



ASHESI UNIVERSITY COLLEGE

A GHANA BEYOND AID

**AN INVESTIGATION INTO THE CRITICAL INFRASTRUCTURE THAT THE GOVERNMENT OF GHANA
SHOULD INVEST IN TO MOVE BEYOND AID**

Undergraduate Thesis Project Submitted to The Department of Business Administration, Ashesi University College in
Fulfillment of The Requirements for The Bachelor's Degree in Business Administration

BSc Business Administration

Maureen Molly Basemera

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DECLARATION

I Maureen Molly Basemera hereby declare except for references made in other research publications and works which have been cited, this project is an accurate representation of the outcome of researches I conducted. This work has not been presented elsewhere for the award of a degree at Ashesi University.

Candidate’s name: Maureen Molly Basemera

Candidate’s Signature:

Date:

I declare that the preparation and presentation of the capstone project were supervised per the guidelines of the thesis project laid down by Ashesi University.

Supervisors Name: Dr. Stephen Emmanuel Armah

Supervisor’s signature:

Date:

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DEDICATION

I dedicate this research work to Ashesi University, my supervisors, the government of Ghana and several other developing economies.

ABSTRACT

Purpose: This paper aims to investigate and identify the most critical infrastructure that the government of Ghana should invest in to move beyond aid. As such, it offers a clear understanding of the role the “resource for infrastructure swap” agreement between China and Ghana in the Sino-hydro deal is supposed to play in the development of Ghana’s economy.

Design: This paper uses quantitative and qualitative techniques such as interviews and case studies from Ethiopia, Angola, and Nigeria to analyze complex entry decisions and success as well as the failures and problems that might arise from the resource for infrastructure swap initiative. It is based on the analysis of case studies from countries like Angola, Ethiopia, and Nigeria, that have had this similar agreement with China. It further recommends the best infrastructure the government of Ghana should invest in for development

Findings: The research concluded that there are five types of critical infrastructures that the government should invest in to move beyond aid. These are in order of importance: the education sector, the food, and agriculture sector, the public health care sector, the transportation sector, and the energy sector infrastructure.

Originality/ value: This is the first comprehensive study that advice the government of Ghana on which infrastructure they should invest in based on the analysis of the past Sino hydro project deals in other African countries including Angola, Congo, Ethiopia and Ghana itself.

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CHAPTER I: INTRODUCTION

1.1 Background

The challenge of economic development has plagued many emerging economies especially in Sub-Saharan Africa (SSA) for decades following their struggle for, and attainment of, independence. SSA countries have each struggled, albeit at different intensities, with diseases, poverty, inequality, poor leadership and underdevelopment but the challenges of underdevelopment largely remain unsolved (Armah, 2016). According to the World Bank, half of the extremely poor live in Sub-Saharan Africa, raising questions about the opportunities available to Africa's young and growing population (World Bank, 2018).

Several causes have been identified for SSA's poor and persistent economic performance. For example, Kabuya (2015) studied population growth and its causes of poverty in SSA. Kabuya listed various causes, including low technology generation and assimilation, and a low capital base, where capital is defined in a strictly economic sense to mean the stock of equipment and structures a country needs to produce new goods and services, rapid population, low productivity, low levels of saving and low levels of demand. He concludes that a high population growth rate and low human capital attainment led to weak economic and political institutions in Kenya (Kabuya F. I., 2015).

Neoclassical economics, per the convergence theory, predicts that countries' growth rate on the path to steady state growth is predicated on access to sufficient physical capital, which can be augmented by high savings rates (Solow, 1956 as cited in Mankiw, 2015). Further, a low population growth rate is needed to ensure faster growth to a steady, economy but once the economy is stable, governments can invest in research

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and technology to foster both economic and technological growth beyond study state growth.

Herein lies the challenge that SSA countries have struggled to surmount for decades, leaving them mired in underdevelopment. African countries have failed to invest in the kind of infrastructure that can support and sustain technological advancement and promote expanded economic activity: roads, bridges, rail, and transportation infrastructure.

SSA, infrastructure compares very unfavorably to the rest of the world (Abed & Davoodi, 2000). SSA countries have also failed to keep their population low and have been unable to keep their saving rates high enough to drive the growth to a steady state (Abed & Davoodi, 2000). This has contributed to their high poverty rates and low development compared to other regions of the world.

Although Ghana was the first SSA country to gain independence from British rule, the Ghanaian situation with respect to population and economic growth is no different from the situation in several other SSA countries. It also suffers from capital deficiency, weak institutions, high populations growth rates and low levels of technology and savings that plagues the rest of SSA (UNCTAD, 2012).

After leading Ghana to independence in 1957, the first for an SSA country, Kwame Nkrumah, the first president of Ghana promised a strong economy, a better agricultural industry, buoyant infrastructure, health and education in Ghana (Amankwa, 2014). It appears Nkrumah initially delivered on his promise but only for a limited time. Kwame Nkrumah was able to promote both formal and informal education, built the Akosombo dam that improved the supply of electricity in Ghana, improved the

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transportation infrastructure through the networks of roads and an international airport, built factories and industries in Ghana that provided jobs to the population. He further built hospitals and provided pipe borne water hence improving the general health of the nation. There is little evidence of any subsequent Ghanaian government investing as much in infrastructural development as Nkrumah (Kennedy, 2018).

Some of Nkrumah's major infrastructural projects, including the Akosombo Dam, was financed by foreign aid. The Akosombo dam created the largest man-made lake in the world (Lake Volta) and was one of the first dams of its kind in West Africa. It generated electricity for all of Ghana. Although foreign aid is typically a small percentage of Ghana's GDP (< 5 %), it usually finances key infrastructure in Ghana such as The Akosombo Dam and numerous roads like the George Bush motorway are obvious examples.

Foreign aid, however, has a controversial reputation in the literature with respect to its efficacy in spurring development because while some economists like Jeffrey Sachs are supportive of it, other economists loathe it. These economic experts, most notably Dambisa Moyo (2009) and Easterly (2006), have blamed the development crisis confronting the continent Africa on foreign aid. They insist that the begging of SSA countries for assistance and submissiveness to developed nations have left the continent more destitute.

According to Moyo, aid corrupts, and unfortunately, foreign aid has benefited only the ruling elites in Africa and not the masses (Moyo, 2009, p.109). This has been done by among other things, enabling and perpetuating corrupt government's hold on power and by extension, entrenching the pervasive underdevelopment.

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Leaders that have benefited from foreign aid such as Teodoro Obiang Nguema Mbasogo of Equatorial Guinea and Ali Bongo Ondimba of Gabon have been in power since the 1970s. Other African presidents who have benefited from aid like Museveni of Uganda, Biya of Cameroon and Alpha Conde of Guinea have been in power since the 1980s (Moyo, 2009, p.108). These leaders have “crowned themselves in gold, seized land, handed over state business to relatives and friends, diverted billions of foreign bank accounts and treated their countries as giant personalized cash dispensers,” (Moyo, 2009). The poor management and use of foreign aid have led to the deterioration of economies under these corrupt presidents.

Over the past decades, although foreign emergency assistance to Africa has helped to avert hardship for many of Africa’s disasters, it has failed to promote any significant economic development (Jallow, 2010). Aid to developing nations is provided with the conviction that economic development begins when the emphasis is placed on giving aid to poor rural and urban communities (Jallow, 2010).

Although the majority of aid Ghana received was used to invest in infrastructure, for example, roads and dams, some political analysts like Sule N. Jotie argue that the foreign support that was obtained in the past has dramatically damaged Ghana’s reputation and concluded that Ghana should lead the way for all other African nations to move beyond aid (Jotie S. N., 2018).

This suggestion seems to have been practicalized in the vision and policies of Ghana’s current president Nana Addo Dankwah Akufo Addo, who preaches this in his “Ghana Beyond Aid” agenda.

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President Nana Akuffo Addo emphasized that there is a need for African countries like Ghana to invest in the critical infrastructure of their respective countries to catalyze the effort to end dependency on foreign aid (Jotie, 2018). This is key because the majority of crucial infrastructural projects in Ghana like roads are aid-financed. He recounted that around the time of Ghana's independence, the country was at par, if not ahead of countries like South Korea, Malaysia, and Singapore. The per capita incomes of Ghana and the aforementioned countries were similar at around \$450 in 1960, and the economies were dependent on the production of primary commodities (Jotie, 2018). However, these countries have now left Ghana far behind in terms of development.

President Akuffo Addo has set up a plan to focus on developing Ghana's economy to drag Ghana out of economic underachievement. The "Ghana Beyond Aid" vision puts the responsibility for strategic investment into infrastructure squarely in the hands of the Ghanaian government and citizens and insists that there should be no key role at all for foreign aid (Jotie, 2018).

1.2 Problem Description

The past governments of Ghana have unfortunately neglected investments in critical infrastructure (roads, bridges, health facilities, etc.) initiated by predecessor governments, leaving them to crumble. Examples abound including the crumbling road and rail networks, decaying the education and health sector infrastructure (schools and hospital buildings) among others. This has led to an increase in road accidents, the teaching of school children under trees, and several other needs.

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In the most recent report on the condition of Ghana's infrastructure, the Ghana Institution of Engineering (GhIE) in collaboration with Ghana Transportation Professional's Forum and the Transportation Research Center provided D-level ratings for Ghana's infrastructure. Potable water, roads and bridges, and electrical power were rated D2, D2, D1, and D2 respectively. The cumulative score of D2, or a poor rating for the economy, demand the government of Ghana improve on the infrastructure (Myjoyonline, 2018).

The GhIE engineers estimated the cost of bringing Ghana's infrastructural projects to a state of good repair (grade B) by 2030 would be 1.5 billion dollars. As a step to breach this infrastructural gap and move Ghana beyond aid, the Ghanaian government recently approved the 2 billion dollars Ghana-China Sino hydro Infrastructure Agreement between Ghana and China, a resource for infrastructure swap (Myjoyonline, 2018). This is also known as the Master project support Agreement (MPSA)

Ghana -Sino Hydro infrastructure agreement between Ghana and Sino hydro Cooperation Limited will offer Ghana the option of developing any desired key infrastructures in exchange for bauxite mining opportunities in the Atewa region of Ghana for the Chinese. Ghana has a period of three years to select its partner to undertake the refining of her bauxite (Myjoyonline, 2018). Dr. Mark Assibey- Yeboah, the Chairman of the Committee on Finance, highlighted that the government should focus on the development of the road infrastructure to facilitate rapid socio-economic development. Some other political leaders believed the road network was not as bad as Dr. Assibey-Yeboah mentioned. They suggested that the infrastructure projects that

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Ghana should rather focus on are hospitals, bridges, interchanges, roads, affordable housing and fishing landing sites to boost employment within the economy (GNA, 2018).

In a separate development, the concerned citizens of the Atewa area have pleaded with the government not to allow anyone to mine bauxite in the Atewa forest reserve which is where the bauxite deposit the Ghanaian government has earmarked to give to China in exchange for infrastructure is located. According to the citizens of Atewa, this reserve has been a source of water for many years for several rural Ghanaians.

The Sino hydro agreement has been strongly opposed by the native Ghanaians living in the Atewa areas (CitiNewsRoom, 2018). Despite such protests and conceding the non-renewable and destructive effects of mining on the environment, the Ghana government has approved the Sino hydro agreement.

This means the Ghana government believes the need for development trumps the collateral damage of mining, but it also means resources must be used prudently. From the discussion above there is a need for investment in key infrastructure in Ghana to promote economic growth but the problem is how to close the \$1.5 billion funding gap. One way to finance the infrastructural investment is by the resource for infrastructure swap arrangement (MPSA) that the government has decided to pursue with the Chinese government. The resource for infrastructure swap has opportunity costs as the local Ghanaians are against mining in the Atewa forest due to possible damage to the environment and compromising the source of drinking water for thousands of Ghanaians.

Given that the government is most likely to go ahead with the project arguing that the need for infrastructure is so great that it exceeds the need to conserve the environment, it is key that the government identifies the key infrastructural projects that

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are needed to spur the economy. The government must pinpoint the critical roads, bridges, rail, transport infrastructure, hospitals, schools, and other infrastructures, where they are to be located and their costs. They must also do proper research to identify and estimate the cost of power-related infrastructure as well as infrastructure for water and waste-water treatment and other infrastructural needs such as streetlights and sanitation-related infrastructure and their costs. The government must make sure that the contract signed with the Chinese is not only sensitive to environmental conservation norms but also ensures that there is provision for capital depreciation of these infrastructural projects, so that clear project lifespan, maintenance protocols, and costs are incorporated. At the moment, it is not clear that the public has this information even if the government has completed some aspects of this essential research.

1.2.3 Research questions:

What are the critical infrastructures the government of Ghana must invest in to guarantee optimum functioning of the economy to move Ghana beyond aid?

1.2.4 Research objectives

The research objectives are to:

1. Investigate the most critical infrastructure that the government of Ghana should invest in to ensure that Ghana moves beyond aid.
2. Explain the reasons for the choice of the critical infrastructure that Ghana must invest in to move the country beyond aid

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3. Explore the experience of other African countries that signed “resource for infrastructure” swap deals with China in order to make recommendations for Ghana’s government
4. Evaluate the choices that the government has made so far with regards to planned infrastructure to verify if that is in alignment with the views of relevant stakeholders

1.3 Research scope and justification

The reasons for using Ghana as a case study is because, several empirical kinds of literature have addressed the impact of the different infrastructure on the development of developed countries like the Netherlands, America, and Europe. Only a few studies have tried to study developing economies. Hence, Ghana being a developing country needs this research more than any other country since it is in a phase of moving to development. Furthermore, Ghana has agreed with China to exchange its bauxite resource for \$2 billion in infrastructure. Hence, it is relevant for Ghana to study the infrastructure developments it has, which ones need more support and which ones are crucial for development.

1.4 Research relevance

The state of Africa’s critical infrastructures is key to promoting economic recovery and growth. As such, this paper aims to help the government of Ghana and several other policymakers to identify the effect of investing in critical infrastructure on the economy. As investments in critical infrastructure are predicted to improve economic development, now and in the future. Higher quality and more efficient infrastructure will

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boost productivity in the country hence leading to long-term economic growth and wages. Even though Ghana has a high unemployment rate for its informal sector, the investment in this infrastructure will provide immediate jobs to the economy.

President Akuffo Addo's Ghana beyond aid agenda is a groundbreaking step calculated to help motivate several African countries to move their economies beyond aid. It is important to note that Ghana Sino-hydro infrastructure agreement is very crucial to the economy and so how the government distributes the funds from the agreement to the different critical infrastructures within the economy is even more important. This research will be very relevant for policymakers within Ghana to know how to effectively and efficiently allocate this unique source of funds to the critical infrastructures.

For decades now, Africa's debt burden has remained a recurrent and discordant note in the discourse on the crises and contradictions of Africa's development (Omotola & Saliu, 2009). This has increased debates on whether foreign aid is the right way for Africa and how well can Africa develop itself without the use of aid. This research paper will help Western countries make informed decisions of whether to continue offering aid to developing nations or not. Likewise, it will also help developed countries structure models that could help them minimize the amount of aid that could flow into the economy hence reducing the debt burden (Omotola & Saliu, 2009).

