

**GHANA IS GOING NOWHERE WITHOUT ENGINEERS:  
MOBILIZING GHANAIAN ENGINEERING AND ALLIED  
RESOURCES FOR THE DEVELOPMENT AGENDA**

**By**

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**At**

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## 1. INTRODUCTION

### 1.1. Salutation

Mr. Philbert Abaka Johnson, Ghana's Deputy Permanent Representative to the U.N., Mr. George Korley, President of the Ghanaian Engineers and Architects Association of America, the Executives and Board Members of GEAAA, members of GEAAA, my lifetime friend and brother Prof. Victor Lawrence, Ladies and Gentlemen, I am highly honored by the invitation to be part of your Annual Fundraising Dinner and to be the Guest Speaker. I bring you well wishes, fraternal greetings and solidarity from the Ghana Institution of Engineers (GhIE). The GhIE wishes the GEAAA a very successful fund raising.

The GhIE seeks to promote and advance the science and practice of engineering to the benefit of society in Ghana and Africa, and globally. Toward that end, it has resolved to mobilize all the Ghanaian engineering resources, no matter where they may be, and help to focus them on the national development agenda. **With the GEAAA's desire to bring the expertise of its members to help advance Ghana's development, it is only natural that we combine our resources to support mother Ghana.**

### 1.2. Preamble

Tonight, in support of your fundraising drive that, among others, is intended to help Ghana's development, I would like to share with you some thoughts on how we, engineers and allied professionals, may be able to help put Ghana's development into a higher gear and lift our dear nation out of its present quagmire. The development journey must be accelerated if we are to liberate the mass of our people from poverty, illiteracy and disease and move them into the contemporary 21<sup>st</sup> century. In my humble opinion, this requires that we give special recognition to the role of engineering and related disciplines.

The inextricable link between engineering and related disciplines on one hand and national development on the other affirms for me that **"Ghana is going nowhere without engineers and allied professionals. Therefore,**

**Ghanaian engineers, together with allied professionals, have a special responsibility to the nation." This assertion has been the theme of my presidency of the Ghana Institution of Engineers. No country ever developed without indigenous engineering and technology. Indeed, in the more successful recently developed countries, engineers have been at the forefront of leadership.**

I am also motivated by a lesson that I have learned in the course of my long professional career: **there is a distinction between *Individual Excellence* and what I refer to as *Group Excellence*. Moreover, the disparate collection of Individual Excellence will not necessarily sum up to Group Excellence.** One of the challenges we face as a people and that has retarded our development is translating our collective Individual Excellence to Group Excellence. I believe that it doesn't matter what we achieve as individuals, until we achieve Group Excellence, our country cannot be competitive on the global level. Correspondingly, our individual recognition will always be limited by the perception of our low level of Group Excellence.

I will first, make a few remarks on the role of engineering and development. I will then discuss the special responsibility of engineers and allied professionals in national development and the need for the engineering community to come together to effectively discharge these responsibilities and help to increase our Group Excellence. I will stress the need for a much broader scope of what engineers and allied professionals ought to be viewing as their role in the society. I will subsequently outline specific areas where the GhIE and GEAAA should target for collaboration. The talk ends with some concluding remarks.

## **2. ENGINEERING AND NATIONAL DEVELOPMENT**

### **2.1. Engineering in Our Daily Lives**

**Engineering is essentially the art of optimally using technology to solve practical problems for the benefit of society. It is primarily concerned with how to direct scientific discoveries to useful,**

**economical and practical ends and** requires the creative imagination to innovatively apply technology. It seeks technologies that are newer, more cost effective, more easily accessible, etc., in effect, better, to solve problems that meet the needs and desires of society.

Fellow Engineers and Allied Professionals, Ladies and Gentlemen, at each step of our daily routine – from waking up in the morning through the working day to night time retirement -- is the work of the engineer. This includes the provision of lights, delivery of water, the razor for shaving, the electric or gas range or microwave oven, the waste disposal system, the radio or TV, the cell phone, the automobile, the road, the computer or adding machine, etc. Modern life cannot exist without engineering!

