Functional Inspection Industry in Nigeria: An Imperative for Sustainable Development

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Abstract

Nigeria’s quest for sustained and rapid economic growth to become one of the world top twenty economies by 2020 is a worthy venture. Effective deployment of appropriate inspection technology to the existing infrastructure and the upcoming ones are certainly obligatory in ensuring the reliability, safe and economic use of these facilities, as well as, fundamental to achieving the nation’s Vision 20:2020 economic transformation blueprint. This paper considers the roles of inspection industry and challenges that can jeopardize this plan. Furthermore, solutions are proffered in order to achieve the laudable aspiration, in addition to, meeting the demand for social and economic equity.

Keywords: Inspection industry, Vision 20:2020, natural gas, independent power plant (IPP), rail transport, Nigerian content initiative.

1. Introduction

Nigeria strives to become one of the first 20 developed economies in the world by 2020, as envisioned in the “Vision 20:2020” plan. Hence, the need for massive sustainable infrastructural development becomes apparent. As with most developed economies of the world, the route to industrialization was based on large scale development of the energy sector and metal production. Therefore, for Nigeria to join the league of developed economies, she also needs to follow this route.

At present, the population of Nigeria is about 167 million. This huge country currently generates about 4,000 megawatts of electrical power (an improvement from 2,500 megawatts in 2010), and desires to boost this to 40,000 megawatts by 2020. It is estimated that the country would need about $10 billion yearly for about 10 years to properly and efficiently reposition the power sector. This is expected to rouse manufacturing / industrial activities in the national economy.

Apart from the importance of the energy sector to infrastructural development, construction and manufacturing capabilities are also vital. The productive activities of these sectors involve the application of a wide range of inspection techniques for safe, security, safeguard
and reliability of components and engineering systems. This makes inspection a critical enabling technology to industrial development and sustainable economy.

2. **Opportunities**

With proven oil and gas reserves of 32.5 billion barrels and 187 trillion standard cubic feet respectively, numerous investment opportunities abound in the petroleum related ventures in Nigeria. Government is stimulating local and foreign investments in the core upstream and downstream activities, as well as, the supply chain and services. It is estimated that energy sector driven initiatives could contribute up to 60% towards doubling of the nation's Gross Domestic Product (GDP) over the next 10 years. [1]

Comprehensive and integrated Gas Utilization Master Plan / programmes have been embarked upon, in which Independent Power Plants (IPPs) and Liquefied Natural Gas (LNG) developments are being given priority. The expected improvement in domestic power supply from IPPs coupled with increased export earnings from LNG, will strongly support and broaden economic expansion and urbanization, increase the income generating capacity of Nigerians and raise the general wellbeing. It will further underpin Government's efforts towards integrating the Host communities into the mainstream of national development and growth.

2.1 **Gas Sector**

Many gas-based projects are being undertaken in line with Governments aspirations in the sector. They include:

2.1.1 **Domestic Gas Market Expansion**
As a result of various projects established, total gas utilized in the country continues to increase. Furthermore, the hitherto flared gas is being channelled into gas powered projects for rapid utilization and monetization with a view to maximizing value addition to the nation's natural gas resource.

2.1.2 **Independent Power Plants**
Government is encouraging multinational oil companies operating in Nigeria to embark on Independent Power Plants (IPPs), as part of the Power Sector reform. The Reform Act reviewed the generation, transmission and distribution of electricity in the country to improve its performance. The IPPs will not only boost electricity supply but also, provide necessary infrastructural support for economic growth, and also guarantee additional revenue to the participating companies. The IPPs will further strengthen the oil companies' social responsibility in the local economy as well as protect the environment through environmentally sustainable operations and industry best practices.

2.1.3 **Liquefied Natural Gas Projects**
Since production started from trains 1 and 2 in 1999, Nigerian Liquefied Natural Gas (NLNG) has been one of the fastest growing endeavours in the world. Liquefied natural gas (LNG)
output has been increasing over the years and is expected to climax at about 22 metric tons per annum (mtpa). In addition, the Brass LNG with an output of 10mtpa and the Olokola (OK) LNG with an output of 20mtpa, are being developed.

2.1.4 West Africa Gas Pipeline
The Final Investment Decision of the West Africa Gas Pipeline was signed on 16th December 2004. The initial capacity utilization of the pipeline which is 200 million cubic feet per day (mmcf/d) is expected to increase to 460 mmcf/d by 2026. This project which is of strategic importance is expected to foster cooperation and economic development in the sub-region in the spirit of the New Partnership for African Development (NEPAD).