The research is very relevant to all African nations who are planning their ways to develop without the use of aid. They can use this research to devise a model that can help their governments know which infrastructure to focus more on and which ones to forego. This research paper will direct different African governments on knowing how to escape the chains of foreign aid and, just like Ghana, move beyond aid.

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In conclusion, the study will supplement existing knowledge about economic development and foreign aid. Hence this knowledge will further help different businesses, investors and several others make sound business decisions that would be linked to opening African countries to trade. Having this information will help them plan for the future, hence reducing their costs. Therefore, developing this economic model for Ghana's critical infrastructure investment will help the government of Ghana minimize costs while increasing productivity within the economy. Moreover, there is limited research on the cost of developing every infrastructure and its long and short-term effects of the development of the economy. Hence this research work will help provide the missing gaps in the investment required for the different infrastructure within the economy.

CHAPTER 2: LITERATURE REVIEW

2.1 Chapter summary

This chapter reviews the relevant literature related to the topic in order to clarify key concepts used in the research; organize and critically evaluates the previous literature on the subject and justify the importance of the study. The chapter comprises two major sections that embody theoretical and empirical evidence about the different critical infrastructure needed for economic development.

2.1.1 Definitions and explanation of terms.

The term “critical infrastructure” is used to refer to an intricate and complex system designed to facilitate the permanent provision of services that are essential to the functioning of society (Rehak, Senovsky, & Slivkova, 2018). Infrastructure is regarded as critical if its destruction would have a debilitating impact on the defense or economic security of the economy.

According to Executive Order 13010 (E.O 131010) of the United States of America, there are eight different kinds of infrastructure that are very critical to national development and security of any country. These are infrastructure related to (1) telecommunications (2) electrical power systems (3) storage and transportation of oil and gas fuel (4) banking and finance (5) transportation (6) water supply system (7) emergency services (medical, police, fire, rescue) and (8) continuity of government (Clinton, 1996).

2.2 Review of the theoretical literature

The economic provision and development of infrastructure have been a topic of much theoretical analysis and empirical study in developed nations. It is an umbrella term for many activities and named as social overhead capital (SOC), economic overheads, overhead capital, basic economic facilities and so on. The term SOC was first used by Albert O. Hirschman and Walt Whitman Rostow in 1959 to identify the source of economic needs that were relevant in the production of almost all goods and services. The term focused on infrastructures like telecommunication, transportation, education, and power systems.

According to Rostow (1959), there are five stages that all developed countries went through before reaching the self-sustaining growth. These are; (1) traditional society, (2) preconditions for takeoff, (3) take off, (4) drive to maturity and (5) the age of mass consumption (Rostow, 1959).

The first stage consists of a traditional society. It focuses on the most basic of economic activities such as farming, extractive industries like mining and harvesting of timber. In the first stage, labor is unskilled, and there are less technological developments. Hence in this stage, the economy is not very productive. In the second stage, science and technology start to progress which aids economic productivity (Rostow, 1959). Saving increases and investment in technology and infrastructure like roads, bridges, and also harbors rockets. Rostow (1959) argues that SOC is the precondition for a country to take off (or attain stage three). As investment in SOC and development of these infrastructures encourage entrepreneurs to invest in risk-bearing businesses (Rostow, 1959). This stage should create literate and technically trained

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personnel in the working force which will lead to a self-sustaining economy (Rostow, 1959). In the take-off stage, new industries start to emerge in the economy, hence driving the economy. Rostow claims that economic growth becomes the normal state of the economy.

The fourth stage is about diversification and expansion. The economy continues to develop new and more sophisticated industries, hence moving beyond the key bread and butter industries that fueled the take off into a more diverse and dynamic economic system. In this stage, economies become less dependent upon imports as its emerging industries can compete with them (Rostow, 1959). The last stage is known as mass consumption. In this stage, the economy is relatively wealthy and enjoys a high standard of living. Services and consumer goods replace heavy industry as the engine. The united states and western Europe fall within this stage (Rostow, 1959).

It has been argued by Professor Kuznets (1963) and Professor Meir (2009) that Rostow's research does not apply to all countries. Some countries may jump some stages during their growth process. Rostow tried to fit all progression into a linear system. However, the assumption has been questioned by researchers such as Professor Kuznets. Kuznets argued that many other countries have had a different start and have reached the progression stage and slipped backward too. For example, Russia moved back from high mass consumption(1950-1973) to the take-off stage (1985-1991) (Mazat & Serrano, 2009)

Furthermore, Rostow's stages only focus on the sequence of the growth and fail to predict the course of events with regards to economic growth

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Rostow's thesis is also biased towards the western modernization. At the time Rostow did his research, the only countries that had developed were in the west. Therefore, there were no other controlled economies that had moved to the high mass consumption stages. The model does not indicate the specific differences between capitalistic and communistic societies. However, he recognizes that development can be achieved in different ways, depending on the type of economy (Itagaki, 1963). Rostow only examines large countries with a large population like Japan, countries with natural resources during the right time of their expansion like northern European countries – coal in 1600, and countries with a large land mass for example Argentina. Small countries like Rwanda are not offered much hope that economic maturity is conceivable and the age of high mass consumption is imminent (Itagaki, 1963).

Ragnar Nurkse (1959) was of the view that economic development is adversely affected by the vicious circle of poverty. For him, the development will only take place only if the vicious circle of poverty is broken. Nurkse (1959) therefore suggested that the whole economy should grow in balance and not in islands of development. In his theory of the balanced growth model, Nurkse (1959) further explains how the small size of markets perpetuates underdeveloped nature. Therefore, the government should make simultaneous large-scale investments in many sectors within the economy including investments in infrastructure.

Ragnar Nurkse (1959) claims that investment in SOC aims at providing services such as transportation and communication services, which are basic for productive activity in an economy (Rao, 2013). As such, the government should implement a balanced growth model through which they find a proportionate way to invest in each of

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the sectors within an economy. These sectors are very vital for the development of any economy and as such governments need to take them as a priority while making economic decisions. Nurkse (1959) indicated that these are services that could not be imported from abroad, they required large and costly installations and in the history of western economics, have usually called for public assistance or public enterprise. However, in past developments, these services have also been provided by private firms. Investments in different overhead capital depend on different expectations of an economy, making them time bound. However, these projects take a long time to be implemented because they need high investments to have high operational capital intensity (Rao, 2013).

Some contemporary reviews on his book, *“Problems of Capital Formation in Underdeveloped Economies”* criticized Nurkse (1953) for ignoring the important economic factors in development. For example, the failure to consider capital formation in education, skills, and health. However, Nurkse commented that investment in educational infrastructure was one of the most basic targets for capital formation. (Nurkse, 1957).

Furthermore, critics such as Hirschman (1959) argued that due to the lack of enough capital in developing economies, investment in infrastructures and other sectors had to be carefully selected due to their backward and forward linkages (unbalanced theory). Additionally, Hirschman (1959) also indicated that more attention needed to be given to the agriculture sector in developing economies and this aspect would thus fall under the unbalanced theory. Nurkse also argues that the economy starts from scratch.

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However, Rostow's theory of development indicates that economies start from the traditional stage and not from scratch.

Hirschman (1959) suggested that the most relevant infrastructures the governments should provide to its citizens are transportation, communication, power, health, water supply, irrigation, and drainage system to the economy. In his paper as referenced by Cypher & Cypher (2008) on government investment in infrastructure, Hirschman develops the unbalanced growth model to explain how investments should be made in developing economies. He suggests that a deliberate imbalance in the economy is the best way to accelerate economic development.

Underdeveloped economies should create a situation of unbalance by making a large investment in any one sector, to get rid of the vicious cycle of poverty. He maintains that investment in strategically selected industries or sectors of the economy will lead to new investment opportunities and so pave the way for further economic development (Hirschman, 1959). He stresses that financing in either SOC or indirect productive activities would allow an economy to create an unbalanced strategy that would lead to growth (Hirschman, 1959).

Even though Hirschman's unbalanced growth theory tends to contextualize the peculiar developmental need of an economy, Paul Streeten, a British economics professor, argues that the concentration of Hirschman's theory on stimulus-led expansion neglects the resistance that would be resulted by such an unbalanced growth. (Streeten(1959) as cited in Andeepa (2017)).

2.3 Review of the empirical literature

Economists such as Hirschman, Alak Ghosh, Benjamin Higgin, and H.W. Singer have had several debates on which infrastructures matters the most and how much of this infrastructure matters. Discussions have covered functional forms such as Cob Douglas, translog, log, linear or log functions and explained variables such as GDP levels that are measured in physical or monetary terms.

This section will explain the relationship of some critical infrastructure on GDP as studied by other researchers. These infrastructures were chosen randomly and discussed in the paper. This will be used to create a general discussion on the effect of investment in infrastructure

2.3.1 How different critical infrastructures contribute to the growth (selected infrastructures)

Telecommunications

Several empirical studies have suggested that there is a positive correlation between investments in the telecommunication infrastructure and economic performances. In Nigeria, there has been evidence that attests to the positive impact of the telecommunication industry. The telecommunication industry alone took about 8.68% of the rebased GDP in Nigeria, leading to an increase in GDP by \$510 billion in 2014. This development in Nigeria made it the largest economy in sub-Saharan Africa (Estach & Garsous, 2012).

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There has been a positive correlation between investment in telecommunication and an economy's growth and labor productivity. Chakraborty's and Nandi's (2011) and Zhan- Wei Qiang's and Pitt's (2009) work on the effects of telecommunication on the GDP of different economies also found positive results.

A paper by Shakeel, Khan, and Malik (2012) also studied the role of telecommunication on economic growth concerning Pakistan. Shakeel, Khan, and Malik (2012) found that for every one percent increase in investment in cellular and landline infrastructure there was a 0.5383 increase in the annual GDP growth of Pakistan. This was higher than in every other developing country. The study also indicated that mobile phone contribution had a positive impact of about 0.162 for all developing economies (Shakeel, Khan & Malik, 2012).

A cross country study by Gary Madden and Scott J. Savage (2000) on the relationship between telecommunication and economic growth indicates that there is a positive relationship between investment in telecommunication on the country's growth. Figure 1 and figure 2 below shows a positive relationship between internet host density and teledensity and the GDP per capita. Internet host density is defined as the number of hosts per 100 persons (Madden & Savage, 2000). Teledensity is defined as the number of phone connections for every hundred individuals living within an area. Figure 2 below indicates that investing in the phone connections within the economy will increase GDP per capita (Madden & Savage, 2000).

Cohen (1992) and Quad (1993) criticized Madden and Savage's cross-country study because it uses OLS regression to analyze the economy's growth dynamics and convergence. However, Cohen (1992) indicated that the use of the Mankiw, Romer, and

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Weil (1992) model (MRW) could be used to provide indirect estimates of the parameters of the production function (Madden & Savage, 2000).

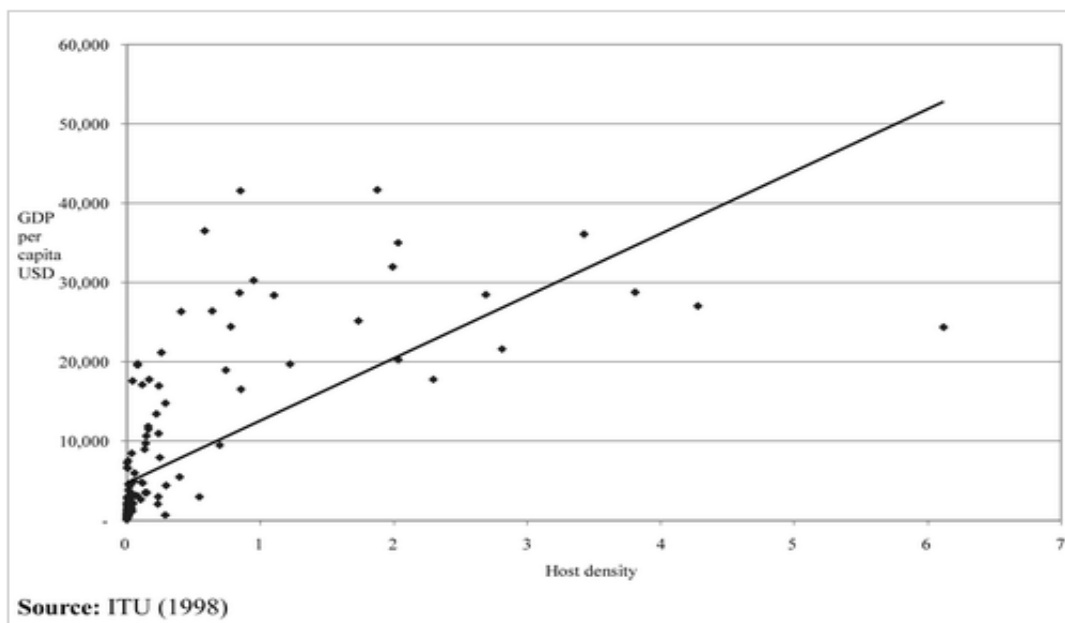


Figure 1 GDP per capita versus Internet host density.

Source: (Madden & Savage, 2000)

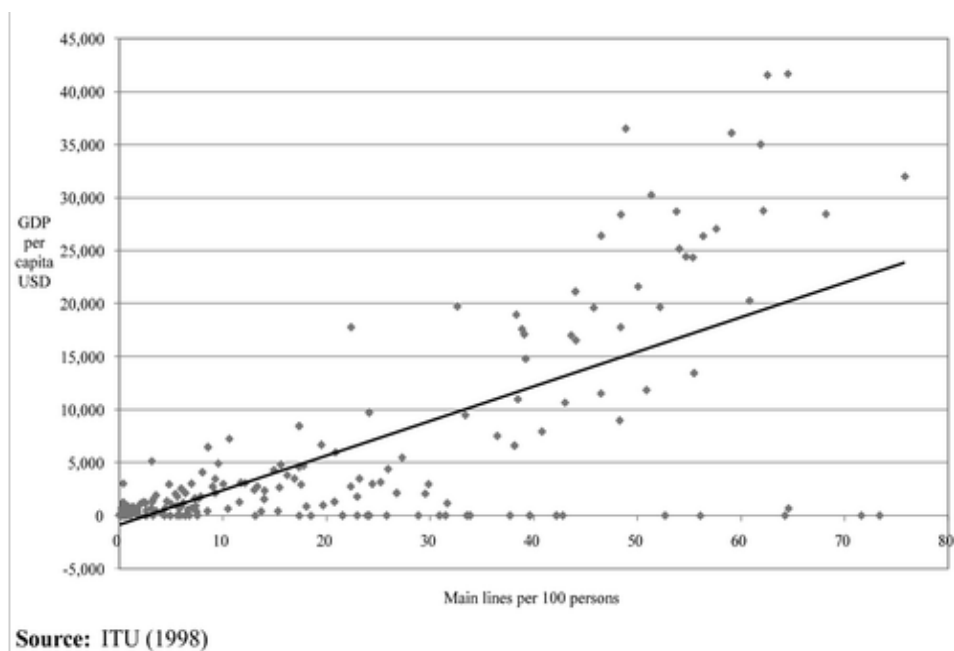


Figure 2 GDP per Capita USD versus teledensity

Source: (Madden & Savage, 2000)

Transportation, Roads, highways

In most developed countries, there have been limited studies that have focused on the effect of transportation investment on growth, due to their infrastructural maturity. Research on developed economies has focused on the quality, addressing bottlenecks or capturing new network or sup national effects which have not been internalized in older designs of the transport networks. This is quite different for developing nation (Estache & Garsous, 2012). Most cross-country studies find a positive impact between investment in transportation and GDP. For example, roads are essential for Africa to match up to the rest of the world. Nana (2016) concluded that the construction of rural roads such as the Kwabenya- Kitase road would boost employment, economic activities, create businesses opportunities for the individuals, improve the accessibility to services such as hospitals, schools, offices and others and finally improve the standards of living within the communities (Nana, 2016).

