services and companies.

The first main threat, cyber fraud, also called Sakawa, is primarily directed against private individuals in the country and abroad. Researchers speak of a "Sakawa industry in Ghana [that] is similar to the informal work sector in the country."[27] Especially young people from the country "resort to cyber fraud as an alternative source of livelihood" due to, for example, high unemployment rates.[28] In contrast, the second threat consists of cybercriminal activities that do not primarily target individuals but government entities and private companies.[29] Experts of the National Cyber Security Center (now replaced by the Cyber Security Authority, see the section "Cybersecurity Architecture - Selected Institutions") estimate a total financial loss of 105 million USD in 2019 due to cybercriminal activities.[30]

The following exemplary cases of cyber incidents are among those that gained national and international media attention:

The Ghanaian financial sector has repeatedly been affected by cyber incidents. In June 2020, a **branch of Universal Bank in Accra** fell victim to a malicious cyber operation. The credentials of some employees on leave were used to remotely access the bank's software and execute several SWIFT transactions worth 46 million Ghanaian Cedis (approximately US$7.5 million).[31] The police cybercrime unit recovered the money shortly after and arrested several people, including a former bank employee, for the crime.

In January 2019, the cybersecurity firm Symantec revealed that **banking institutions in several West African countries**, among them Ghana, had been the target of a cyber operation since mid-2017.[32] The perpetrators used commercially available malware, such as the Cobalt Strike Trojan[33] for their operation.[34] It was one of the first reported malicious cyber incidents affecting financial institutions in West Africa.[35]

In December 2016, the Ghana Electoral Commission's (EC) website went offline the night after voting due to a cyber operation during the parliamentary and presidential elections.[36] The website was back online after four hours, and according to the Electoral Commission, the integrity of the election was guaranteed at all times. Although false election results circulated on social media, an attempt by the threat actors to publish fake results on the official website failed, according to Ghana's electoral commission cited in media reports.[37]

Key Documents

Ghana's cybersecurity is shaped by the Ghana National Cyber Security Policy & Strategy[38] and the Directive for the Protection of Critical Information Infrastructure (CII).[39] In addition, Ghana also has sector-specific key documents, such as the Cyber & Information Security Directive, a cybersecurity-related framework for financial institutions, illustrated below.[40]

The **Ghana National Cyber Security Policy & Strategy** was approved in 2015. In order to achieve the set goals of "a secure and stable connected Ghana," the strategy[1] lists the following nine policy pillars:[41]

- Effective Governance – The organizational elements of cybersecurity and knowledge sharing shall be improved by centralizing tasks and increasing cooperation between governmental and non-governmental institutions.
- Legislative & Regulatory Framework – The Ghanaian legal framework shall always be adapted to the current situation and any new developments through regular review. Capacity-building programs for law enforcement agencies are planned to ensure the implementation of cybersecurity legislation.
- Cyber Security Technology Framework – In the future, cybersecurity products and services will be certified and tested, especially in critical infrastructure sectors, to ensure their quality and safety. For the purpose of the policy, it previously defines the notion of critical national information infrastructure (CNII) and identifies the sectors that should be considered as such (see next paragraph for more information).
- Culture of security and Capacity Building – Various programs shall be designed to increase the awareness and competence of the Ghanaian population in the field of cybersecurity.
- Research & Development towards Self-Reliance – This section highlights the increase of support for cybersecurity research and development to ensure self-reliance and protect CNII.
- Compliance and Enforcement – Compliance with laws and regulations shall be ensured by developing a standard cybersecurity risk management framework and further measures to standardize systems across all elements of the CNII.
- Cyber Security Emergency Readiness – The strategy aims to improve incident reporting mechanisms, mainly through the National Computer Security Incident Response Team and the call for more monitoring of cyber incidents by critical infrastructure operators.
- Child Online Protection – With a multi-stakeholder approach and increased exchange between stakeholders, the protection of children online shall be strengthened.

1 Currently, the only available version of the document is labeled as a final draft. It remains unclear if this is the final version approved by the government. Furthermore, it is unclear if a revision of the strategy took place in 2019 as was claimed by the European Council (Council of Europe, 2018). There is no document available that indicates that such a revision took place.

- International Cooperation – In the future, Ghana plans to increase its involvement at the international level on the topic of cybersecurity, in particular by organizing an annual international cybersecurity conference.