## **2.2. Applying Engineering to National Development**

**National development refers to the ability of a nation to improve the lives of its citizens.** It is about poverty elimination and making access to the basics in life -- food, shelter, healthcare, education -- a matter of course.

**No matter what metrics are developed to measure impact, science and technology are key drivers to development, because technological and scientific transformations underpin socio-economic advances, be they improvements in health systems, education or infrastructure.**

A World Bank report observed that:

"Science and Technology are critical inputs for economic development and poverty alleviation. Advances in scientific and technological knowledge made possible the significant reductions of poverty and improvements in the quality of life in both developed and developing countries throughout the 20<sup>th</sup> century. In the future, the ability of countries to access, comprehend, select, adapt, and use scientific and technological

knowledge will increasingly be the determinant of material well-being and quality of life."

**Developments in science and technology -- delivered through engineering -- are fundamentally altering the way people live, connect, communicate and transact business, with profound effects on economic development. Engineering has been and continues to be the backbone for the development and progress of any country. But for engineering where would we be today? Indeed, there would be no civilization.** The Pyramids of Egypt, the Taj Mahal of India, the Great Wall of China, etc., of yesteryear as well as the tunnels and bridges, the provision of easy access to potable water, the control of flooding, the space exploration, the cell phone and easy access to information, to name a few, are all products of engineering. Engineers and allied professionals are the key people in building and sustaining civilization.

**It is therefore, not surprising that there is a correlation between the number of engineers in a country and its level of development.** Engineers conceptualize, plan, design, build and maintain the platforms -- systems, processes, structures and devices -- upon which development rests. **The newly developed and emerging economies such as South Korea, Malaysia, China, India and Brazil have exploited this to full advantage.** Korea Republic, for example, as a matter of deliberate policy, developed her engineering capability in key cutting edge areas including semiconductor electronics, telecommunications engineering, computer hardware and software engineering, as well as genetic engineering. The results tell what that has meant for a country that essentially had to start from scratch after the Korean War in the 1950s. Now, a world 'knowledge and innovation power', per capita income has risen from US\$67 in 1953 to over US\$30,000 today. It has moved itself from a beggar aid recipient nation to a donor country. The story is the same in Singapore and other Asian Tigers.

**It is also noteworthy that engineers, by their training, make good leaders in the development effort. The newly developed and emerging**

**economies, in addition to embracing science and technology, have deployed technical people, especially, engineers in leadership position. China is most noteworthy for this practice. At one point, 8 of the 9 top Chinese government officials were scientists or engineers with the same sort of ratio found at all levels of the Chinese government.** President Xi Jinping studied Chemical engineering, President Hu Jintao was trained as a hydraulic engineer, Premier Wen Jiabao, is a geo-mechanical engineer, Yu Zhengsheng, the chairman of the Communist Party graduated from Harbin's Military Engineering Institute specializing in the design of Automated Missiles, and the Foreign Affairs Minister, Wang Yi, is a Military and Civil Construction Engineer. Scientists and Engineers are the most admired and respected people in China, and to become a politician you better have a degree in science or engineering, and prove that you have a highly disciplined mind.

The Chinese government has placed emphasis through funding, reform, and societal status on science and technology as a fundamental part of the socio-economic development of the country as well as for national prestige.

**The emphasis on engineers and scientists as leaders was a deliberate policy consciously borrowed from Singapore, Korea, Malaysia and Taiwan.**

Ladies and Gentlemen, **most of our development problems are essentially engineering problems.** We can succeed in our war against poverty, disease, illiteracy and environmental degradation only if we make use of science, technology and engineering. For example, the effective way to eliminate many of the diseases we face in Ghana is not through medicine but rather through engineering. The provision of potable water, the absence of which encourages the spread of all water-borne diseases is an engineering problem. The provision of suitable drainage in communities to eliminate the fertile breeding grounds for mosquitoes that transmit the malaria parasite and prevent destructive flooding is an engineering problem. Needless to say, Dumsor is an engineering problem. A large part of the solution to the problem of food insufficiency lies in mechanization of

agriculture, proper management of watersheds and the application of science and engineering to agro processing. **In this connection, let me express my exasperation that 59 years after the passage of the Gold Coast to Ghana, the hoe and cutlass continue to be the prevalent tools for farming in our dear nation.**

Without a doubt, Engineering is one of the principal weapons we need to fight poverty, disease, illiteracy and environmental degradation.

