

## **Energy and Sustainable development in developing countries**

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**Abstract:** *Energy is a fundamental input to the development and progress of a nation since it is require drive engines, to generate electricity and automobiles to cook foods etc. The harnessing and exploiting of these energies has adversely affected our environment such environmental degradation, pollution and destruction of ecosystem. These problems are different from country to country. The destruction in this ecosystem can be caused by spillage of oil, application of chemicals, and potential loss of productivity in agriculture, fishing, forestry and acid precipitation. These problems need urgent and adequate attention that must be addressed by every Government and individual. The trend of energy use in the developing countries was classified into future trend and past trend and Prospects of changes in energy supply were discussed in this revive paper. Also agenda for sustainable development were also discussed such as embracing alternative sources of energy, reduction in population growth and control and reduction in carbon and other poisonous gaseous emission etc.*

**Keywords:** *energy, sustainable, prospects ,emission and ecosystem*

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### **I. Introduction**

Energy is the fundamental input to development and progress in any organization, society and nation (Oyedepo, 2012). Every sector of the economy needs energy input in one way or the other. But the use of energy and the production creates a lot of environmental problems and degradation in ecosystem. Individual, States, countries and the world generally are facing many environmental problems that have caused a lot of havoc to them because of generating and supply of energy and harnessing of natural resources. Some of these are areas, zonal and regional problems and impacts, the prospect of world climate and the sea level change related with nuclear proliferation or supply of oil. The State, individual and also country should take steps and measures that will reduce environmental hazards and damage. In addition large international cooperation is necessary to ensure that the universal home is habitable and livable for the present generation and generations yet unborn. There are many things you can do to reduce your impact on the environment. If we all use energy, transport and other goods and services more carefully, we can reduce harmful emissions to our air, land and water. Everyday choices have the power to make a difference, and help protect our environment for a clean and sustainable future NPI date accessed [18/06/18].

### **II. Energy Problems**

There are many related problems associated with the supply and the use of energy. These kinds of problems and their effects are differed from country to country or region to region. The problems the developing countries are facing are different from those that developed countries are facing.

### **III. Development and energy use**

We must know and release the environmental impacts and other problems related with the use of energy. But in some countries that are just developing more serious problem is to discover the resource to supply enough energy to the timing, growing and the large population. Developing countries must be conscious and very careful of degradation of the environment and other environmental issues, factors and climate change but a matter of greater priority in some of these counties is to provide energy for economic and sustainable development. Development of energy resources demand large sum of finances and capital. Importations of oils have contributed heavily to the foreign debt and consumed many major foreign exchange earns .Many oils exporting countries such as Nigeria and Mexico, a large increase in local oil demand tends to limit export oil earnings and potentials. The ongoing investment in energy and power sectors in some of these developing countries is less than 50% of the requirement. The payments for imports in hard and foreign currencies is a

problem in some of these developed countries and also low performance of power utilities companies raises the national indebtedness (Gupta, 2008).

#### **IV. Environmental problems**

Uses of energy, harnessing and production and dispatch of energy has caused a lot of environmental problems. Some of these problems are oil spillage and release of radioactive emissions from a nuclear generating plant which may even come across regional and national boundaries. Effects and impacts on safety, public health and risks called for a quick attention all over the world. These effects and impacts arise from production of energy, coal mining, waste disposal, electricity generation and transportation/transferring of raw energy and materials. All these effects can be reduced but will cost a lot of resources. The damage of ecosystem is caused by the damage of environmental problem. The destruction in this ecosystem can be caused by spillage of oil, application of chemicals, and potential loss of productivity in agriculture, fishing, forestry and acid precipitation. This damage to ecosystem is of greater concern. It is characterized as any change or aggravation to nature's turf seen to be pernicious or undesirable (Conserve Energy Future, Accessed on 18/06/18).

This damage to ecosystem is of greater concern to human being and the inhabitant of ecosystem and other non-human forms of life due to the fact that non-human forms support welfare of human beings.

##### **4.1. Greenhouses problems**

Greenhouses are special rooms that are made of glass that are used for cultivation of vegetables in some areas that receive low sunlight. These glasses are transparent for short wave radiations. The heat energy that will enter the house will be trapped. This energy that trapped inside helps plants' growth. Warming of earth surface and atmosphere is caused by greenhouse effect. Carbon dioxide (CO<sub>2</sub>) and water vapor are contributing to warming of the earth. The surrounding atmosphere and the earth behave as a greenhouse. Some gasses such as R-11 and R-12 that are employing in refrigeration and air conditioning affect the environment. Ozone normally protects earth from the harmful ultraviolet rays of sun, but CFC which is used in refrigeration and air conditioning damage ozone layer.

Everybody known that CO<sub>2</sub> and some other gases that are releasing into the air can result in global climate change and also change of sea level in the future. Some regions or areas may experience a lot of rain and other regions face drought and while some will face storms if the emission rate continues will urgent and due attention. The uses of energy contribute much to greenhouse effect. The CO<sub>2</sub> from power plant and other heavy machines is the main cause of this problem. Other gases that contribute to this problem are natural gas leakage; nitrous oxide and methane also have their own share in contributing to greenhouse effect though in a smaller rate. No Country in the world is exempted from this effect.

##### **4.2. Threats to international Relations**

The use of energy and supply constituted some threats to international relations. One good example of this is conflict over the control of crude oil resource. Also, the international communities' relations need to close relationship between nuclear arms and nuclear power. If a country has a large nuclear power program, it is easier for her to acquire nuclear weapons.