Roads play a very important role in the national development of a lot of countries. The rural road system is a public good that every government should invest in. The importance of road infrastructure has informed several policy decisions of different countries. For instance, the five-year plans of Malaysia, Philippines, Thailand, and Indonesia in the early 1970s had road infrastructure as a major developmental component. This component accounted for about 18 percent of the respective countries' budgets as identified in the reports the different countries released in the 1970s and 1980s.

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Comparatively, studies in Zambia, Uganda, and Nepal in 2001 found no link between improved road conditions and poverty alleviation despite the government's intentions in that direction. For instance, Seah Chee Meow's (1978) overview of road infrastructure in the Association of Southeast Asian Nations (ASEAN) made a rare but insightful observation that roads, apart from bringing rural areas into the market also aggravate problems in cities by increasing rural-urban migration (Center, Asian Regional Integration, 2018). Hence although transportation infrastructure is very crucial in Africa and rural communities, it has the potential to encourage rural-urban migration leading to slums in the cities; destabilize rural families and undermine farming and other rural businesses (Center, Asian Regional Integration, 2018).

The road infrastructure in Ghana connects all districts, regions and provides many settlements. In the past few years, there has been a deterioration of roads in the country that needs government attention. The research carried out by NDPC (2016) has observed poor road connectivity in the rural areas such as Berekuso in the Eastern region, where only one-fourth of the rural population lives within 2km of an all-season road (Porter, 2013). There is a need for the country to improve the road quality and introduce modern construction technology, better maintained and regulations and improve rural connectivity (Porter, 2013).

Ghana's road networks is mostly categorised by feeder roads. Even though feeder roads cover the largest road networks in Ghana; the variations are not very pronounced by lengths and surface type. Ashanti has 17.2 percent, western region (16.5 percent) and Brong Ahafo (15 percent). These regions have the largest proportions of gravel surface roads. The largest earth surface roads are also predominant in the northern region, Brong

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Ahafo and Ashanti. The implication of these poor road services in these regions is they are susceptible to deterioration during the rainy seasons. As such governments need to convert these roads to all-weather bitumen surface roads. This would require large investments in this infrastructure (Ghana statistical service, 2005).

Energy

The contribution of energy to the growth of economies has received a lot of attention in the literature. Garsous (2012) finds that ceteris paribus, studies focusing on the energy sector in an economy are likely to find a robust positive impact than any other infrastructure sector.

These observations are premised on the essential function of the energy sector in the performance of the other sectors. Energy is input in many infrastructure subsectors. For instance, electric pumps are required to pump water. This shows that an investment in the energy sector has a multiple social effect return investing in the sector critical in development (Estache & Garsous, 2012).

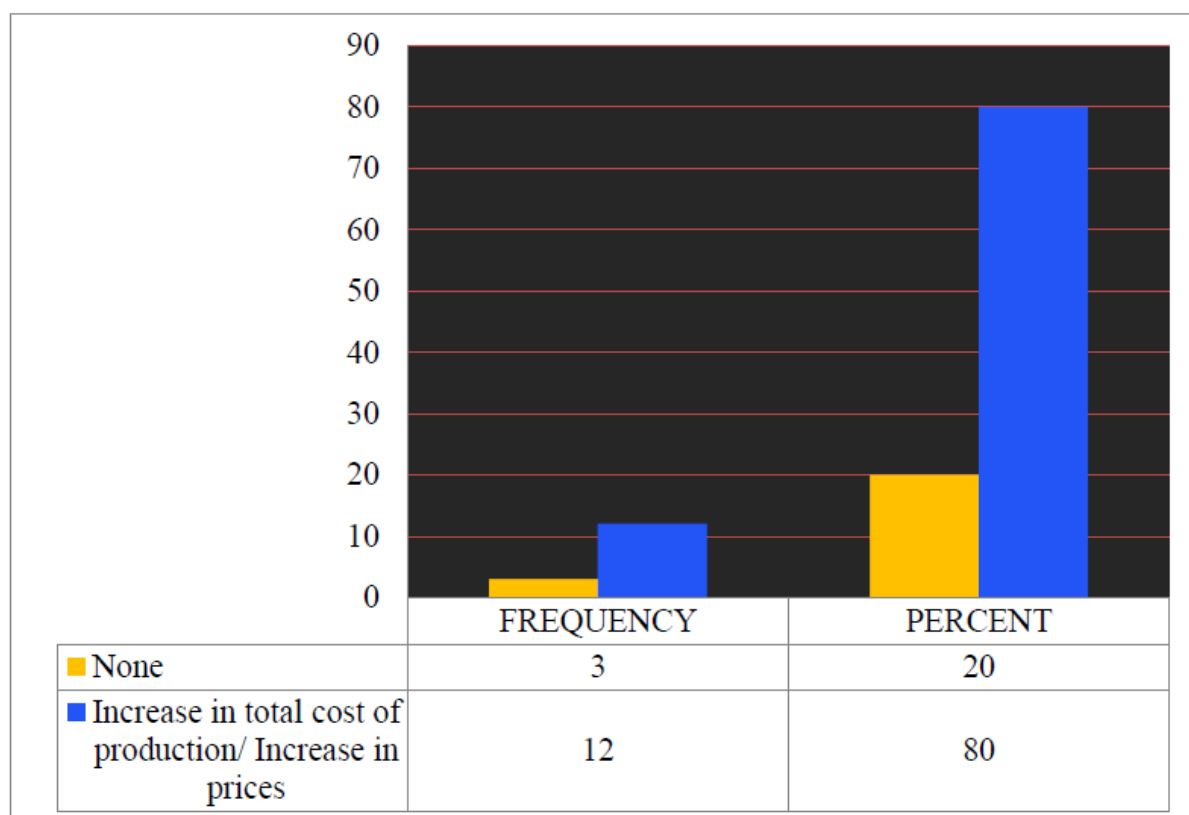
In Ghana, the electricity crisis that started in 2013 turned into a household phenomenon, leading to the adoption of the word “dumsor” to describe the situation. In December 2013, 400MW Bui hydroelectric power station was commissioned to provide electricity to support the peak load of the country, which has been an ever-increasing trajectory.

The Dumsor era led to a decrease in economic activity, economic profits and a downfall in the GDP of the economy. The investment in this sector is very relevant as it will be vital in running all other critical infrastructures. According to research carried out

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by Muhammed Sadat Alhassan on the impact of dumsor on economic activities, there was a high cost of production from all companies and business during the blackout period. This implied that the lack of electricity for economic activities would reduce the economies gross domestic product (Alhassan, 2016).

Figure 3 below shows that eighty percent of the company's employees indicated that they incurred an increase in production costs during blackout periods while only twenty percent indicates that they had never incurred any costs. Most of these companies' production costs included the purchase of LPG generator, or fuel powered generators to allow them to carry out their daily activities. These studies imply that lack of enough investment in the energy sector increases an economy's costs and leads to a fall in economic growth.



Source: Field Survey, 2015.

Figure 3: Shows the cost implications of the blackout (dumsor) to their company.

Source: (Alhassan, 2016).

Water and sanitation

This sector may be the infrastructure subsector with the lowest econometric documentation. Several researchers find it has an indirect effect on economic growth and development as compared to the other sectors. However, water drives health that in turn drives labor productivity and then growth. The tapped relationship of water and growth does not easily occur in the minds of several researchers.

Calderon and Serven (1960-2000) spent most of their time studying the relationship between infrastructure on growth. However, they left out the water and

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sanitation sector from their analysis. Researchers that have tried studying the relationship of water and sanitation on development have had mixed up evidence. Binswanger et al. (1992) found that investment in canal irrigation infrastructure to crop output is null from the panel districts in India. Estache et al. (2005) rather found a positive relationship between investments in water and sanitary infrastructure and economic growth (Estache & Garsous, 2012).

There are several other critical infrastructures such as food and agriculture and education that have been studied and indicated to have a positive correlation on the country's economic development. However, it is important for researchers, policy makers, and governments to identify which infrastructure is relevant to the growth of their economy. Which infrastructure did other developed economies such as the Asian tigers and the United States of America invest in to move to the take-off stage, drive to maturity stage and the age of mass consumption just as Rostow (1952) explains?

2.3.2 South Asia's Development Versus Sub-Saharan Development

Over the years, there has been massive development in several Asian economies that their studies are relevant to the future of African economies. In 1957, Ghana was the richest country in SSA with a GDP per capita of \$490. The GDP per capita for Ghana then was not that much different from South Korea's per capita income of \$491. The two economies were characterized by low income, low growth and their economies were dominated by agriculture and primary production. However, in the 1980s, Ghana's economy started to fall (Adei, 2007).

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Ghana's GDP per capita income reduced to \$400 while that of South Korea significantly increased to \$2,000. By the end of 1990, South Korea and the other Asian tigers had an income per capita income that was ten times larger than Ghana's own. Ajakaiye (2007), presented that the reasons for the development expansions in these Asian countries were due to the transformations of the economic structures. These countries highly invested in technology and innovation to steer their economies.

Further research also indicated that countries like Hong Kong implemented the unbalanced growth model that focused more on expanding the manufacturing industry. The development and expansion in the manufacturing industry are was indicated as a way for these countries to enter stage three of development (take off stage). The rapid economic and infrastructure development supported manufacturing and raised the living standards of individuals in Hong Kong, Singapore, South Korea and Taiwan (Researchomatic, 2011).

It is important to note that the development of these Asian economies was not predicated exclusively on democracy. Although some Asian countries that have done well such as Singapore and South Korea had democratic governments, Thailand is not a democratic economy. China has remained a communist economy but still is the second largest economy in the world after the USA (Adei, 2007).

The experiences from these Asian countries teach governments that developing countries need a combination of peace, national think tanks, a development agenda, efficient bureaucracy that is not corrupt (Adei, 2007). Furthermore, African economies also need prudent development management to create the governance, macroeconomic and financial atmosphere to encourage non-state actors to perform; and old-fashioned

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improvement in development infrastructure – education, health, transportation, energy, ICT to achieve national development and sustainability (Adei, 2007).

While the Asian tigers focused on a mixture of infrastructures such as government sustainability, the manufacturing sector, and transportation, different African economies have focused on the development of their energy sector and transportation sectors with the help of China and Sino-hydro corporation. It is relevant for the government of Ghana to understand the infrastructures other developing economies have invested in and how the china agreements have been used to benefit their economies.

2.3.3 China's resource for infrastructure model – Sino-hydro cooperation

The infrastructure for resource model is a framework that involves the repayment of loans utilized for infrastructure through natural resources. This model was invented by the Chinese government in 1993 when they turned into a net importer of oil (Durovic, 2016). Below is the diagram illustrating infrastructure for resource model that China uses to finance African developments.

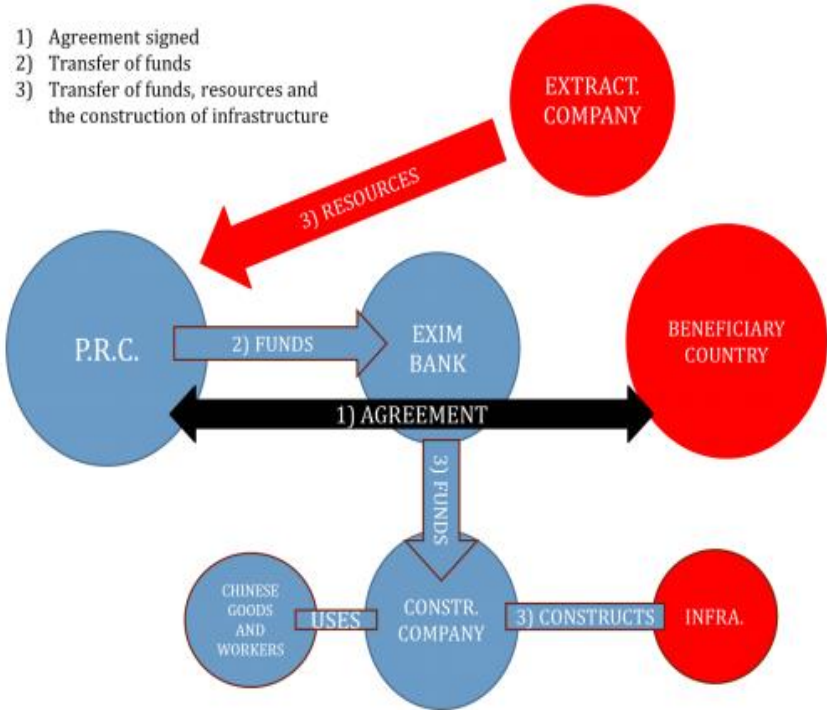


Fig 4: Showing the infrastructure for resource framework

Source: (Durovic, 2016)

China realized that Western economies were focused on moving funds away from infrastructure in Africa. The government of China started using resource-backed loans as a practical instrument for diversifying its supply of natural resources. Hence, providing economic assistance while gaining long term access to natural resources that it lacked (Durovic, 2016).

This model was innovative since it managed to convert Africa’s natural wealth into useful developmental projects hence providing SSA an additional way of financing their economies without directly incurring debts. The fact that African countries were indebted, so, could not borrow at realistic rates but needed to develop their infrastructure

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and the Chinese government was fulfilling this need while gaining needed resources was mutually beneficial (Durovic, 2016).

Several African countries with rich resources are incapable of attracting enough donor aid, and very few organizations are willing to provide infrastructural development (Brautigam, 2009). Leone Alhaji Momodu Koroma, the EC-minister of foreign affairs of Sierra Leone elaborated the differences between Western support and Chinese support as; “what they want to help you with is what you have identified as your need. With Britain and America, they identify your needs” (Ibid.: 140).

The resource for infrastructure model requires careful study and needs coordination between the different participants. It entails the two governments, a Chinese company that will be building the infrastructure and the other company that will be extracting the resources (see figure 4 above).

The loans are dispensed through state-owned enterprises (SOEs). The terms and conditions of the model require a Chinese company to carry out the construction of the infrastructural projects and reimbursed by the EXIM bank, a Chinese bank (Durovic, 2016). This deducts the expenses from the value of resources that African countries transfer to the Chinese government (Tan-Mullins, Mohan and Power, 2010). The funds are directly transferred to the companies that are doing the construction works and not directly to African governments (Durovic, 2016) — hence reducing the chances for corruption among African economies.