### **3. RESPONSIBILITY OF GHANAIAN ENGINEERS AND ALLIED PROFESSIONALS**

#### **3.1. Overview**

**If engineering capacity of a nation is one of the most important factors necessary for achieving socio-economic development, then the community of engineers and allied professionals bears a special responsibility.**

To achieve the GhIE's objective of promoting and advancing the science and practice of engineering to the benefit of society, the Institution is collaborating with the relevant statutory bodies, in particular, the Engineering Council -- the government regulatory entity for engineering practice that has recently been inaugurated -- to undertake the following:

- Registration and Regulation
- Maintaining Professional Standards
- Providing Civic Service
- Promoting and Recognizing Excellence

**These inter-related functions provide the framework for the GhIE and other collaborators such as the GEAAA to help move Ghana's socio-economic development forward. I believe that this is where the collaboration between the GhIE and the GEAAA comes to the fore.**

## Registration and Regulation

**We must all work with the various government agencies to ensure that the nation has the requisite engineering resources for its development and that those who practice engineering do so legally and competently.** It also implies mobilizing all Ghanaian engineering resources both within and outside Ghana. The GhIE took a major step toward this goal when it partnered with the Ghana Armed Forces engineers for last year's Annual General Conference. It is hoping to continue the progress with the interaction with the GEAAA.

Fellow Engineers and Allied Professionals, Ladies and Gentlemen, I am sure that in this hall tonight, we have some of the best engineering brains in this world at our time. They represent Ghanaian Individual Excellence. Yet, our dear nation is under the yoke of underdevelopment and our people are suffering in a world where technology reigns high. Until we find a way to transform the collection of Individual Excellence to Group Excellence, this unpleasant situation will persist.

With respect to the young, we must develop programs that will generate interest in engineering at the basic level, especially in high schools. For this to be a reality, students must develop interest in science and mathematics. We need to evangelize and expose these young minds to the prospects of an engineering career. **There must be a special emphasis to attract girls to the profession.**

We must, in addition, ensure that the next generation of our professionals are trained and mentored to keep pace with the growth and complexity of the profession and our infrastructural development. The experienced professionals should help in the development of younger ones and effect knowledge transfer in the course of national development and building of Group Excellence.

**Finally, toward working for Group Excellence, we must undertake to bring into the fold the Ghanaian diaspora and help to organize Ghanaian engineers and allied professionals all over the world.**

### **Maintaining Professional Standards**

**The credibility of the profession rests largely on the integrity of engineers and how well they perform their tasks.**

Poor workmanship, use of cheap and inferior materials, wrong interpretation of building design, inadequate supervision, non adherence to due process in building construction, lack of maintenance culture, abuse of plans and the activity of quacks are some of the reasons for bad reputation of engineers. Recently, there have been a number of negative developments such as building collapses and flooding. These tend to mar the reputation of the profession. We need to partner with all stakeholders to address these. Indeed, we need to deal with the notion sometimes expressed that "there are no bad contractors, just bad engineers." While this may be an unpleasant indictment of the profession we need to understand that we are ultimately responsible since works cannot be accepted without an engineer's signature.

