**TERM PAPER ON: OPERATION, MAINTANANCE, AND MANAGEMENT OF ENGINEERING EQUIPMENT FOR SUSTEINABLE DEVELOPMENT IN NGERIA**

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**CIVIL ENGINEERING**



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**ABSTRACT**

Sustainability can be defined as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability drives business and innovation as well as operational efficiencies, lower energy use and less waste. To ensure that this takes place it is ensured that engineering equipments are appropriately cared for, maintained and managed appropriately.

Using analytical approaches, in Nigeria the main challenges affecting sustainable development is based on three assumptions : (economic, social, and natural) which maybe non –substitutable.

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# CHAPTER ONE

## introduction

Operation: is the process of carrying out an activity on a machine.

Maintenance: is any process used to keep any equipment in good working condition. Which includes functional checks, servicing, repairing or replacing of necessary devices, equipment, machinery, building infrastructure, and supporting utilities in industrial, business, governmental, and residential installations. Maintenance is done with the sole purpose of controlling failure .

Management: is the process of setting the strategy of an organization and coordinating the efforts of an equipment to accomplish its objectives through the application of available resources, such as financial, natural, technological, and human resources.

## Literature review

According to Edward (1987) who used a Venn diagram to show that sustainable development has many versions such as economic, environmental and social sustainability. Although this particular discovery was criticized by other people with various thoughts, it can still be discovered that sustainable development revolves around this three versions.

Sustainable development is tripartite in nature. For sustain able development to occur it must reflect on the environmental, social and economic aspect of a countries life. All of which revolves round the engineering aspect of that particular country.

Engineering equipment: can be defined as any equipment that aids in speeding up the process of any operation.

The theoretical capacity of a manufacturing processes or machine is the output per unit of time of continuous operation at the maximum safe operation speed. In any real manufacturing environment some output is inevitably lost because of factors like shift changes, materials defects, maintenance, product changeovers, and operational inefficiencies. Most process engineers employ a deterministic safety factor approach that reflects a reasonable level of unavoidable loss of output. They design processes for a theoretical or running capacity, which is calculated on the basis of a systems estimated efficiency.

In actual day to day productions, manufacturing engineers generally monitor two basic measures of equipment or processes performance, scheduled and actual. Scheduled output is the out expected from an operation for a given allocation of time, material, and labor; it is usually based on a published output rate. Actual performance reflects on true performance of an operation including scrap and both scheduled and unscheduled time

# CHAPTER TWO

Nigeria is a country blessed with an abundance of natural resources of which more than half of its citizen depends on agriculture to generate their livelihood. Most of which do not know the right way to go about it.

### Challenges of sustainable development in Nigeria

* Poverty
* Rapid population growth
* Rapid urbanization/urban development
* Rate of economic growth

All of the following which have been mentioned above give need to quick intervention of engineering equipments. For example since Nigeria is blessed with natural resources knowing how to harness those available resources is important by knowing how to operate available engineering machines managing them appropriately and maintaining them from time to time to ensure smooth running of the equipments.

Nigeria’s government is currently under increasing threat from natural and human induced disasters such as drought, floods and erosion. Population increases Is exerting pressure on the environment. Rapid deforestation, resulting from unsustainable uses of forest resources for human survival (e.g fuel wood and energy, housing etc.) is a major contributing factor to land degradation. Also, indiscriminate and inappropriate mining activities in many parts of Nigeria have left some areas of the country bear and unproductive. There is also concern about air and water pollution, liquid and solid wastes associated with continued urbanization and industrialization in the country.

### Addressing sustainable development issues

Like any developing nation, Nigeria faces some challenges in its development stride and efforts to improve the quality of life of its citizens. The critical economic issues concern the need to foster sustainable rapid economic growth that will cater for needs of its large population and the imperative for proper integration of its domestic economy into the world economy in the face of increasing globalization. The government also recognizes that advancing democratic governance is key to the political stability of the country. Overcoming the challenges of poverty, fighting corruption, meeting the basic needs of the people, inadequate and inefficient infrastructure and development of human resources and capital for sustainable growth and equality are critical social challengers that government is determined to address. The government also recognizes the need to maintain the sustainability of the country’s environmental resources for benefit of present and future generations.

For Nigeria to address this issues effectively, Nigeria should focus its effort on;

* Creating consistent demand for good governance.
* Promoting massive investment in people to tap unto the latest potential offered by globalization and new information technology.
* Be ready to make provisions to enable people acquire knowledge on engineering equipments.
* Those who have the knowledge should be readily provided with equipment to enable them put their knowledge into good use.
* Advanced engineering materials that offer the prospect of better life cycle performance and other gains.
* Rapid product realization techniques to speed delivery to the marketplace.
* Building workforce with the multidisciplinary skills needed for competitiveness.

Intelligent manufacturing control for improved reliability and greater precision.

# CHAPTER THREE

## Conclusion

To improve in the social standing of Nigeria, have an appropriate sustainable development , it is necessary to improve in the available engineering equipment. Take proper precautions to maintain and manage them to enable smooth running operations, maximize production for the increasing population leading to an increase in the nations economy and hence good living.

### Maintenance tips to extend equipment life span

* stay on top of large machinery operator training.
* Add and test lubricants frequently.
* Constantly check for signs and wear.
* Keep large machinery clean and maintain a clean environment.
* Have a maintenance and repair schedule and keep good records.

Lack of maintenance in a country’s operating machine will ultimately lead to risks as a result leads to unexpected failures and leading to lack of safety of work-force.

Recommendations :

This sound and accessible analysis will be useful to manufacturing engineers and researchers, business executives, and economic policy analysts.

#### References :

#### Google

#### Wikipidia

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