Case study one - Angola – (Angola Model or Angola mode)

China's infrastructural agreements within Angola began in 2002 after the Angolan civil war. The agreements began with the rehabilitation of rail and power transmission infrastructure and the installation of new fiber optic links. In 2004, China Ex-Im bank scaled up its involvement within Angola to repair its damaged infrastructure. Two billion dollars was loaned to finance Angola's recovery, where half of these finances were used towards infrastructures such as electricity, roads, water, and public works. The other half of the financing was used to revive the health, education and fishing industries.

The loan was backed by the agreement to supply China with 10, 000 barrels of crude per day for 17 years. The use of natural resources to back financing deals is what is known as the Angolan model (Chen, 2007b).

Angola invested in the energy sector. The model helped increase the electricity production hence increasing the infrastructural developments in the field of energy. The increase in electricity production boosted Angola's GDP growth as indicated in figure 5 below. Angola stopped relying on the oil rents, even though this reliance is very important even until today. Figure 6 below shows how Angola's GDP per capita growth from 2004 to 2013. The growth in the economy suggested a positive contribution of China towards Angola's development.

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Indicators	Year							
	2004	2006	2007	2008	2010	2012	2013	2014
Electricity Generation ¹¹	2.1	3.2	3.1	4	5.3	5.4	-	-
GDP From Manufacturing ¹²	-	-	241	303	464	726	-	-
% Inflation of Consumer Prices ¹³	43	13	12	12	14	10	8	7

Figure 5 Showing Angola's electricity production from 2004 to 2014.

Source: (Durovic, 2016)

Indicators	Year					
	2004	2006	2008	2010	2012	2013
GDP per capita ¹⁴	1300	2800	4400	3900	5500	5900
Oil Rents as % of GDP ¹⁵	53.9	65.3	38.1	45.5	41.1	34.6

Figure 6: GDP per capita growth about the Oil rents as a percentage of GDP

Source: (Durovic, 2016)

Case study two - Nigeria

In 2005, Nigeria received its first loan from the China EX-Im Bank to support the construction of power stations at Ppalanto (335 MW), Geregu (138 MW) and Omotosho (335 MW) in Oqun, Kogi and Ondo states. The construction was estimated to cost 400 million dollars of which China Ex-Im agreed to finance 300 million dollars of the finance costs.

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In addition to the power plants, 598 boreholes in 18 Nigerian states were constructed. This was to aid the construction of power. Furthermore, this was to also provide clean drinkable water to ordinary Nigerians who were living in poor conditions. Furthermore, the People's Republic of China (PRC) also constructed dams that are currently very important for the national water supply program and irrigation schemes.

The China Exim Bank finance increased to about 5 billion dollars of projects within Nigeria. The infrastructures that were built with this loan were the Kano railway project that costs 2.5 billion dollars, the Abuja Rail Mass Transit Project (ABRAT) that cost the 1 billion dollars, the railway systems connecting Murtala Mohammed International Airport and Nmandi Azikwe international airport with Lagos and Abuja city centers respectively.

Research by Pat Utomi suggested that Nigeria should further invest in policy creation, institutional buildings, human capital, entrepreneurship, and the culture and leadership capabilities to maximise their relationships with China (Utomi, 2009). Utomi's concerns indicate that China's support has not been fully maximized by the Nigerian government. Even though he provides evidence that China's loans to Nigeria's railway constructions Nigeria have boosted economic growth (Utomi, 2009).

Case study three - Sudan

Sudan has received over 1.3 billion dollars to further finance its infrastructure projects from the Chinese Ex- Im bank. In earlier times, funds were allocated to the development of the power sector. The construction of the EL Gaili ignited the combined

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Cycle Power Plant in 2001 and the Qarrel thermal station in 2002, Al-Fulah and Rabak coal-fired and gas-fired stations.

In 2004, the Chinese started with the support of one of the highest profile power sector projects (Merowe dam) in Sudan that had a capacity of 1,250 Mega Watts (MW). This project was the largest international project that China had ever participated in at the time of the contract. The financiers of this project were the Chinese Ex-Im Bank, the Saudi Fund, Badea, the Kuwait Fund for Arab economic development and the Abu Dhabi Fund (Powanga & Giner-Reichl, 2019).

According to the government of Sudan, the dam has increased the country's electrification rate following much-needed investments in distribution. This project has led to a resettlement project of about 70,000 residents away from the fertile agricultural areas surrounding the river Nile (Powanga & Giner-Reichl, 2019).

In 2008, China continued to have other developmental relationships with Sudan. The people's republic of China agreed to construct the Al-Fuah 405 MW power station, Dongola-Halfa pipeline, and the Dibaybat-Malakal road. These power sector projects increased the GDP per capita of Sudan by fifteen percent (Powanga & Giner-Reichl, 2019).

Case study four - Ghana: Master Project Support Agreement (MPSA)

In 2017, the government of Ghana signed a Bauxite Barter arrangement with Sino Hydro Corporation Limited of China. This was known as the Master project support agreement (MPSA) also known as Ghana - Sino-hydro infrastructure agreement. Sino

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Hydro Corporation is a Chinese state-owned hydropower engineering and construction company (Jotie S. N., 2018).

Under this resource for infrastructure swap agreement, Sino hydro corporation will implement several infrastructural contracts for Ghana in exchange for five percent of its refined bauxite (aluminum). Furthermore, Ghana must settle its half of the agreement in 15 years and turn get about two billion dollars that will be used to construct the different required infrastructures. The government would hope to pay off this deal with money received from the aluminum they will be producing (Jotie S. N., 2018).

Sino Hydro corporation has been selected by several countries to construct and renovate their infrastructure. For example, Nigeria, Algerian, Pakistan, Uganda, Angola, Ethiopia, and several other countries have selected this company to build their energy sector, roads, and other critical infrastructures. Earlier this fiscal year, the first phase of the Sino hydro Bauxite Barter arrangement has been allocated seventy percent of the two billion dollars to constructing roads, interchanges, and highways. This would involve repairing and construction of roads, interchanges, and bridges that would help ease traffic congestion and ensure free movement within goods and services (Jotie S. N., 2018).

According to Mr. Amoako-Attah, a member of parliament for Atiwa west, the payments for the first phase together with ten other different projects will be made over 12 years after the three-year deferred period.

The Bauxite will be mined by the Chinese and refined by the Ghana Integrated Bauxite and Aluminum Development Authority (GIBADA). The investment into the road networks in Ghana would not only enhance the movement of goods, services, and people

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but also reduce vehicle operating costs, travel time, accident rates, pedestrian and vehicular congestion in cities (GNA, 2018).

According to the Ministry of roads and highways, Mr. Kwasi Amoako-Attah, the first phase that entails 649 million dollars will consist of the construction and fixing of sixty-eight roads that include a total of 442 kilometers (Km). Even though the first ten projects of the phase-only consists of 442 Km roads, the whole Sino hydro agreement investments consist of 70 percent transportation developments. Mr. Kwasi Amoako has indicated that the construction of roads, bridges, highways, and interchanges will ease traffic congestion and ensure the movement of goods and services within Ghana (Jotie S. N., 2018).

The first phase entails about ten road projects;

- (1) Accra inner city roads (84.0km),
- (2) Kumasi inner city roads (100 km),
- (3) Tamale Interchange project,
- (4) PTC roundabout interchange project,
- (5) Takoradi,
- (6) Adenta-Dodowa Dual Carriageway (14km),
- (7) Sunyani Inner city roads (39km),
- (8) Western region and Cape coast inner city roads (32.19km),

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(9) upgrading of the selected feeder roads in Ashanti and western region, Rehabilitation of oda-foase Abirem road, (38km),

(10) Construction of Hohoe -Jasikan Dodo Pepesu, (66.40km) (Ansah, 2018).

The roads to be constructed or fixed for the Accra inner city roads are Ga North - Torbu that will get about 19.3km, Ga Central -Anyaa Sowutoum that is expected to get 23.7km; Ga East Dome Kwabenya, 21.7km; Ledzokuku-Teshie 11.3km and Nanakrom – Sandto will take 8.0km (Ansah, 2018)

The roads in Kumasi that will benefit from phase one project include Manyhia sub-Metro, which will get 11km road; Suame sub-Metro, 9.45km; Tafo-Pankrono sub-Metro, 9.79km; Asokwa sub-Metro, 9.91km; Kwadaso sub-Metro, 6.29km; Oforikrom sub-Metro 7.43km; Subin sub-Metro, 8.98km; Nhyiaeso sub-Metro 7.00km; Bantama sub-Metro, 10.00km and Asante Mampong, 20.15km (Ansah, 2018).

In cape cost, six roads in Amamoma area, three roads at Akotokyir and several roads at Abura New community and three roads near Polytechnic area will be constructed during the phase one of the Sino hydro agreement (Ansah, 2018).

In the Western Region, the Apawusika road and links that are about 10.19km will be constructed during the construction. Some of the roads in the Ashanti and western regions include a 7.2km Achiase-Wansamere-Awisasue junction (Ansah, 2018).

The feeder roads to be constructed are the 4km Mpasatia-Town roads; 4.5km Nyinahin-Adupri feeder road; Nyinahin – Sereso, Timpon–Achiase junction feeder road, 29.7km; 4.1km Nyinahin town roads; 1.5km Nyinahin Market junction -Pentecost

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Church feeder road, 14km Nyinahin-Kyekyewere feeder road; 3km Kessekrom-Adiembra feeder road (Ansah, 2018).

Phase two of the master project support agreement will further entail 1300 kilometers of roads and three interchanges and sixty-nine steel bridges. These are expected to cost about 850 million dollars. Furthermore, the government has decided to invest in housing projects, rural electrification projects, industrial parks, hospitals, sanitation projects, and additional court and residential builds for the judicial services (Mensah, 2019). Even though the details of phase two have not yet been approved by the government of Ghana, construction of the proposed infrastructures in phase two is expected to kick off in June 2019.

Given that several other countries that have utilized the support of China and Sino-hydro cooperation have reported positive growth and change in their economies, I suggest that Ghana should also exploit the Chinese support in the development of the different critical infrastructures. In conclusion, most of the developing economies such as Angola, Nigeria, and Sudan have focused on the development of their energy and transportation sectors. Are these the infrastructures that are relevant for Ghana to move beyond aid?

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

Chapter three discusses how the study was conducted. It discusses the population, identifies relevant sub-populations and sub-samples, sampling techniques, and the methods of data collection. It summarizes the techniques for analyzing the data and discusses the ethical considerations in collecting the data.

3.2 Research design –Mixed methods.

The study used a mixed-method design to satisfy the objectives outlined in chapter one. Data was collected with questionnaires that were distributed using online platforms such as Facebook, WhatsApp and LinkedIn, and interviews with experts in the fields of transport, energy, education, and economic development. The mixed method was used because it provided the strengths that offset the weaknesses of both the qualitative and quantitative methods.

3.3 Data collection method and tools

Primary data was collected through personal interviews with experts from the ministry of health, ministry of roads and highways, ministry of foreign affairs, Institute of engineering and lecturers at the University of Ghana. Interviews were aimed at identifying participants' views and in-depth reasoning for a given suggestion of the infrastructure. The advantage of interviews was that it involved personal and direct contact between the participants and eliminated non-response rates.

Questionnaires were administered to a sample of the Ghanaian population. According to the world data bank, Ghana currently has a population estimate of 30 million. Due to a large population, only a sample size of 200, where need to fill the questionnaire. Out of the 200 respondents, only 176 respondents filled the questionnaire. Questionnaires were used to get the people's views on which infrastructure are more important to them and explanations to why those specific infrastructures were very important.

3.5 Research approach

This study took an inductive approach. The inductive approach requires researchers to make a specific observation which is used to create a generalized theory or conclusion from the research (Dudovskiy, 2018). The main weakness of this approach is that it makes generalized conclusions based on the limited study, thereby the reliability of the research being under question (Dudovskiy, 2018).

3.6 Sample selection

The method of random sampling and purposive sampling were used to develop the sample of the research in the discussion. Random sampling is a probability sampling technique where everyone has an equal chance of being selected to take part in an interview. Whereas purposive sampling is non-probabilistic, and members are selected based on their knowledge, relationships, and expertise regarding the research subjects.

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The questionnaires that was published to the general Ghanaian population was randomly sent, and any Ghanaian who found it was allowed to fill it in. Interviews and information from the different agencies were purposively selected. The pre-mentioned organizations were selected based on the interest of the researcher and how well they know about the topic being discussed.

3.7 Research Process

Meetings and interviews with the different respondents were held in January and February 2019. Random sampling and purposive sampling were used to select participants. Purposive sampling was carried out with individuals from the ministry of roads and highways, Ghana Institute of engineering, the ministry of information and several other accessible organizations. The researcher came in touch with the respondents and asked them to participate in the research after explaining the nature and the scope of the study to the different participants.

The discussion took place in the offices of the different government agencies or desired places that they suggested by the respondents. An interview lasted approximately 20-30 minutes. During the interview, the researcher took notes and used an audio recorder to dossier the conversation based on what the interviewee permitted.

This method of data collection facilitated the analysis of the data gathered. Respondents were encouraged to express their views on any topics raised freely. Questionnaires were designed and sent out online through Facebook, Instagram, WhatsApp, emails, and LinkedIn

3.8 Data analysis

Content analysis was used for the analysis of qualitative data. The advantage of this analysis was that it helped in simplifying data, while at the same time producing results that were measured using quantitative techniques. This analysis gave researchers the ability to structure the qualitative data collected in a way that satisfied the accomplishment of research objectives. Since there is always a risk of researcher misinterpreting the data gathered, there might be some errors made by the researcher during the analysis.

3.9 Ethical considerations

This study is subject to some few ethical issues. As mentioned, this research considered people who are well conversant with the topic. As a result of the selective sampling, participants might have been biased towards what they believed in or in support of their professions. Participants were asked to sign a debriefing and withdrawal letter. The letter was to show that the participants understood that their contribution in this research was voluntary and they were free to withdraw from it any time.

Participants were also informed about the objectives of the study. Furthermore, they were reassured that their answers were treated as confidential and were to be used only for academic purposes. They were not abused, harmed, both physically and mentally during this research. The researcher also created a comfortable environment for respondents during this research study.

3.10 Research limitations

The research study might have a few limitations which are;

- The language barrier between some few participants and the researcher. Since the researcher is a Ugandan trying to study the Ghanaian economy, it was hard to understand some local translations that participants made.
- Sometimes, participants refused to respond to some questions against some organizations or the government.

CHAPTER 4: A SUMMARY ANALYSIS AND BROAD DISCUSSION OF RESULTS

4.1 Introduction and background to the results

This chapter discusses, interprets and presents the findings from the research study. The main purpose of the research was to find out which critical infrastructure the government of Ghana should invest in to move beyond aid and to explain the choice of infrastructure. In answering this question, interviews and questionnaires were administered to the public. Interviews were administered to professionals within different fields because the researcher needed a deeper understanding of Ghana's infrastructure development and more explanations on their infrastructural choice.

Questionnaires were published to the public to assist researchers in getting the opinion of different people living within Ghana. Findings from both the qualitative and quantitative research methods were presented respectively. The results from the research are discussed under the top 5 infrastructures most often selected by the respondents. These include; Education infrastructure, transportation infrastructure, health infrastructure, agricultural infrastructure, and energy-related infrastructure. This is followed by a discussion of each of the relevant findings.