In October 2021, the **Directive for the Protection of Critical Information Infrastructure (CII)**, prepared by the Cyber Security Authority, an agency of the Ministry of Communications and Digitalisation (see section "Cybersecurity Architecture - Selected Institutions"), came into force.[42] Based on the provisions of the Cybersecurity Act (see section "Legal Frameworks"), the directive identifies 13 critical information infrastructure sectors and defines requirements and obligations for their owners.[2] Among other requirements, owners must "develop and implement a Cybersecurity Policy which adequately addresses CII risks"[43] and is reviewed annually, "implement relevant security measures to mitigate cyber risk"[44], and "develop, regularly test and update business continuity and disaster recovery plan[s]."[45] For incident reporting, the policy requires critical infrastructure owners to establish a point of contact for cybersecurity incident reporting, "disclose and report any *vulnerabilities* [...] within 72 hours of identifying or discovering the vulnerability,"[46] and report incidents to the appropriate CERT (Sectoral CERTs or the National Computer Emergency Response Team (see the section on "Cybersecurity Architecture - Selected Institutions" for more information")) within 24 hours of discovery.[47]

The **Cyber & Information Security Directive**, published in October 2018 by the Bank of Ghana (BOG) (see the section "Cybersecurity Architecture - Selected Institutions").[48] This document provides a comprehensive framework for financial institutions to ensure their integrity in cybersecurity matters. With this directive, all entities, banking or non-banking regulated by the BOG, must address potential cyber threats and work towards securing their operative systems and internal structure. The directive comprises new regulations for the administration and governance of financial institutions, the monitoring and reporting of risks and incidents, and new requirements for infrastructures and services. As a concrete step toward the professionalization of cybersecurity in the financial sector, all BOG-regulated entities are obliged to appoint a Chief Information Security Officer that advises the senior management on cybersecurity and develops the internal incident response. According to bank officials, the central goal of the directive is "to restore confidence and promote stability and integrity of the banking sector."[49]

2 The 13 sectors identified as critical information infrastructure are national security and intelligence, information and communication technology, banking and finance, energy, water, transport, health, emergency services, government, food and agriculture, manufacturing, mining, and education. However, neither the Cyber & Information Security Directive nor the Cybersecurity Act cite more specific indicators of what constitutes critical information infrastructure besides the definition that the critical information infrastructure is computer systems or computer networks "essential to national security or the economic and social well-being of citizens." (Cybersecurity Act, Article 35). Ghana Gazette (2021): Thursday, 23rd September, No. 132. https://bit.ly/3P82pGQ

Legal Frameworks

The following section focuses solely on selected key pieces of the national legal framework. These include, among others, the Cybersecurity Act, the Electronic Transaction Act, the Electronic Communications Act, and the Data Protection Act.

The **Cybersecurity Act** (Act 1038) is the most comprehensive act of cybersecurity legislation in Ghana and was enacted in 2020.[50] It establishes several new institutions, such as the Cyber Security Authority (see section "Cybersecurity Architecture - Selected Institutions"), and defines concepts like the critical information infrastructure.[3] According to Article 35, infrastructure is considered critical if the responsible minister determines that it is "essential for national security, or the economic and social well-being of citizens".[51] The Cybersecurity Act further reforms the criminalization of cybercrime, such as cyberstalking or child pornography, and advances the legal clarification, for example, regarding interception warrants and production orders.[52] It also outlines cyber incident reporting duties and, for example, further clarifies the relationship between Sectoral CERTs and the National Computer Emergency Response Team (see "Directive for the Protection of Critical Information Infrastructure").

The **Electronic Transaction Act** (Act 772), enacted in 2008 by the president and parliament at the time, regulates all types of electronic transactions, such as digital signatures and electronic records.[53] It contains an enumeration of cyber offenses, such as stealing, denial of service, child pornography, access to protected computers, among others. In 2018, The Ministry of Communications and Digitalisation announced that it plans to revise the law to ensure that it is still up-to-date and of practical use for the prosecution authorities.[54]

The **Electronic Communications Act** (Act 775), also enacted in 2008, regulates electronic communication and broadcasting.[55] Concerning cybersecurity, the most important innovation of the Act is the criminalization of all forms of interception, alteration, decryption, and disclosure of transmitted data and messages. In addition, the law criminalizes the dissemination of fake news and other forms of deliberate misinformation.[56] This part of the law was publicly criticized, for example, by the non-governmental organization Freedom House, because of its "overbroad definition" of fake news and thus its restriction of digital freedoms.[57]

The **Data Protection Act** (Act 843) of 2012 aims to protect citizens' privacy and personal data.[58] It sets binding rules for data controllers and processors by defining data protection principles (amongst others, accountability, quality of information, data security safeguards, and data subject participation). In addition, the Data Protection Act, for example, lists security measures data controllers are supposed to take to ensure the integrity of personal data. The Act also provides for establishing a Data Protection Commission (see section "Cybersecurity Architecture - Selected Institutions"), which will ensure compliance and conduct investigations into suspected breaches of the Act.[59]

3 see footnote 2 on page 8

Cybersecurity Architecture - Selected Institutions

Cybersecurity in Ghana is shaped by various actors. These include the following governmental institutions: the Ministry of Communications and Digitalisation, the Cyber Security Authority, the Ghana National Computer Emergency Response Team, the National Information Technology Agency, the Data Protection Commission, the Ghana Police Service's Cybercrime Unit, and the Bank of Ghana.

