

**Committee:** United Nations Environment Programme

**Topic:** Mobilizing financial resources for developing countries' sustainable energy production in order to meet future global energy demands and reduce reliance on fossil fuels

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## Introduction

Fossil fuel now serves as the most dominant role in the world's energy system. It is not too much to say that fossil fuel was the fundamental impetus of the industrial revolution which also led to the development of technology, society, and economy. However, fossil fuel has serious demerits, such as the emission of greenhouse gas which increases global warming. According to research from Germany, Canada, the United States, and the United Kingdom, various pollutants such as coal or petroleum could potentially kill 4.5 million people per year. Thus, the world needs to focus on reducing fossil fuel reliance and balancing to the low carbon energy sources.

Not only fossil fuels, the development of sustainable energy sources especially for developing countries, is becoming extremely important. In countries with low energy access, the priority will be the accessibility of reliable energy. Grid, mini-grid, and off-grid solutions can all be pursued for electricity. Off-grid solutions could be the fastest way to provide cost-efficiency energy services in rural areas.

Supporting universal access to reliable fashionable energy is becoming a priority. The economic process, which is crucial for financial condition reduction, is potential. Lack of energy limits chance, job creation, business development, and access to health and education.

## Definition of Key Terms

### **Fossil fuel**

Fossil fuels are the energy sources made from decomposing plants and animals which could be utilized for energy. Coal, petroleum, natural gas, oil shales are the examples. The problem of using this energy is that it is non-renewable energy which means it will be exhausted in the near future. Therefore, the world needs to search for other renewable energy sources. Also, when fossil fuels are burnt, it emits CO<sub>2</sub> (carbon dioxide) and other greenhouse gases that cause serious global environmental problems such as climate change or global warming.

### **Renewable energy**

Renewable energy, also called “clean energy”, is the energy that comes from natural resources that are constantly replaced. Common technologies could be solar power, wind power, hydropower. Energy harnessing technology could be geothermal energy, bioenergy, ocean energy. Grid strengthening technologies could be battery storage, smart technology. The importance of renewable energy comes from its reliable and clean energy sources. To be specific, renewable energy provides fuel diversification that facilitates energy security and reduces the necessity of imported fuels.

### **Energy Demand**

Energy demand is a term describing the consumption of energy by human action. It drives the total energy system, influencing the whole amount of energy used and also the characteristics of the top use technologies that consume energy. Energy demand depends on numerous socioeconomic factors such as population, urbanization, industrialization, net capital income, development of technologies, and more.

### **Off grid**

Off grid is a characteristic of buildings and a lifestyle designed in an independent manner without reliance on one or more public utilities. The term "off-the-grid" traditionally refers to not being connected to the electrical grid, but can also include other utilities like water, gas, and sewer systems, and can scale from residential homes to small communities. Off-the-grid living allows for buildings and people to be self-sufficient, which is advantageous in isolated locations where normal utilities cannot reach and is attractive to those who want

to reduce environmental impact and cost of living. Generally, an off-grid building must be able to supply energy and potable water for itself, as well as manage food, waste and wastewater.

### **Industrial revolution**

Industrial Revolution, in modern history, the process of change from an agrarian and handicraft economy to one dominated by industry and machine manufacturing. This process began in Britain in the 18th century and from there spread to other parts of the world. Although

### **Energy access**

The household having reliable and affordable access to both clean cooking facilities and to electricity, which is enough to supply a basic bundle of energy services initially, and then an increasing level of electricity over time to reach the regional average.

### **Greenhouse gas**

The gas that has the property of absorbing infrared radiation (net heat energy) emitted from Earth's surface and reradiating it back to Earth's surface, thus contributing to the greenhouse effect. Carbon dioxide, methane, and water vapor are the most important greenhouse gases. Greenhouse gases have a profound effect on the energy budget of the Earth system despite making up only a fraction of all atmospheric gases.

### **Global warming**

Global warming is the long-term heating of Earth's climate system due to human activities, primarily fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere.

### **Climate change**

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed effects that are synonymous with the term.