4.2 Quantitative interpretation of results

4.2.1 Analysis of Questionnaires

An online questionnaire was shared on Social Media platforms including Facebook and WhatsApp with the expectation that about 200 Ghanaians respond to it. However, only 176 Ghanaians were able to fill the survey. The response rate to the

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questionnaire was 88% with all respondents filling all the required questions honestly. These responses were used to interpret the results. In the questionnaires, there was two most important research question that informed the data collection. These were (i) *“Check the five most important critical infrastructures you think the government should invest In and (ii) justify your topmost choice.”*

Data gathered through the questionnaires was subjected to frequency counts. In other words, individual responses were added together to find the highest frequency of occurrence. The responses to the questions were then presented in percentage forms and then presented in a tabular form. The qualitative question in the questionnaire was analyzed using content analysis as shown in table 2 in the appendix.

4.2.2 Demographics Relationships and study variables

All the respondents to the questionnaire were residents of Ghana or citizens of Ghana. (86) 48.5% of the respondents were male and (90) 51.5% were female, as illustrated in figure 7 below. Twenty-eight percent of the respondents were from Greater Accra, 23% were from the Eastern Region. There were no respondents from Brong-Ahafo Region and the Northern Region. If a larger sample size were chosen, perhaps, the total population would have been represented better by having respondents from all the regions of Ghana.

The questionnaire was filled by individuals from a variety of fields ranging from contractors, students, entrepreneurs, lawyers, real estate developers and many more. However, the students had the highest frequency represented by 68%. 48.5 percent of the

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respondents were males while 51.5 percent of the respondents to the questionnaire were females as shown in figure 7 below.

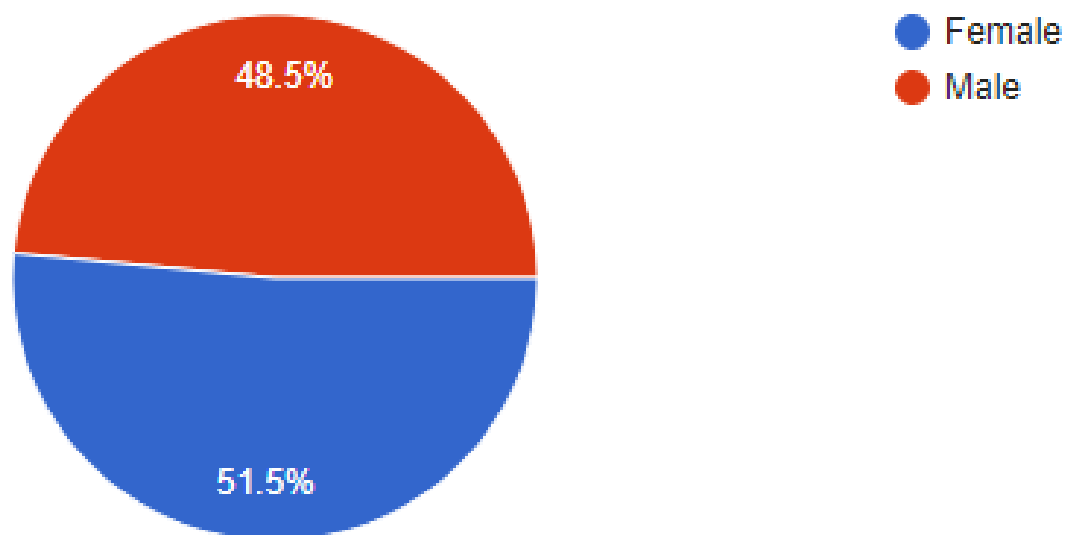


Figure 7 percentage of female and male that responded to the questionnaire

Source: Research study, 2019

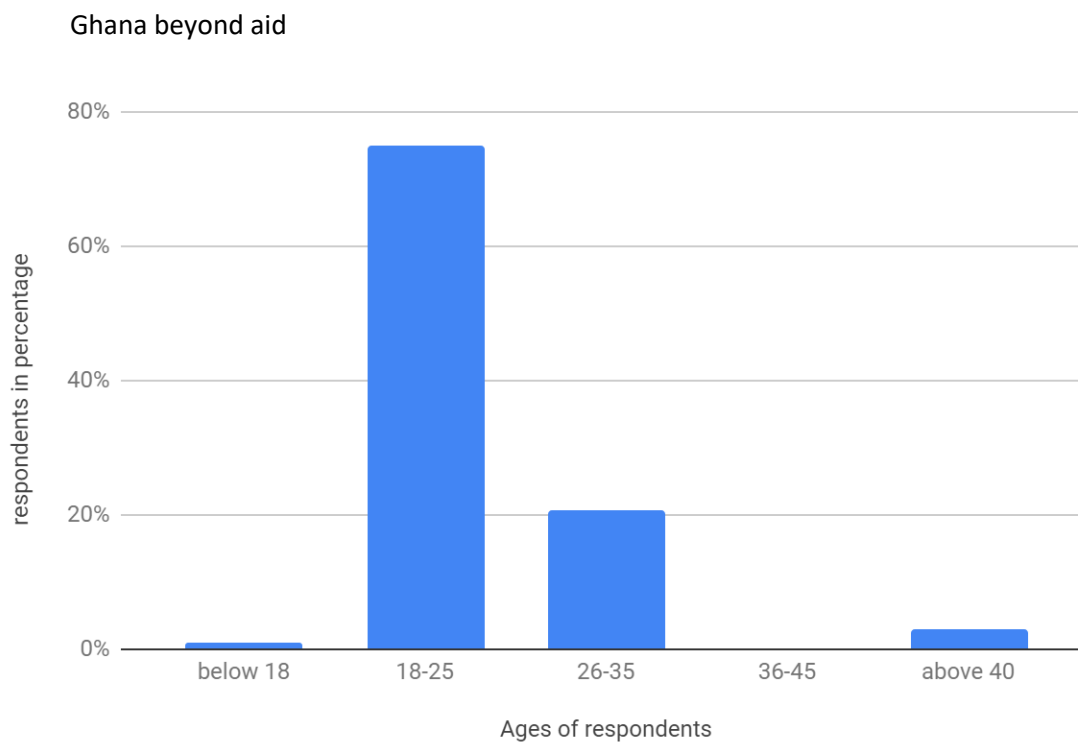


Figure 8 age range of respondents

Source: Research study, 2019

Figure 8 above is a column chart representing the age ranges of the different respondents. The figure indicates that most of the respondents were between 18-25 years, represented by 75%. This was followed by the age range between 26-35 that was represented by 20%. The results of the survey might have been affected by the age range of the respondents being highly between 18-25 years.

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4.2.3 Critical infrastructure the government should invest in to move Ghana beyond aid

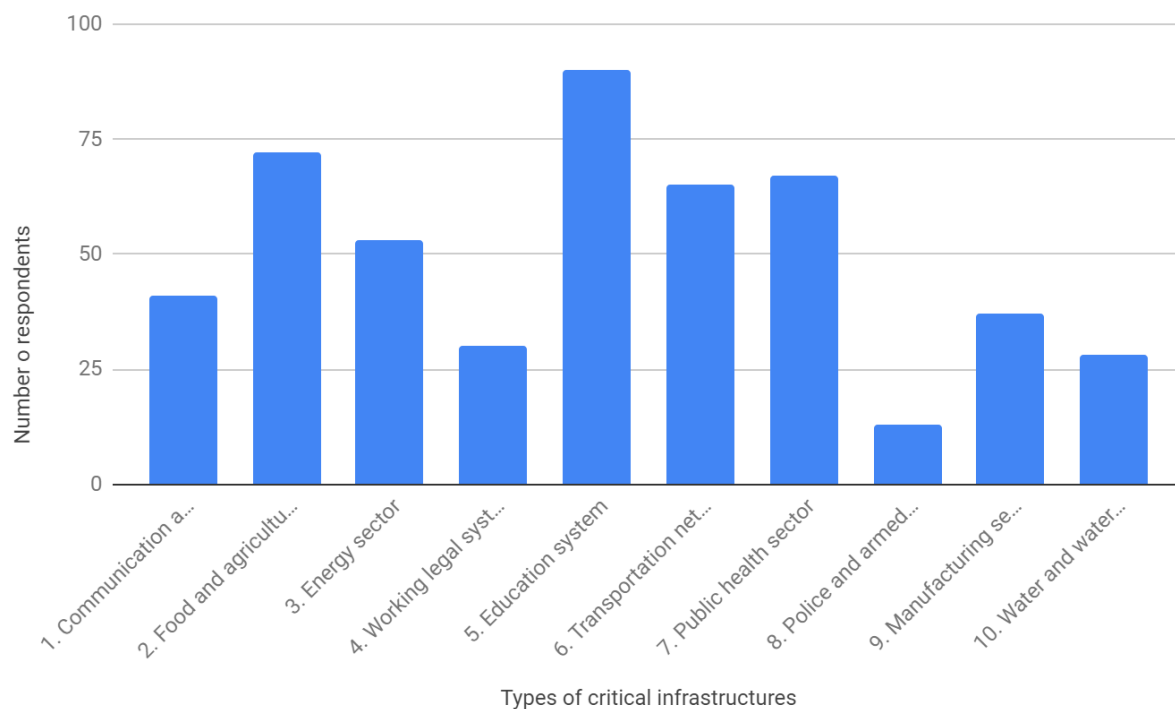


Figure 9 Most important critical infrastructures

Source: Research study, 2019

Figure 9 above is a column chart showing the respondents most important critical infrastructures that they think the government of Ghana should invest in to move the economy beyond aid. Each of the 176 respondents chose the five most important critical infrastructure.

From Figure 9 above, majority of respondents suggested that the government of Ghana should invest more in the Ghanaian education system (79.9 percent), food and agriculture (68.3 percent), transportation (58.4 percent), public health (63.4 percent) and energy sector (47.5 percent). The public suggestions were in alignment with a few infrastructural developments the government of Ghana is currently suggesting to

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implement. The government, however, suggested that the transportation infrastructure was more important and allocated seventy percent of the Sino hydro investments to improve this specific infrastructure. The public health and transportation infrastructures are the only infrastructures that align with the developmental plans.

One reason for the choice of focusing resources in education-related infrastructure suggested by the majority of the respondents is that the literacy rates of the economy are low and that graduates are not qualified for the labor market. Education is the most fundamental right that every individual in Ghana should be able to attain. The main purpose of the education system is to ensure that there is a high percentage of the Ghanaian population that is literate, competent and prepared for the fulfilling life in society (Huq & Tribe, 2018).

Being that education greatly affects the future of the economy, the government should invest in the infrastructure by building more schools (primary, secondary and universities), employing qualified and skilled teachers in each level, providing laboratories and equipment to enhance the quality of education within the economy. According to the research by Paul Effah, a former executive secretary of the Ghana National Council for Tertiary Education (NCTE), the government expenditure on the main areas of education (Pre-primary, Primary, secondary Tertiary) amounted to between 5.1 and 7.4 percent between the 2001 and 2013.

Table 1: Government expenditure as a percentage of GDP 2001-2013 (Selected years)

	Pre- primary	Primary	Secondary	Tertiary	Total	Expenditure as a percentage of government expenditure
2001	-	2.22	2.12	0.76	5.10	15.60
2005	0.44	2.93	2.41	1.64	7.42	23.43
2010	0.34	1.71	2.06	1.44	5.55	22.68
2013	0.40	1.51	2.92	1.20	6.03	21.70

Source: UNESCO (2016)

Respondents indicated that these values were significantly low if compared to developed countries such as the USA that had a government expenditure on education of 28.70 percent in 2014 on primary education, 32.03 percent on secondary education in 2014 and 32.54 percent on tertiary education in 2014 (Index mundi, 2017). China also had significantly high government expenditures on education by the educational level that ranged from 29 percent to 48 percent from 1990 to 1999 (Index mundi, 2017). According to Index Mundi, Malaysia invested more in the primary and secondary education from 1971 to 2015 with more than 40 percent of the government expenditure allocated to these education level (Index mundi, 2017).

Respondents indicated that the government should focus on all the education levels and provide libraries, playgrounds, classrooms, laboratories, and school buildings that are well ventilated and refurbished. Well-equipped laboratories will enable the students to perform laboratory activities much more effectively. The respondents of the questionnaire also emphasized more facilities such as extracurricular workshops, games

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equipment, halls, libraries, and assembly areas and proper sanitation facilities. According to Finland's government, play and recreation facilities are crucial and a prerequisite to effective learning. As such the government of Ghana should properly plan school infrastructures both in and out to prepare pupils and students for the working world effectively.

Food and agriculture received the second highest response rate with 68.3 percent of the respondents suggesting that the government should invest in improving the economy's food and agriculture sectors. The different sectors that respondents indicated were important are; fishing, livestock, forestry, and technology. A few of the respondents indicated that there was the need for the government to invest in this sector due to the decrease in the production rates of the country's major export food products such as guinea corn, millet, cocoyam, and plantain.

The low adoption of modern agricultural production technologies amongst the Ghanaian farmers are the reasons why there is low agricultural productivity within the country. Houssou et al. (2006), indicated that farmers in rural communities such as the northern region are not able to access inputs and infrastructure that is necessary to intensify their crop production. Hence, the government should provide, irrigation schemes, fertilizers, pesticides and other chemicals, improved seeds and seedlings, bore-holes (water), tractors, power trillers and training to the farmers to increase crop production.

Agriculture could serve as a basis for industrialization for the Ghanaian economy. According to Rostow, for a country to move from stage one to stage two, science and technology will progress to aid industrialization. Rostow defined industrialization as a

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social and economic transition from the agrarian society into the industrial society. Industrialization would involve the extensive re-organization of the economy for manufacturing. Both Hirschman and Rostow suggest developing economies should start by investing in food and agriculture. Henceforth, for Ghana to develop, it is important they allocate some of their expenditure on improving the food and agriculture sector of the economy.

Respondents to the questionnaire also suggest that the economy needed integrated planning of forest infrastructure — this included building of road networks within forests, skid site constructions and onsite crushing. Improving the forestry infrastructures will improve the economic value of the forests and woodland through timber production and increase the social and environmental benefits of the woodland.

Two respondents indicated the importance of investing in forestry. They stated that;

“forestry products have also highly contributed to the GDP growth of the Ghanaian economy,”

and

“The GDP of the economy has grown drastically in the past because of some of the activities in the forests.”

According to Mozammel Hug and Micheal Tribe (2018) research on the *“The Economy of Ghana,”* forest products such as timber contributes about six percent of the GDP per year (Huq & Tribe, 2018). Respondents also indicated that there had been high returns from the agricultural sector including forests themselves. Timber is the third

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largest exported resource that benefited more than \$120 million in investment. The increase in investments in the forestry sector in 1990 increased the earnings from timber production by 50 percent. As of 2010, Ghana earned more than 137.9 million euros in timber exports when compared to 128.2 million euros in 2009. According to Huqand Tribe (2018), forest exports added GHC 1,549,000 and GHC 650,513 in 2011 and 2014 respectively. The reduction in the revenue was due to the increase in deforestation in the country. It is relevant that the government introduces a forestry recovery program that would reduce deforestation and increase planting of the commercial trees within the forests.