### **Providing Civic Service**

**We must advise the Government and the public on engineering matters; undertake activities, especially of engineering nature, that promote the welfare of society; and undertake other activities that promote the impact of science and technology in the society.**

As part of Engineering Evangelism, we need to actively promote public awareness of the need for engineering and technology in all aspects of national activity and in particular to promote the active use of engineering and technology professionals at the local (District, Municipal, etc.) level. We also need to become a much stronger voice and an active participant in the technological development of the nation and be a conscience of the nation in matters relating to science and technology. On this score, we should

strive to get engineers into the leadership of the country, just as China and the other successful developing countries have done. Perhaps, it is not amiss to set targets for the numbers of engineers in the Cabinet, Parliament, Municipal and District Assemblies. Younger engineers should be encouraged to become part of the political process. **Regardless of political affiliation, engineers will make good leaders!**

### **Promoting and Recognizing Excellence**

**We must undertake activities to facilitate and promote the operation and growth of engineering and engineering practice; recognize and promote outstanding contribution to, and excellence in the practice of engineering; and recognize and promote the civic responsibility activities of engineers and engineering organizations. In particular, we need to focus on bringing increased productivity to agriculture, the mainstay of the economy. Specifically, we must undertake a special initiative to develop the "child(ren)" of the hoe and cutlass in order to increase the productivity of our farmers.**

## **4. SPECIFIC AREAS OF GHIE-GEAAA COLLABORATION**

Fellow Engineers and allied professionals, Ladies and Gentlemen, in addition to the activities described above, there are specific activities that our two organizations can focus on in the near term. These are among the 2016-2017 activities that the GhIE has targeted.

- 1. The development of an Engineering Master Plan** aimed at a blueprint for the development of engineering capacity in Ghana. It will address issues such as the number of engineers and types needed, how they should be deployed, the training of engineers, etc.
- 2. The Infrastructure Score Card** consisting of a baseline for Ghana's infrastructure, periodic assessment of the state of the infrastructure to determine whether or not there has been progress, assessment of the investment required to bring the infrastructure to an acceptable level and a blueprint for Ghana's infrastructure.
- 3. National Engineering Advisory and Review Group:** Set up an expert group of Past Presidents and eminent engineers to review major

engineering projects in the country and provide advice to Government. This group is expected in the development of the *GhIE Engineering Bible* that will capture the GhIE Perspectives and Recommendations on the major engineering areas of interest to the nation.

To improve our execution, the GhIE is engaged in the following initiatives.

1. **Setting up a Government and External Affairs Directorate to focus on our interactions with the various branches of government, with special emphasis on Parliament, and other partners.**
2. **Professional Practice and Ethics:** a campaign to make professional practice and ethics a hallmark and to clean our house. It is to help orient members toward excellence and discipline those who refuse to abide by our Code of Conduct.
3. **Model for use of ICT in the country:** The GhIE has undertaken a concerted effort to become an **e-organization**. It will use ICT to connect with members and give them easy access to information at the Institution. The thrust will also be aimed at creating a strengthened Ghanaian engineering community. Finally, it will empower the Regional Branches and the diaspora to allow them to more effectively and economically participate in the activities of the Institution.

## 5. CONCLUSION

Honorable Guests, Fellow Engineers and Allied Professionals, Ladies and Gentlemen, I would like to conclude by reiterating my belief that Ghana is going nowhere without engineers and allied professionals since many of our development problems are essentially engineering problems. However, we could learn from the newly developed countries and make a deliberate effort to infuse the leadership of the country with engineers who will help to bring clarity and focus to our development problems. **Perhaps, all the political parties should actively be recruiting engineers!**

However, if the nation is to take advantage of engineering and engineers and allied professionals, the engineering community, in conjunction with its allies needs to step up to its responsibility. We can no longer be shy of

expressing professional opinions. Our relevance comes from being a key agent in the national development effort. The Ghanaian people must be assisted to know whether or not we are indeed making progress in the development exercise and whether or not we are getting value for the investments in the supporting engineering projects. By mobilizing all the Ghanaian engineering resources, both at home and abroad, by demonstrating professionalism, integrity and strong ethical behavior, and organizing ourselves to operate efficiently and effectively, we will position ourselves well for the task ahead. A strong collaboration between the GhIE and GEAAA will not only help with the task but also the critical need to transform our Individual Excellence to Ghanaian Group Excellence, an essential ingredient to the development journey.

Thank you and may God Bless you all.