The **Ministry of Communications and Digitalisation** (MoC) was initially established in 1993 as the Ministry of Communications.[60] It oversees the regulation of all forms of communication and is therefore responsible for digital communication and other ICTs and their security issues.[61] The Ministry's goal is to develop "Ghana into a knowledge-Based Society and a smart economy through the use of ICT."[62] To achieve this goal, the MoC has introduced several cybersecurity laws and regulations, such as the Cybersecurity Act 2020 (see section "Legal Frameworks") or the Directive for the Protection of Critical Information Infrastructure (see section "Key Documents").[63] In addition, it oversees and coordinates several agencies that deal with cybersecurity issues; these include the Cyber Security Authority and the National Information Technology Agency (more information below).[64]

The **Cyber Security Authority** (CSA) is the central institution responsible for implementing cybersecurity policy, coordinating incident response, and building awareness in society. The CSA was established in 2020 through the Cybersecurity Act 2020 and began operations in October 2021. It replaced the National Cyber Security Center (NCSC), which transitioned into the CSA.[65] The Cybersecurity Act (see section "Legal Frameworks") lists 21 tasks for the CSA, including advising the government on cybersecurity matters, monitoring potential cyber risks, certifying digital services, identifying critical infrastructure, and more.[66] It is one of the main actors in implementing Ghana's cybersecurity policies. The Authority is an agency of the Ministry of Communications and Digitalisation (see above). Furthermore, the CSA hosts the Ghana National Computer Emergency Response Team (CERT-GH).[67]

The Ministry of Communications and Digitalisation established the **Ghana National Computer Emergency Response Team** (CERT-GH) in 2014. Its primary mission is the protection of government resources, critical infrastructures, and industrial and commercial systems infrastructure.[68] It thus serves the government primarily but is also available for interventions in the private sector in case of cyber incidents. The CERT-GH is the primary point of contact for international cybersecurity incidents[69] and participates in the Forum of Incident Response and Security Teams (FIRST). This forum aims to facilitate the cooperation between different CERTs and other emergency response teams to enhance their technical capabilities and facilitate international exchange.[70] Additionally, the CERT-GH is tasked with raising awareness for security measures to prevent cyber incidents or mitigate their effects among all relevant actors.[71] As indicated in the section on "Key Documents" above, the Directive for the Protection of Critical Information Infrastructure requires critical infrastructure owners to report incidents to the CERT-GH or the Sectoral CERTs within 24 hours of discovery.

The **National Information Technology Agency** (NITA), established by the National Information Technology Agency Act in 2008, is responsible for regulating the ICT sector.[72] It is also responsible for implementing IT policies, like the e-Government Interoperability Framework.[73] The NITA supports other government agencies on the national and local level in implementing e-governance measures, develops regulatory frameworks for ICT in the public administration (e.g., Data Center Standards, LAN Standards), and is responsible for registering government domains.[74] It is an agency of the Ministry of Communications and Digitalisation.

The **Data Protection Commission,** established in 2012 by the Data Protection Act (see section "Legal Frameworks"), is tasked with implementing the provisions for the protection of individual and personal data.[75] The Commission is defined as an "independent statutory body."[76] Its governing body, the board, is appointed by the President, and the Minister of Communications and Digitalisation "may give directives to the Board on matters of policy."[77] All data processors and controllers are required to register with the Data Protection Commission, which makes the information at least partially publicly available.[78]

In 2018, a **Cybercrime Unit** was created as part of the Criminal Investigation Department of the **Ghana Police Service**.[79] The unit investigates cybercrime cases and offers specialized support to other police units.[80] To achieve the goal "of dealing effectively with cyber crime, the Ghana Police is set to erect two cyber crime units to add to the existing one" that is currently situated in the capital Accra.[81]