The government needs to also focus on fisheries and livestock in the agriculture sector. Fish contributes more than sixty percent of the national dietary protein supply. The government should support the local and private industries to increase fish production. One challenge the livestock industry faces is the lack of nutritious grasses, limited water supplies during the long dry seasons in the northern region. Respondents suggested that the government of Ghana should build dams and dugouts to help reserve water within the northern region. Furthermore, pests, parasites, and other diseases and the low growth rates in the livestock within the country are other problems that were listed out by the respondents.

Evidence provided by the globalization101 a developmental agency indicated that developing countries should focus more on food self-sufficiency and build their export bases starting from agricultural products. This highly correlates with a few respondents' suggestions on why investment in food and agriculture is critical for Ghana. Ghana and several other SSA countries produce vast quantities of agricultural products like cocoa

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and coffee, which their populations are not large enough to consume. As such, surplus production could be exported. Exports would serve the purpose of earning foreign currency with which they could use to imports that they could not be able to manufacture, mine or grow themselves. Literature from development agencies has indicated a positive correlation between investment in the food and agriculture sector and GDP per capita of a country.

As such the government should implement irrigation schemes, education programs for farmers and several other developments that would support the food and agriculture sector in Ghana.

Sixty-three percent of respondents further indicated that the government should invest in the public health sector. Investment in this infrastructure will save not only lives but also an investment in the wider economy. The health of people is influenced by factors such as air quality, water supply, sanitation, and education level of individuals.

Respondents who had this as their first choice had concerns about the high death rates within the country and the lack of essential medical facilities in the north.

Table 2: Life expectancy in Ghana between 1960-2015 (selected years)

Years	Life expectancy at birth, females	Life expectancy at birth, male	Life expectancy at birth, total
1960	46.15	45.53	45.83
1970	50.26	48.45	49.33
1980	53.52	51.08	52.27

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2010	61.54	59.73	60.61
2015	62.51	60.52	61.49

Source: World Bank (2016)

Table 2 shows the data relating to life expectancy at birth from 1960-2015. From the table, the average life expectancy in 2015 was 61 years. As usual, the male expectancy rate is lower as compared to female life expectancy. The data provided in table 2 indicates a remarkable improvement in life expectancy from 1960 to 2015.

Table 3 below, shows the mortality rates in Ghana between the period of 1960-2015. The data shows that there is a reduction in the death rates in the country from an average of 387 per 1000 in 1960 to 250 per 1000 in 2014. The fall in the mortality rates among the under-five newborns is highly notable. The introduction of vaccination, inoculation programs and availability of clean water and sanitation quality might have led to a reduction in the mortality rates in the children.

Table 3 showing the mortality rates (number of people) in Ghana between 1960-2015 (selected years)

Years	Mortality rate, adult female per 1000	Mortality rate, adult male per 1000	Mortality rate, infant per 1000 live births	Mortality rate, under 5 per 1000
1960	368.98	407.57	125.10	210.90
1970	328.50	379.04	120.10	201.90
2000	379.94	319.06	64.90	100.70
2010	240.26	278.05	50.20	74.70

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2014	231.04	270.23	44.20	64.00
2015	-	-	42.80	61.60

Source: World Bank

Respondents indicated that the government should increase proper health services in rural areas in the Ashanti and Northern regions. Infrastructures such as well refurbished hospitals, accommodation for the doctors and nurses in villages, water facilities, mosquito nets and several other types of equipment to support the villages. The government should also invest in emergency threat centers and chronic facilities that would help strengthen their emergency and public health critical infrastructure.

The fourth infrastructure that was highly suggested by the respondents was transportation. Several developments by Sino-hydro also focus mostly on improving the transportation infrastructures of the developing economies. The transportation sectors included roads, water, railways and air transport. Investment in this infrastructure is relevant to bring people closer to business centers. Respondents suggested that good transportation networks reduce the cost of trading goods and increases volumes of goods traded.

A few individuals suggested that there was a need for the maintenance of roads in rural communities such as the northern region. Respondents indicated a few issues with the road transportation that they thought needed further attention. These are (1) There should be quality mini-buses on the roads. The current buses that carry 14-20 passengers have been known to cause a lot of accidents; they are unsanitary and dangerous for the passengers to ride in. (2) Increase of traffic in the cities of Kumasi and Accra on peak hours, (3) increase tolls on the roads to help raise enough money to maintain roads within

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the cities and help build other feeder roads. These concerns were repeatedly indicated in the questionnaire by the respondents.

Furthermore, the government should build new railway networks to reduce traffic on the road and aid the transportation of goods within the country. In 1898, the railways were built to promote the gold mining industry in the western region and foster trade with the British. The construction of railways started in 1898 from Sekondi to Tarkwa, Obuasi, and Kumasi, where gold was being mined in 1901, 1902 and 1903 respectively. Furthermore, bauxite, manganese, timber, cocoa and kola nuts have massively benefited from the railway constructions within the economy. Research carried out by MoRH and MoT in 2010 indicated that more than two-thirds of the railways had not been used for more than 12 years. These require a re-construction to restore services.

A few respondents supported the need for investment in ocean transportation in Ghana as it is highly important in connecting Ghana to the rest of the world. Ghana has two main harbors that are currently located in Takoradi and Tema. The Takoradi harbor was opened in 1928 and expanded in 1953. It is the main exporting port that handles bulky exports such as bauxite, timber, cocoa, and manganese from the Ashanti, Brong-Ahafo region and the western region. The Tema harbor was opened in 1962 and received more than 80 percent of the country's imports. These harbors should have the capacity to handle all the heavy activities. According to Huq and Tribe (2018), the service of the two harbors is both poor. A respondent indicated that there are port inefficiencies owing to the shallowness of the harbor draughts in some areas as such large vessels cannot sail closer to the harbor. Furthermore, the Tema harbor also faces challenges with cargo handling procedures and management problems. It is important that the government allocates some

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of the finances to develop the transportation of the exports and imports into and out of the country.

Air transport that was suggested by only 28 respondents who supported investments in the transportation sector indicated that the current projects on expanding the Kotoka International Airport (KIA) were very good to the development of the country. Ghana amongst all African countries receives the highest number of tourists and foreigners who come through their international airports. Respondents indicated that as Ghana is expanding the airport, they should also acquire an airline business that would be licensed to travel internationally. Investments in air transportation would increase government revenue just as countries like Rwanda and Ethiopia that have highly profited from this business.

Furthermore, the airport investments have proved to be among the biggest investments as it leads to several other developments within the economy that include, construction of hotels, recreation centers, shopping malls, entertainment centers, tourists' places, and several other things, of which the government is planning to invest in during the second phase of the sino-hydro agreement.

In the literature, it indicated that the transportation infrastructure was very important as such, countries like Malaysia, Thailand and Indonesia focused on investment in this infrastructure during their five-year developmental plan. Other countries such as the USA, China, and UAE also significantly invested in the transportation infrastructure during their development. This should also be the reason why the government of Ghana has allocated seventy percent of the sino-hydro funds to the development of the transportation sector.

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Finally, 47.5 percent of the respondents suggested that energy was also a very important infrastructure that the government of Ghana should invest. As indicated in the literature review, Angola, Nigeria, and Sudan also invested in electricity and energy sectors to spark development within their economies. These developmental projects were also constructed by sino-hydro cooperation. Investments in the energy sector have proved to increase business operations and growth. As such, several respondents also suggested the need for the government to support the energy sector.

Table 4 showing the energy consumption and primary sources in Ghana 2000

Electricity	Oil and derivatives	Charcoal	Wood fuel
7,838,000 MWH	1,095,000 tones	1,000,000 tones 10,700,000 m ³	8,200,000 tones 10,900,000m ³
674.1 ktoe	1095.0ktoe	3745.0ktoe	2870.0ktoe
8.0 percent	13.2 percent	44.6 percent	34.2 percent

Note: 1 ktoe = 1000 tones

Source: Ofori-Nyarko (2000)

Table 4 shows that Ghanaians highly consume charcoal and wood fuel. Even though there has been an increase in modern energy, wood fuel and charcoal still account for more than two-fifths of the energy supplied and consumed in the economy. The government should increase the coal transport trains, natural gas pipelines, and electricity transmission lines to improve the process of transporting energy from the producers to the consumers.

Respondents recommended that the government should provide subsidized private companies to invest in the energy sector. It was indicated that almost all countries that have had Chinese investments have highly focused on building dams to power up their

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economies. This has shown that this infrastructure is highly relevant to the development of the economy. Respondents were of the view that investment in the energy sector should be given to the private sector to manage because it would be more efficient and reliable.

4.3 Qualitative interpretation of results

4.3.1 Analysis of Interviews

To supplement the results presented from analyzing the questionnaires, a qualitative research study was also implemented. This technique gave more substance and revealed detailed information on the topic of study. It studied the way people think, feel and act and what they know about the area of study. This section was conducted through interviews. The information collected was presented in a narrative form that included descriptions and analysis of the data. The section further reflects on the results of the interviews conducted with the interviewees. It presents the analysis of their verbal responses during the interviews.

Semi-structured interviews were carried out with subjects regarding their perceptions on the infrastructural development needed for investments to move Ghana beyond aid. Furthermore, questions were structured to understand Ghana's relationship with China and how the Sino-hydro agreement would be a relevant investment agreement with Ghana. The purpose was to find out how respondents felt on Ghana's investment plans.

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4.3.1.1 Content analysis process

The analysis of the interview data was done according to the content analysis process as described in the methodology. All notes taken during the interviews were analyzed to gain a deeper understanding of the body and context of the gathered data. The process was followed by a three-step coding process that consisted of open, axial and elective coding procedures. This led to the documentation and marking specific segments of meaning in relation to the research aims. Each category was labeled in accordance with the relevance of the data.

Data analysis generated the following themes that are also considered as the relevant infrastructures to move Ghana beyond aid; public health care, transportation, food and agriculture sector, energy, the education system as the key critical infrastructures that are relevant for national development. (See table 5 in the appendix for the transcribed interviews, content analysis break-down)

4.3.1.2 Background information about participants in the semi-structured interview

The interviewees were chosen based on their professional expertise in the field of interests. For example, experts in the energy industry, transport industry, Asian studies, economists and the health sector. All the interviewees held master's degrees in these areas and were well informed and interested in supporting the continuation of the research. All the professionals that were contacted were willing to participate in the interview process. The interviews were conducted in a friendly and cooperative manner. Four of five interviewees were male and one female

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4.3.2 Presentation and discussion of the semi-structured interviews and qualitative responses in the questionnaires: Questions on critical infrastructure

What is the most important critical infrastructure the government should invest in to move beyond aid?

In addition to the questionnaires, respondents were given an opportunity to list out the most important critical infrastructures and give justification for these infrastructures. The five interviewees were also asked several semi-structured questions that were directed towards their choice and field of study. Interviewees were asked questions such as,

1. What are the essential infrastructural needs of Ghana in the next five to ten years?
2. Explain your reasons for your choices

4.3.2.1 Education sector

Eighty percent of the respondents suggested that education was the most critical infrastructure. There is a huge need for the government to invest in this infrastructure to improve literacy rates. Participants were of the view that it is critical for government to increase infrastructure in schools and classrooms, and to build laboratories and stock them with equipment. Libraries, auditoriums, and other education-related infrastructures were also mentioned. The professionals in the education sector lamented the lack of job readiness and employability skills in the current graduates. A reason for this could be the poor quality of educational infrastructure, equipment, and laboratories in the schools. Respondents also lamented the quality of the teaching professionals and the quality of students produced. According to a respondent,

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“Hmmm...I doubt a lot of schools in this country understand the required skill set for different jobs. The system of education we run does not allow us to be creative ... We end up producing graduates and sending them out into the labor market without the skills that are we needed” (B)

The employability, skills and job readiness in the labor market of graduates were also addressed by the professional’s responses.

Further, according to the respondents, there is still a high illiteracy rate in the country that needs to be reduced. Moreover, only a few graduates have technical and practical skills in the field of interest. Indicating that there is need to improve not only the infrastructure but also the curriculum to allow students to be practical and ready for the labor market.

“Madam... I can tell you for the fact that many of the CVs I review in this company are from social science majors. Just a couple of these is in the technical fields. These are the same people all our universities are producing. Hence we do not have the right pool of people to recruit for the jobs.” (D)

“We prefer working with international employees who have the technical skills than graduates from Ghana. The system does not allow them to be practical. I do not think the institutions know the kind of caliber we are looking for” (A)

All participants who favored the education infrastructure regarded that Ghana still had low literacy levels. Both professionals and the Ghanaian population identified this problem. Data from the world bank presented that there were low levels of literacy rates in employees who had technical degrees such as engineering and vocational training.

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Most students tend to drop out of school at an early age and thus acquire limited formal education. Participants indicated that these employees were very costly to maintain as they required training and created safety issues as they lacked basic skills.

“As you know.... literacy levels hmmm...we define this term very wrongly...some workers have to translate simple English to local languages for them to operate. How are we expected to have a policy framework for people who do not understand it at all...anything that might be suggested is taken as a threat towards their jobs.... the companies spend so much money training these people... hmmm even simple ID, they do not know how to acquire... I have helped someone do this before. Madam trust me there is high illiteracy in this economy” (E)

4.3.2.2 Energy sector

Energy has been a major infrastructure in the development of any economy. Angola, Sudan, and Nigeria focused on the construction of dams to support the supply of hydroelectricity within their economies. Interviewees acknowledged the work the government has done to improve the electricity sector but also presented some antipathy in the management of this sector by the government.

“When the Akosombo dam was constructed, it was the biggest developmental project at the time. The business was running smoothly; roads were built faster, everyone had electricity, people had jobs. I can't tell you all the things I realized had changed that time. But now, governments are not managing the property. These days the dam is almost always dry. So we have no lights every single time.” (K)

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About fifty-seven settlements were linked to the hydroelectric supply in the 1970s. This was due to the construction of the Akosombo dam in 1966. The number of connected communities increased to about eighty (Ghana statistical service, 2005). The connected communities were mostly those that had economic dominance such as Greater Accra, Ashanti, and Eastern regions. The construction of the Bui Dam, more than eighty percent of Ghana can access electricity. However, in the past few years, this has been hard due to the “dumsor” (Kumi1, 2017).

“This place requires us always to use electricity to run everything...we barely see the paperwork. So, computer, emails, emails, emails... that’s mostly how we operate... if we have electricity issues, we lay off a lot of people. Four years ago, the economic situations forced us to buy a generator.” (F)

Other participants indicated that the government should invest in green energy as it is more reliable. Ghana as a country receives sunshine every single day of the year and is expected to be using solar panels.

“in my house, I use solar panels. I think the government should provide solar panels to businesses to help boost business productivity.” (J)

Green energy is expensive, but it is worth it in the long run. I have stopped paying for the cost of having a solar panel in my house. I pay nothing. Like yeah. (B)

A few other respondents suggested that energy is a very crucial aspect of the development and thus should receive high attention. However, since the government seems to be unreliable in the provision of this service, it should be given to the private sectors to operate and run.