##### **5. Energy Use trends in developing countries**

The trend of energy use in the developing countries is classified into future trends and past trends and this is explained below:

(a).Past trends: Many manufacturing industries are energy intensive and passengers travelling consume a few percentage of total energy in developing countries. This contributes largely to the heavy demand of petroleum products and the rapid rise in population and also large dependence on motor car and vehicles for transport has caused large consumption in energy. The residential also consumes some few percentage or proportion of the energy such as cooking and lighting.

(b).Future trends

As the population is increasing the energy consumption will increase also in the future because of increase in per capital energy consumption and demand. Also the economics in these developing countries will be influenced by industrial economics.

Activity of manufacturing sector is of increase in some of these developing countries. Passengers travel also will experience use of energy in coming years. Urbanization will also cause more energy to be used and consumed. The residential sector will also demand for more energy consumption due to increase in population, development and also extension of electricity in rural areas.

##### **(6).Prospects of changes in energy supply**

(A).**Increasing roles of Gas:** Gas has been employed by many people especially for cooking of foods; this is also employed in generation of electricity in power generation and in other applications.

(b).**Displacing oil:** Because of high energy density that oil has and it is also easy to transport. These characteristics have encouraged its use for automobile engines. This will make it difficult to displace oils. If we can substitute oil, the greenhouse effect will reduce. Electric vehicles may soon displace oil as we are campaigning towards renewable energy and green revolution.

**(c).Improvement of efficiency in energy supply:**

Losses of energy are taking place as raw materials are converted into usable forms and finishing products that can be brought into consumers. A lot of losses occur in electricity generation, transmission and distribution but the loss is not so high in refilling of crude oil. Some thermal plants in some of these developing countries operate at low and at a poor efficiency in energy supply. The best way for saving energy supply lies in reduction of transmission and distribution losses. Power factor can be improved through the application of shunt capacitors to reduce these losses.

**(d)Unpredictable role of nuclear energy:**

There have been sharp divisions over the use of nuclear energy among international communities. The supporters of nuclear energy called it clean, cost effective and safe and those that opposed it called it uneconomic and dangerous elements because of many havocs and disasters it has caused on several occasions. Safety, public confidence and economics will remain controversial as regards the use of nuclear energy. Most countries have suggested that nuclear energy is a suitable and technical solution to energy problems but due to fear of disasters and havocs that surrounds its uses so many have lost confidence to the development of nuclear energy. The disposal of its waste is a big problem and threat to the environment. The proliferation of nuclear is also a great concern. The greenhouse effect would have made nuclear energy acceptable but the disaster and accident surrounds its uses has not favored its adoption.

**(e).Displacement and cleaning coal:**

Many countries are no longer use coal industrially but coal will continue to be a favorite fuel in generation of electricity because of low price of coal and this will result in low cost of electricity generation. The difficulty in developing of hydro sources and sophisticated technology involved in generating power through nuclear favors coal but it is a worst fuel considering the environment due to harmful emission from it during burning. The mining of coal also constitutes occupational and ecological hazards. Efforts must be made to develop technologies that can reduce emissions in air though is available technology for removal of CO<sub>2</sub> but it is very costly, if this technology can be made available and cheap CO<sub>2</sub> emissions would be reduced.

**7. Renewable / alternative energy source:**

The renewable energy sources such as sun, wind, biomass etc are clean sources of energy for all people always. The alternative form or renewable sources of energy will form the foundation of energy supplies in the future. Today energy many have adopted the use of wind energy and photovoltaic in generating of electricity.

**Agenda for sustainable development:**

The People and government of every nation and the communities of the world need to take the following steps in order to ensure sustainable development so that the generations yet unborn will not be endangered by this energy problem:

- a. Investment in researches and developments: More researches should be embarked on alternative energy sources and government need to invest in renewable energy sources because it is friendly.
- b. Checking population growth: The growth of population in developing countries needs to be checked and regulated because population affects every aspect of energy use. If the population is not checked and controlled, the efforts toward reducing the use of energy may not yield positive result.
- c. Remove barriers to efficient energy use: Energy labeling of new equipment and energy audit may help energy users to evaluate and assess life cycle costs. The manufacturing industries should accelerate researches efforts to bring out more equipment that are efficient.
- d. Adoption of different strategies to conserve energy: Proper land use planning reduces the use of individual passenger vehicles. The industrialized nations are feeling the effect and burden of individual passenger vehicles on the society and there is a need to learn from the experience of the developed countries. Therefore, a change in life style and behavior of passengers are necessary.
- e. Adjust energy prices to reflect full costs of energy use: The energy prices should reflect the total cost of energy use and supply. The damage done to the environment due to energy supply and energy use included in the costs of energy.
- f. Reduction in carbon energy: Adoption of natural gas would reduce carbon emissions. Each country must exploit and use its natural gas resources with high priority.

## **V. Conclusion**

Energy is vital the development of a nation and to sustain the development it a collective responsibility of both the Government and the entire citizens because the harnessing and exploitation of energy has caused different havocs on both living things and non living things and the environment generally. Many problems associated with supply and the uses of energy were discussed. The past trends and future trend of energy used in the developing countries such as the population is increasing the use of energy is also increasing and this in turn affect the ecosystem. The prospects of changes in energy supply were considered such as increasing roles of gas in cooking foods and in generation of electricity, displacing oil as in replacing of fuel vehicles with electric vehicles and embracing of renewable sources of energy for power generation such biomass, solar, wind etc. Lastly, agenda for sustainable development were also discussed such as investment in researches and developments, checking population growth, remove barriers to efficient use of energy, adoption of strategies to conserve energy and reduction in carbon emissions.

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