The Central Bank, **Bank of Ghana** (BOG), was established with Ghanaian independence in 1957. Today, it develops and implements monetary policy, ensures monetary stability, and regulates Ghana's banking and non-banking financial institutions.[82] The bank "acts as banker and financial adviser to the Government;" its board is appointed by the President of the Republic of Ghana.[83] In the context of ever-evolving cyber threats, the BOG recognized the relevance of cybersecurity for the financial sector and addressed the topic in multiple forms. One of the most critical measures of the BOG is the Cyber & Information Security Directive, which was published in October 2018 (see the section "Legal Framework").[84]

Bilateral and Multilateral Cooperation

Ghana has anchored international cooperation as a key element of its cybersecurity strategy (see section "Key Documents"). The current Minister for Communications and Digitalisation underlined that "Ghana's domestic cyber resilience is very much dependent on strong international collaboration arrangements."[85] Ghana is a member of several international organizations that deal with cybersecurity-related topics, such as the African Union (AU) and the International Telecommunication Union (ITU). It has also recently signed and ratified key international treaties on cybersecurity, such as the Convention on Cybercrime and the Commonwealth Cyber Declaration (see below for more information). Ghana also cooperates bilaterally with other countries in this area, such as the United States and Israel (see below).

The African Union, of which Ghana is a member, adopted the **African Union Convention on Cyber Security and Personal Data Protection** (Malabo Convention) in 2014. However, due to the lack of ratifications (a minimum of 15 ratifications is needed) the Malabo Convention has not yet entered into force.[86] Ghana was among the first countries to sign the agreement in 2017. As of 2020, the country is among eight countries that have already submitted their ratifications.[87] By its signature, Ghana is obliged to elaborate appropriate cybersecurity policies and strategies to protect critical infrastructure and criminalize certain offenses specific to ICT.[88]

Moreover, Ghana participated in elaborating the **Commonwealth Cyber Declaration**, which was issued at the Commonwealth Heads of Government Meeting in 2018, thereby underlining its commitment to guarantee secure and inclusive cyberspace where the rights of citizens are protected.[89] As a follow-up measure, workshops on revising the cybersecurity strategy were organized in Ghana; civil society and government representatives participated.[90]

Furthermore, Ghana ratified the **Convention on Cybercrime** (Budapest Convention) in 2018, which came into force in April 2019.[91] The Convention aims to harmonize cybersecurity legislation and strengthen international cooperation in this field.[92]

As of 2022, Ghana currently holds a seat in the **International Telecommunication Union** (ITU) Council, being one of 13 countries representing the African continent.[93] The ITU's goal is to ensure the security of and confidence in ICTs by strengthening international cooperation and providing information on best practices, standards, and national strategies.[94] Ghana participates in several ITU Study Groups and has hosted multiple ITU conferences in the past.[95]

Global Action on Cybercrime Extended (GLACY+), a joint project of the European Union and the Council of Europe, targets key countries, among them Ghana, and aims at advancing capacity building in the field of cybersecurity. The focus is on developing effective cybersecurity legislation and policies and building the necessary expertise among law enforcement agencies to prosecute cybercrime.[96] In the case of Ghana, examples of implemented measures are training for judges and prosecutors,[97] the organization of a National Cyber Security Awareness Month,[98] and the revision of the Ghana National Cyber Security Policy & Strategy supported by GLACY+.[99]

In March 2021, Ghana joined the **Global Forum on Cyber Expertise** (GFCE). The GFCE members range from countries to intergovernmental, international organizations, and private companies. The organization's primary goal is to build and exchange practical knowledge amongst these actors.[100] As a member, Ghana has access to high-level and multi-stakeholder discussions on cybersecurity issues and profits from the clearinghouse function of the GFCE.[101]

Ghana also engages in bilateral cooperation with other states. The country, for example, is a partner of the **US-American Security Governance Initiative** (SGI). It was launched in 2014 by the US government to enhance the partner governments' capacity in the field of security.[102]

In the case of Ghana, the partnership focuses mainly on cybersecurity and border security issues. Concrete measures implemented include promoting inter-ministerial coordination, information exchange, and training of local staff in responding to cybersecurity incidents.[103]

In 2020, Ghana signed a **Memorandum of Understanding (MoU) with the Government of the State of Israel** to coordinate cybersecurity matters.[104] The MoU, for example, underlines the importance of developing adequate policy and operational and regulatory responses to cybersecurity risks.

To further the development of an inclusive and secure digital society in Ghana, the Ministry of Communications and Digitalisation signed a **Memorandum of Understanding with the Digital Transformation Center Ghana**, a project implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and commissioned by the German Federal Ministry for Economic Cooperation and Development.[105] Other than enhancing digital skills in the Ghanaian population, the Digital Transformation Center Ghana aims to advise "political partners on the formulation of national policy programs and concepts, laws, regulations, and strategies".[106]

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