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“I think the private sector will be expensive but reliable” (C)

Food and agriculture was also identified as an important sector for national development. Participants indicated that methods of farming that were used in some of the major food growing environments were outdated and needed improvement and training for the farmers. There are a lot of problems that have arisen in the ways we cultivate including, aged farmers, high costs of farm inputs, low levels of technology, low agricultural productions, frequent land use, low prices of farm produce and several others.

“I am not very knowledgeable about the agriculture in this country, but my observations have made me wonder, Farmers still use the traditional means of farming to grow food for millions of people...people burn and slash as a way to conserve nutrients, but I think these are dangerous means” (A)

“Food for the thirty million people and exports should not be cultivated using hoes, Cutlass, axes, mattocks; we should invest in machines, tractors, spraying machines, and others.... modern agriculture is very limited” (D)

Participants in the food industry complained further about the high costs of training their workers and the old methods of farming that sometimes make farming expensive. One of the participants indicated that the world population is increasing and thus countries should also increase their food production by 60%. This will be hard to do if farmers are still relying on the old methods of farming.

“it is the role of the government to ensure that our agriculture improves. We need to train the farmers and educate them on, soil fertility, the grass types that are suitable

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for their animals and agrochemicals...mm... Marketing systems are also important in our line of work.” (E)

Several respondents further indicated that investment in transportation was also relevant for national development. It was not as highly emphasized an infrastructural need like education, food and agriculture and public health but respondents had government should further increase its investment in this sector. Transportation infrastructure in the cities was considered better than in rural communities. Respondents focused on Ghana’s transportation projects to focus on the rural and newly created regions to connect them to the cities.

“It is very true that Ghana’s infrastructure is very bad. Madam, I think if this is improved on it will boost our economy. The recently created regions should be the main focus for Ghana’s new roads and highways development as they needed to be connected to the main economic centers.” (A)

“...Ghana’s development will be faster if all regions are connected, hence we need the roads to help us move around.” (J)

“The rainy seasons are usually the worst of times; I always find it hard to drive on the poor roads. I cannot even pick public transportation on these specific days... Hmm. If the governments improve the roads within Accra and the towns out of Accra, it will boost development for our country.”(E)

Furthermore, having better health was also another concern for the different respondents. Most of them responded that having a healthy population will boost

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economic growth. If the government wants people to live longer, be more productive and reduce death it should invest in public health.

“... a happy and healthy community results to the healthy country...” (C)

“... improving roads improves individuals' access to health services...” (A)

From the analysis of these responses, investment in public health will be very vital to keep a healthy community. This will, in the long run, improve the workforce, the labor hired will be healthy to work, hence improving productivity for the economy.

4.3.3 Presentation and discussion of the semi-structured interviews and qualitative responses in the questionnaires: Questions on Sino-Hydro agreement

How can we make sure that Ghana benefits from the Sino hydro agreement they have currently signed with China?

Three out of five participants connected their responses to Sino hydro and spotted out its relevance and a few lessons Ghana could learn from the past. Discussions were on issues such as;

1. What lessons could Ghana learn from other agreements China has had with other African countries?
2. Which steps should we take to make sure that Ghana benefits from the Sino hydro agreement?

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Poor infrastructure

All the three agreed that Ghana and several other developing countries have poor infrastructures that have been rated with a D2 or even below. They indicated that China's effort to support Ghana and other African economies to improve their infrastructure is a good thing. The mentions on infrastructure ranged from Ghana's poor education system that has cost the economy millions of dollars to the poor roads in almost all regions of Ghana. Hence, this theme represented an important part of the discussion for the respondents

“the agreement between Ghana and China might not be enough but offers the economy a significant push to start improving different infrastructures such as roads in the most needed places” (C)

Respondents A (2019), had much more harsh and complex comments on Ghana's stagnant infrastructure and mentioned

“.....We only need China to help us. America, Britain has been working with us ever since independence, and we are still on the same level they found us. Our infrastructure is bad; the schools are not good, the roads are bad, Madam, I truly support that we step up and improve our infrastructure.....” (A)

This same statement was compared to Respondent D who related her argument to the Bui Dam, which was constructed with Chinese help, to the current Sino-Hydro agreements. His arguments to these new projects intertwined into the lessons we can learn from the past projects. He started by stating;

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“Ghana has had some advantages and disadvantages from the Bui dam project. Firstly, there have been a lot of improvements in road infrastructures in these communities. This has made the movements of goods and services, people to and from communities easier...”

Respondent A further referenced Ethiopia and Angola that have massively benefited from similar agreements. She agrees that Ghana will strongly benefit from this project and improve its poor infrastructure. This will only be possible if there is a good government and run by ethical project leads. She also has some worry that China is known for having tricky and complicated agreements that sometimes-hurt Africans.

“I am not sure if this agreement is just a swap or foreign aid. But all I am sure, it will be pushing our infrastructure to at least a grade B.” (A)

A few case studies that can support this view are Angola, Nigeria and Ethiopian case studies that mentioned that China’s aid programs tend to cover a lot of projects that fall into the main critical infrastructures. These include; health. Communication, agriculture, transport, education, energy projects, and so many others.

Maintenance

Maintenance was also a major code that was generated from the discussion. Almost all respondents were worried that after the construction of the different infrastructures, it would be sad to note that Ghana had difficulties in maintaining them.

Respondent D;

“...A very good example of poor maintenance is in the north...” (D)

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He was further concerned that at the time of Kwame Nkrumah' Ghana had the best roads in Africa and currently, *"we cannot be placed on a map."* His argument is shared by several other participants who cite a few other projects that were destroyed due to mismanagement.

"Our system is a very good example of poor maintenance... If we cannot manage our structures, how well can we manage our property..." (D)

Respondents A suggested that Ghana should implement a strong strategy, firms, and individuals that will ensure that property is maintained regularly.

"...these bodies might be there, but we cannot see the work they are doing. I think they should foster this aspect to ensure that our infrastructure never gets shattered." (A)

Hence from such statements and dismay, it is relevant that the government of Ghana should not only invest in the construction of new projects but also think of the maintenance strategies that should be put in place.

Funding

The discussion with the respondents would not have been complete if the topic of finances was not mentioned. Even though they supported the resource for infrastructure agreement, they thought it was not enough funding.

Respondent B;

"The two billion dollars is not enough money, but we hope it will push us to make sure that we start working and finishing projects." (D)

In some way, this was also observed in respondent's A's argument that;

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“This agreement can only work on three different projects. And for us Ghanaians we think it is enough money to rebuild our country... it is surely not enough” (D)

“Ghana’s main challenge is funding. We have no machines or money to extract and refine the bauxite or other resources. We rely on developed countries for a small token of two billion. Because we are vulnerable. We need that small money to develop at least one infrastructure.” (B)

Based on these responses, it is very vital to understand that the government is limited by funds and should critically plan on how to improve its infrastructure.

Based on the Sino-hydro agreement, the government has seventy percent of the Sino hydro investments to developing and constructing roads. These have been divided into phase one and two. As indicated in the literature review, the roads under phase one are the Accra Inner City Roads, Kumasi and Mampong Inner City Roads, Tamale Interchange, PTC Roundabout Interchange, Dualisation of the Adenta-Dodowa Road , Sunyani Inner City and Berekum Township Roads, Prestea Township and Cape Coast Inner City Roads, Selected Feeder Roads in Ashanti and Western Regions, Rehabilitation of Akim Oda-Ofoase Roads and the Construction of the Hohoe-Jasikan-Dodo Pepesu Road of the Eastern Corridor.

Furthermore, the construction of phase two also includes 1300 kilometers of roads, interchanges and steel bridges. Other projects under phase two include hospitals and public housing.

4.4 Discussion and managerial implications

The research study points out the different infrastructural investments the government should invest in with suggestions from the population. These were education infrastructure, food and agricultural sector, public health sector, transportation, and the energy sector. These five sectors were considered key as they highly contribute to global, local and national development in one way or the other.

The literature on investment in different infrastructural development such as Hussain et al (2011), Obasan et al (2010), Mikeal L. et al (2007), Singh A. et al (2005), Dutt and Lee (1993), Wilber (2002) suggest that infrastructural development is relevant to economic growth. They all showed a positive correlation between growth in specific infrastructure sectors like agriculture and GDP growth.

Investment in the education sector will not only improve the literacy rates of the Ghanaian population but also offer quality skills to the graduates hence making them suitable for employability. Majority of employers and professionals indicated the education system in Ghana does not provide individuals with enough work readiness or employable skills. As such, the government should provide build more laboratories, vocational institutions to improve the quality of graduates.

Furthermore, the government should increase investment in the food and agriculture sector to improve the quality of food production, increase production. As such government should provide low cost and quality farm inputs, increase the use of technology, and provide educational schemes to the farmers. Rostow and Hirschman also

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suggested that the developing economies should start by investing in agriculture as it is the backbone of any economy.

Lawrence Amirah (2002) studied improving the agricultural production in Ghana also concluded there is a need for improving the methods used for cultivation by providing agricultural extension programs. The study further also stated that agriculture is also the backbone of Ghana and investment in agriculture will increase the production of food hence eliminating hunger within the economy.

According to Yedu (2018), there has been a decline in national investment in health care since 2005. The study expected the introduction of the National Health Insurance (NHIS) that was introduced in 2004 to have increased government spending on this sector. However, there was a decline in spending, and from the research study carried out, there is a general outcry that the government should increase their investment in health-related infrastructure.

The government must establish new health institutions and expand existing ones, provide incentives to discourage exodus of health workers and further provide more alternative insurance schemes for vulnerable individuals. Furthermore, there was a general suggestion that the government should build better quality clinics in the northern region of Ghana and the new regions that have just been demarcated. This is because these regions lack the most infrastructural needs and residents always travel long distances to seek for simple medical attention.

A report from Oxford business group (2016) indicated that Ghana's increase in its investments in transport (roads and highways) had seen an improvement on the GDP.

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With an investment of about 2 billion dollars in 2016 to develop the Takoradi and Tema road infrastructures, there has been an improvement in road connectivity. However, there is still need for further road connectivity to the rural communities and within the cities to reduce road traffic.

Given that this infrastructure is the only infrastructure indicated in phase one of the MPSA shows how relevant it is to the developmental plan of the economy. The roads that will be constructed under phase one of the Sino-hydro agreement include Kumasi inner city roads, Takoradi PTC roundabout dual carriageway, Accra inner city roads, tamale interchange, and the Sunyani inner city roads. However, as advised by the experts in development, it is better to develop the new roads in the new regions of Ghana and further repair and maintain the ones in the cities.

The government of Ghana is planning to adopt smart progressive and innovative methods to improve the road infrastructure in the country as well as contribute to the socio-economic development of the people of Ghana. The government should further investment in road, railways, and airport transportation to develop the economy. The innovative and progressive methods should be adopted in the other transportation sectors such as the railways. This is predicted to foster effective services for the transportation of goods and services around the country. The government can allocate some of the investments to construct effective railways that would foster effective services for the transportation of goods and services around the country.

Research carried out by Dodzi (2014) indicated that electricity usage negatively affects the economy's GDP in the short run. However, in the long run, there was a positive trend in the relationship. Hence the government of Ghana should increase

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investment massively into the energy infrastructure and conservation measures to meet the needs of various sectors of the Ghanaian economy. Even though investment in electricity has been proven to be economically beneficial, the government should only maintain and improve on the services of the already existing electricity and energy providers. It is even important for the government to subsidize the private companies to provide energy infrastructure. The private companies are proved to be more efficient and active than then public companies.

Outsourcing the energy infrastructural development to the private firms will enable the government to focus on other infrastructures that are equally important such as roads, schools, and hospitals.

The research from Nana (2016) substantiated the findings in this paper that there is a need for the government to focus on critical infrastructures such as food and agriculture and education and transportation infrastructure. However, it is worth noting that the two billion dollars are not enough to construct all the desired five critical infrastructures suggested by the research. As such, the government can use these suggestions to move the economy beyond aid.

CHAPTER 5: CONCLUSIONS, RECOMMENDATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

5.1 Summary

This chapter summarizes the entire research study. It presents the conclusions, recommendations derived from the analysis of the data collected. The chapter further presents the limitations and suggestions for further research.

5.2 Conclusion

Based on the findings of the study, the following conclusions were reached

1. From the research analysis, the objective of investigating the critical infrastructure the government of Ghana needs to invest in to move beyond aid was accomplished. From the study, there were a strong request for government investment in infrastructure related to (1) education systems, (2) food and agriculture, (3) public health system, (4) transportation systems and (5) the energy sector. The findings reveal that there are high benefits for the government to investing in this infrastructure as revealed in the literature.
2. Secondly, the research study on the lessons Ghana should learn from the past China relationships with other countries serve as an important step in Ghana's Sino hydro agreement to determine how they can ensure they benefit from this agreement. The findings implied that Ghana like several other countries lacks enough resources to extract its resources. As such, Ghana should use external companies to extract and refine their resources. Again, the study found that there were deep concerns that the government should follow the local content

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laws of Ghana and ensure that Chinese employ the Ghanaians in this project as it is expected to create jobs for the Ghanaian population. Furthermore, the Ghanaian population (government, ministers and the public) should carefully monitor all the processes of the project to ensure the plan is not changed.

3. The MPSA suggested that seventy percent of the infrastructure to be developed by Sino hydro corporation would be roads, highways, and interchanges. Roads are with no doubt among the most important critical infrastructure the economy should build. It is was however important that the government also focuses on improving the education infrastructure and food and agriculture of the economy.
4. Finally, the research study also revealed that there would be a positive relationship between investment in the five infrastructures listed above and the economy's GDP. As such, the government should increase their investment in each of these infrastructures and will acquire similar results to those indicated in the literature review.

5.3 Recommendations

The research study brought to light the importance of investing in the education sector, health sector, food, and agriculture sector, energy, and transportation sector on the development of an economy. Taking cognizance of this, the following recommendations are proposed to help achieve a Ghana beyond aid agenda.

1. The government should consider creating and maintaining macroeconomic stability that is necessary for economic development and competition while encouraging the different stakeholders in the different infrastructural sectors to

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enhance human resource development for efficient maintenance of infrastructures such as roads, highways, hospital buildings.

2. Also, all the sectors in Ghana should work with each other to draft and implement policies that are aimed at ensuring efficient accessibility of the infrastructures developed by the government. This will improve the efficient allocation of the country's resources.
3. The government of Ghana should invest highly in the education sector. They should build better schools, classrooms, playgrounds, and laboratories, to improve the quality of education within Ghana. Furthermore, I highly recommend that more investments should also go to the food and agricultural sector as these are the backbone of the economy. The government should focus on improving the forestry, livestock and other industries. As such, they should provide, boreholes in villages, irrigation pipes and several other modernized types of equipment of farming.
4. The government should ensure that sino hydro cooperation employees the Ghanaian population to support them in construction of these infrastructures. Furthermore, the government should also ensure that the Chinese company abides by the contract signed and not breach any terms of the contract. It is further important the government clearly understands the terms required by Sino Hydro cooperation to prevent any future conflicts.
5. All developing economies should further focus on identifying which infrastructures are key for their economies to develop. This would help them allocate their resources efficiently.