2.1.5 Tran Saharan Gas Pipeline
A Tran Saharan gas pipeline running from Nigeria to Algeria is under consideration. The objective is to make Nigerian piped gas available to Europe.

2.2 Power Sector
A wide range of reforms and initiatives has been undertaken to boost the amount of electricity generated and delivered to consumers. 40,000 megawatts is expected to be generated by 2020. Measures aimed at achieving this target include:

- full capacity recovery of existing power plants
- attract investors to generate power, utilizing in-country human and natural resources (coal, natural gas, hydro and solar)
- stimulate private sector participation in the transmission, distribution and related services

2.3 Transport Sector
The deficiency in the nation’s rail transport system over the years has led to undue pressure on roads and bridges, causing them to fail serially, and unspeakable carnage as a result of motor accidents. The Government has initiated public-private schemes to address this insufficiency. Other measures aimed at boosting mass transit include provision of road and water transport infrastructure and business friendly environment.

2.4 The Nigerian Content Initiative
The “Nigerian Content” vision is to transform the oil and gas industry into the economic engine for job creation and growth. Nigerian content is simply defined as “the quantum of composite value added or created in the Nigerian economy through the utilization of Nigerian human and material resources for the provision of goods and services to the petroleum industry”. Such goods and services must be within acceptable quality, health, safety and
environmental standards in order to stimulate the development of indigenous capabilities. [2]

This measure is aimed to:

- Develop in-country capacity and indigenous capabilities
- Ensure greater proportion of the work is done in Nigeria with active participation of all sectors
- Position Nigeria as hub for service delivery within the West African sub region and beyond
- Take Nigeria on path to industrialization – producer Nation

3. Inspection Industry in Nigeria

Increased activities in industrial and manufacturing towards achieving sustainable economy in Nigeria implies a watershed in the inspection and technical diagnostic practice across the productive sectors. Safety, reliability and availability of components, engineering systems, plant and infrastructure depends on effective and efficient deployment and management of appropriate inspection technique. From ‘cradle to grave’, non-destructive testing plays crucial roles in industrial components, systems and plants.

The continuous growth and sustenance of the inspection industry, which is pivotal to industrial and economic development, depends heavily on the availability of adequate manpower, both skilled and semi-skilled. However, shortage of skilled work force and inability of inspection industry to attract young talents are emerging as the foremost challenge which needs to be addressed expeditiously.

Other challenges and issues that are currently militating against viable deployment of inspection technology in the Nigerian quality management system include the lack of the following:

- Vibrant manufacturing facilities
- Technical personnel with necessary skills
- Technology transfer mechanisms
- Relationship between research, development and commercial activities
- Acceptance and integration into national quality management system
- Clear national policies and regulations
- Alliances and collaboration with global inspection community

4. Conclusion

Nigeria, at present, needs a vivacious industry that is anchored on sound, home-grown, human and technological initiatives, which can spur the revitalization of the energy industry in particular (by increasing the Gross Domestic Product (GDP) contribution of the energy sector) and the national economy at large. A real local content driven manufacturing and industrial development are pivotal to the long-awaited era of productivity and prosperity. This need is more pressing today as we witness the demand by citizens and the international
community for social and economic equity, and more tangible benefits from the nation’s abundant natural and human resources. [3]

Non-destructive testing and technical diagnostics play crucial roles in ensuring the safety and reliability of engineering components and infrastructures, both through inspection during production / construction and in-service. It is important that global knowledge of the inspection of the existing facilities is effectively deployed to the new ones. Such knowledge and experience include:
   i) Importance of design for inspectability
   ii) Inspection qualification (performance demonstration)
   iii) Reliability of methods / techniques
   iv) Inspector sourcing, engagement and retention
   v) Inspection personnel skills, training and certification.

The economic development of any nation depends considerably on the level of its industrial development which in turn invariably depends on the technological advancement and the level of production of goods and services in the national economy. Thus technological advancement and economic development are two sides of the same coin. This presents a viable opportunity for sustainable inspection enterprise. For instance, the changes in natural resources utilization, power generation and rail transport policies will continue to stimulate new and important research, development and applications in NDT and technical diagnostics. Furthermore, global co-operation (scientific, technical and business) is essential to meet the energy supply, safety, environmental and anti-terrorist challenges of the 21st century.

References