5.4 Limitation of the study

The study aimed at investing the most important critical infrastructure that can easily reap benefits for the economy of Ghana to move beyond aid. However, the study did not extensively use the quantitative analysis to study the relationship of the infrastructures suggested by the population and in the interviews to the GDP growth. The study would have been stronger if evidence was compared to the relationship between the GDP of Ghana and the infrastructure investments. But there was limited current data on infrastructural investments, hence making it hard for the study to be concrete.

5.5 Suggestions for future studies

Research into the type of critical infrastructure governments in developing countries should invest in is still in its initial stages of research. Therefore, recommendations will target future researchers, academicians, and scholars who are interested in economic development and international economic policies.

1. Further studies should focus on using up to date quantitative data to critically analyze the impact of different infrastructures on the economy.
3. Furthermore, researchers should also investigate the different types of investment projects. These should include how their long-term benefits and cost for the economy. The study should also detail out lessons that should be learned from past projects and how they should inform future projects.
4. Finally, scholars and researchers should also devise a model that will developing economies invest wisely in different infrastructures.

Bibliography

- Abed, G. T., & Davoodi, H. R. (2003). *Challenges of growth and globalisation in the Middle East and North Africa*. Retrieved from IMF:
<https://www.imf.org/external/pubs/ft/med/2003/eng/abed.htm>
- Abed, G., & Davoodi, H. (2000). "Corruption, Structural Reforms and Economic Performance in Transition Countries". *IMF Working Paper*.
- Alhassan, M. S. (2016). *The economic effects of dumsor in Ghana*. Retrieved from
<https://www.academia.edu/>
- Ansah, J. (2018, August 02). *Sinohydro deal to be used for infrastructure development*. Retrieved from Graphic: <https://www.graphic.com.gh/news/general-news/sinohydro-deal-to-be-used-for-infrastructure-development.html>
- Armah, S. (2016). Strategies to Stimulate Ghana's Economic Transformation and Diversification. *The Ashesi Economic Lecture Series Journal*, 9-16.
- Center, Asian Regional Integration. (2018). *Association of Southeast Asian Nations (ASEAN) cooperation on transport, telecommunication, energy, and customs*. Retrieved from Asian Regional Integration Center: <https://aric.adb.org/>
- Dudovskiy, J. (2018). *Research Methodoly*. Retrieved from <https://research-methodology.net/>
- Durovic, L. (2016). Resource Curse and China's Infrastructure for Resources Model: Case Study of Angola. *JCIR*, 67-86.
- Estache, A., & Garsous, G. (2012). *The impact of infrastructure on growth*. IFC Economics.
- Ghana statistical service. (2005). *Policy implications of population trends*. Accra.

Ghana beyond aid

GNA. (2018, 07 29). *Parliament approves \$2bn Ghana-Sinohydro infrastructure agreement* .

Retrieved from Myjoyonline: <https://www.myjoyonline.com/>

Huq, M., & Tribe, M. (2018). *The Economy of Ghana; 50 years of economic development*.

Glasgow, UK: Palgrave macmillan.

Index mundi. (2017). *Malaysia - Public spending on education*. Retrieved from Index mundi:

<https://www.indexmundi.com/>

Itagaki, Y. (1963). Criticism of Rostow's Stage Approach: The Concept of State, System and Type.

The Developing Economies, 1-17.

Jallow, M. K. (2010, April 17). *Foreign Aid and Underdevelopment in Africa*. Retrieved from

Modern Ghana: <https://www.modernghana.com/>

Jotie, S. N. (2018, April 5). *Ghana Beyond Aid—President Akufo-Addo charts the path, 61 years after Independence*. Retrieved from Government of Ghana:

ghana.gov.gh/index.php/media-center/features/4437-ghana-beyond-aid-61-one-years-after-independence

Jotie, S. N. (2018). *GHANA BEYOND AID—PRESIDENT AKUFO-ADDO CHARTS THE PATH, 61 YEARS AFTER INDEPENDENCE*. Retrieved from Government of Ghana:

<http://ghana.gov.gh/index.php/media-center/features/4437-ghana-beyond-aid-61-one-years-after-independence>

Kabuya, F. I. (2015). Fundamental Causes of Poverty in Sub-Saharan Africa. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)* , 78-80.

Kabuya, F. I. (2015). Fundamental Causes of Poverty in Sub-Saharan Africa. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 78-81.

Ghana beyond aid

- Kumi1, E. N. (2017). The Electricity Situation in Ghana: . *Center for global development*, 1-30.
- Madden, G., & Savage, S. J. (2000). *Telecommunications and economic growth*. MCB UP Ltd.
Retrieved from Emeraldinsight: <https://www.emeraldinsight.com/>
- Mazat, N. M., & Serrano, F. (2009). *An analysis of the Soviet economic growth from the 1950's to*
An analysis of the Soviet economic growth from the 1950's to. Retrieved from
<http://www.centrosraffa.org/public/bb6ba675-6bef-4182-bb89-339ae1f7e792.pdf>
- Mbabane, S. (2018, 07 20). *Ghana's Bauxite Being Traded for Chinese-funded Roads*. Retrieved
from Modern Ghana: <https://www.modernghana.com/>
- Mensah, K. (2019, April 10). *Akufo-Addo launches \$2bn Sinohydro deal*. Retrieved from
<https://starrfm.com.gh/>
- Nana, B.-A. A. (2016). Assessing road construction: potential impact of constructing the
Kwabenya Kitase road on the local economy. *Ashesi Institutional Repository*, 17-27.
- Omotola, S. J., & Saliu, H. A. (2009). Foreign Aid, Debt Relief and Africa Development: Problems
and Prospects. *South African Journal of International Affairs*, 87-102.
- Porter, G. (2013). *Urban transport in Cape Coast, Ghana: A social sustainability analysis*. Accra:
Global Report on Human Settlements .
- Powanga, L., & Giner-Reichl, I. (2019). China's Contribution to the African Power Sector: Policy
Implications for African Countries. *Journal of Energy*, 1-10.
- Rao, P. S. (2013). Infrastructure Development and Economic growth: Prospects and Perspective.
Journal of Business Management & Social Sciences Research.

Ghana beyond aid

Researchomatic. (2011, 12). *The Growth Of The Researchomatic* . Retrieved from
<http://www.researchomatic.com/The-Growth-Of-The-asian-Tigers-97614.html>

Rostow, w. (1959). *The Stages of Economic Growth*.

UNCTAD. (2012). *Official development assistance and debt relief*.

Utomi, P. (2009). *China and Nigeria*.

World Bank. (2018, september 24). *Poverty*. Retrieved from
<https://www.worldbank.org/en/topic/poverty/overview>

APPENDICES

ASHESI UNIVERSITY

BUSINESS ADMINISTRATION

AN INVESTIGATION ON THE CRITICAL INFRASTRUCTURE THAT THE GOVERNMENT OF GHANA SHOULD INVEST IN TO MOVE BEYOND AID.

This questionnaire is to help the research on finalizing the investigation on the critical infrastructure that the government of Ghana should invest in to move beyond aid. It is an academic research work that will be presented in school as a requirement for the final year capstone presentation

1. What is your gender?

- Male
- Female

2. What is your age?

- Below 18
- 18-25
- 26-35
- 36-45
- Above 45

3. Which region do you come from?

- -----

4. What is your occupation?

- -----

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5. Check the five most important infrastructure; you think the government should invest in.

- Communication and information technology sector
- Food and agriculture
- Energy sector
- Working legal system
- Education system
- Transportation network
- Public health sector
- Police and armed force
- Manufacturing sector
- Water and water systems

6. Give justification for your top choice

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.....

Interview guide

These are some of the questions that I will be asking the experts in the field. However, the interview process will be unstructured.

China's foreign policy

1. Given the different plans and agreements China has put in place in other countries, what do you think are the lessons Ghana should learn from them?
2. Do you think this agreement is even relevant to strike for Ghana?
3. What are the possible consequences of this agreement?
4. How well can we ensure that Ghana benefits from this agreement?

Infrastructure investment

5. Which infrastructure do you think the government should employ the unbalanced growth model in?
6. Can you please estimate the number of years it might take for Ghana to start ripping the benefits from these infrastructures?

Consent to Participate in Research

Identification of Investigators & Purpose of Study

You are being asked to participate in a research study conducted by Maureen Molly Basemera from Ashesi University. The purpose of this study is to investigate into the critical infrastructure that the government of Ghana should invest in to move beyond aid. This study will contribute to the researcher's completion of her senior thesis.

Research Procedures

Should you decide to participate in this research study, you will be asked to sign this consent form once all your questions have been answered to your satisfaction. This study consists of an interview that will be administered to individual participants in Ghana. You will be asked to provide answers to a series of questions related to Ghana's developmental plans. We will be audio recording the interview to allow the interviewer capture all insights accurately.

Time Required

Participation in this study will require 30 minutes of your time.

Risks

The investigator does not perceive any risks from your involvement in this study.

Benefits

There is no benefit that will arise from taking part in this study. However, participants will be offered a copy of the final report via email that they will agree to provide during the interview session. This will only happen, if participants are interested in receiving the final report.

Confidentiality

The results of this research will be presented in a classroom and conferences. The results of this project will be coded in such a way that the respondent's identity will not be attached to the final form of this study. The researcher retains the right to use and publish non-identifiable data. Respondent information such as name, age, gender, their location,

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phone numbers and emails. will not be published or presented in the final form of this study. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents with their answers will be destroyed.

Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.

Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Maureen Molly Basemera

Business Administration

Ashesi University

Maureen.basemera@ashesi.edu.gh

Stephen Emmanuel Armah

Business Administration

Ashesi University

Armah.stephen@gmail.com

Questions about Your Rights as a Research Subject can be directed to

Ashesi University through irb@ashesi.edu.g

I have read this consent form and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have been given satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

I give consent to be (*video/audio*) recorded during my interview. _____ (initials)

Name of Participant (Printed)

Name of Participant (Signed)

Date

Name of Researcher (Signed)

Date

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Content Analysis

Elements to be coded	Codes	Themes
<p>Agriculture is the backbone of the economy, so that's important as well.</p> <p>The GDP of the economy has grown drastically in the past because of some of the activities in the forests.</p> <p>The importance of agriculture to helping contribute towards the development of a nation can never been overlooked. There's so much offering, which comes as benefits in investing in agriculture. Besides, we are endowed with natural and Agric resources, so it makes sense to channel the very little resources (human and technology) to this sector.</p> <p>forestry products have also highly contributed to the GDP growth of the Ghanaian economy</p> <p>Food and Agriculture- we have all the necessary resources to create wealth from agriculture and also improve livelihood</p>	<p>The fishing, livestock, forestry, and technology.</p> <p>Food production</p> <p>Exports and backbone of the country</p> <p>Aging farmers in rural communities</p> <p>low technology using in the farmlands</p> <p>low prices for agricultural products</p>	<p>Food and agriculture</p>
<p>Education. Educating the citizen will improve the way things are done and even the way people behave towards work which will then lead to the development</p> <p>A robust education system means the caliber of graduates that are churned out of local Universities are critical thinkers and excellent problem solvers. We have enough mediocre graduates with more of a sense of entitlement than focusing on working and giving off their best. Once the education system is enhanced it eventually impacts other sectors in the country.</p> <p>Education system because most schools lack the necessary infrastructure. Police and armed forces because it seems there isn't enough motivation to perform duties.</p> <p>They are working a legal system because most of us don't even know our laws, so the laws more or less don't work.</p>	<p>Literacy rates</p> <p>Labour markets in need of more</p> <p>Unqualified labor from graduate schools</p> <p>Right</p>	<p>Educations</p>

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<p>Once the country has a strong educational base, all the other issues will be well managed by sensible people in this our country</p> <p>The success of a country mainly depends on education. Without education, there will be roadblocks to its development. Most people should know how to discover their capabilities so that they can contribute effectively to the success of a country. This will increase the literacy rate and move the country in the direction of the "beyond aid agenda."</p> <p>The illiteracy rate is so high.</p> <p>When better educational systems are implemented with not just theoretical but practical tuition, it will help Ghana move forward.</p>		
<p>The human workforce of a country stems from the basis of good health. Without healthy people, it would be impossible to educate, provide skills, and train our workforce. This the primary focus now should start from Health, public health to be specific because most people can't afford private health care. The National Health Insurance Scheme should be properly structured and working. Directions into our National Hospitals should be careful and straightforward. Ambulance systems should increase in terms of efficiency, and quantity. Nurses should be trained to understand that the word *care* is in Healthcare. Thus there's an amount of love and joy that should be exhibited in carrying out their duties. And many more. Unless of course, Ghana's poor public health sector is a population reduction strategy, then there's not much that can be done.</p> <p>Investing in the public health sector will help improve the health of Ghanaian and improve productivity</p> <p>Health is life, and a nation without healthy people is a dead nation.</p>	<p>Healthy citizens and a healthy workforce</p> <p>High productivity</p> <p>NHIS</p> <p>Hopistals in the north</p>	<p>Public health</p>

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<p>In Ghana, our education, food, and health is the most important because once there are well done the rest will fall in place</p> <p>The health of the workforce of this country is important. Healthy workers make for better production.</p> <p>To educate the public on the importance of proper sanitation which results in the prevention of diseases and hence decreases the death rate</p>		
<p>With a strong energy sector too, the country can provide enough power to support the manufacturing sector..excess of power produced can be supplied to neighboring countries at a fee</p> <p>Without a stable energy sector, how do we expect the country to compete in the 21st century technologically as everything needs to be powered up</p> <p>We have seen how energy has highly contributed to the success of the business and the whole economy. Hence we should invest in this sector and stabilize it to support businesses</p>	<p>Private sector should control this</p> <p>Need for electricity to carry out economic activities</p> <p>Dumsor times was the worst</p> <p>Manufacturing sector is supported by the energy sector</p>	<p>Energy and electricity</p>
<p>The transportation infrastructure is not the best. It has the potential to be great, but I believe we didn't think fast. Some businesses that rely on fresh and perishable raw materials usually grown in rural areas die out or sometimes suffer because the roads linking the rural areas to these businesses usually in urban centers are not developed.</p> <p>Transportation network would prevent floods and avoidable accidents</p> <p>Better transportation in the country allows for the decentralization of jobs</p> <p>Transportation network will make it easier to get to areas which were not easily accessible to make it easier for business</p> <p>Outside Accra and Kumasi, most of the major roads are so bad. Take the road to the northern part of the</p>	<p>Poor roads in rural communities</p> <p>Rainy seasons</p> <p>Trotros are in bad condition</p> <p>Need for railways,</p> <p>Invest in airtransportation</p> <p>Create jobs</p>	<p>Transportation</p>

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country for example. There is only one main road going up north, and it needs repair at several points. Moreover the rule of law is so low that people take the law into their hands and commit crimes the of the murder of innocent people in the name of instant justice. Also, as a nation, we need the control of our food production and stop importing food. We have the fertile lands to grow food so why import food? The road infrastructure needs to be worked on to enable the transfer of people and goods from place to place.

Transportation should be one of the most important infrastructures in any economy. It will allow for other economic activities to take place

And with good road network, people and products can easily be transported from one place to another; this promotes productivity.

I believe we have a poor transportation system that can be developed to enhance economic growth in various ways