### **Solar power**

Solar power is the conversion of energy from sunlight into electricity, either directly using photovoltaics (PV), indirectly using concentrated solar power, or a combination. Concentrated solar power systems use lenses or mirrors and solar tracking systems to focus a large area of sunlight into a small beam.

### **Wind power**

Wind power or wind energy describes the process by which the wind is used to generate mechanical power or electricity. Wind turbines convert the kinetic energy in the wind into mechanical power. This mechanical power can be used for specific tasks (such as grinding grain or pumping water), or can be converted into electricity by a generator.

### **Hydropower**

Hydropower is power derived from the energy of falling or fast-running water, which may be harnessed for useful purposes. Since ancient times, hydropower from many kinds of watermills has been used as a renewable energy source for irrigation and the operation of various mechanical devices, such as gristmills, sawmills, textile mills, trip hammers, dock cranes, domestic lifts, and ore mills.

### **Geothermal energy**

Geothermal energy is the thermal energy generated and stored in the Earth. Thermal energy is the energy that determines the temperature of matter. The geothermal energy of the Earth's crust originates from the original formation of the planet and from radioactive decay of materials

### **Bioenergy**

Bioenergy is renewable energy made available from materials derived from biological sources. Biomass is any organic material which has stored sunlight in the form of chemical energy. As a fuel it may include wood, wood waste, straw, and other crop residues<sup>[1]</sup>, manure, sugarcane, and many other by-products from a variety of agricultural processes.

### **Ocean energy**

The energy carried by ocean waves, tides, salinity, and ocean temperature differences. The movement of water in the world's oceans creates a vast store of kinetic

energy, or energy in motion. Some of this energy can be harnessed to generate electricity to power homes, transport and industries.

### **Energy security**

Energy security is the uninterrupted availability of energy sources at an affordable price. Energy security has many aspects: long-term energy security mainly deals with timely investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance.

## **Background Information**

Among OECD countries, annual energy use is somewhat constant, but about 5% of the world is driven by economic development. However, the energy use is mostly only 30 percent in countries apart from the OECD 30 times larger than within the use than in Bangladesh, with 1.3 billion people without access to electricity, and about 3 billion people are estimated to cook and warm their homes using fire and straight-line stoves. Access to modern energy services is critical in consideration of reducing poverty and improving the lives of the world's poorest countries. Africa lags behind all other regions in modern energy access and consumption, and African citizens rely heavily on traditional biomass like firewood, charcoal and excrement. Geographic regions (except South Africa) have the bottom access to electric furnaces within the world. Nearly 70 percent of the population, or nearly 500 million people, don't have access to electricity. Sub-Saharan Africa has the world's highest "energy gap" and potential renewable energy supply, but the foremost renewable energy options have still not been explored.

In addition, there's an enormous national imbalance between urban and rural people. In most countries, the energy infrastructure is under-maintenance and operates below optimal levels.

More African countries are turning to traditional biomass energy than anywhere else. Many countries rely heavily on such fuels for plenty of energy use, and a few countries are a great deal obsessive about them. Ethiopia and Burundi rely mostly on traditional fuels. The high use of traditional fuel causes major health problems. Deforestation is another serious

effect of cooking with the use of tree fires. Ethiopia, for instance, has cut everything except 3 percent of its primary forest.

Many development experts and multilateral development banks are using African countries' low-level modern energy consumption to streamline investment in large centralized energy development. For example, fuel power plants are connected to cities and industrial centers that have large hydroelectric power plants and high-voltage transmission lines. There's an unbelievable need for the expansion of recent energy services, but African countries cannot ignore the intense shortcomings of this approach, including long-lasting social and environmental damage, climate risks, and heavy debt burdens.

The key tasks in African countries aren't simply to extend energy consumption. However, their goal is to make clean energy services and a firm approach to sustainable consumption in order that future generations don't acquire poorly planned energy development. The more equitable balance between future energy-assisted total energy access and decentralized energy investment and centralized energy investment is most important because it reduces poverty. Many argue that African countries should make an immediate development from traditional to sustainable energy options. It could be done by avoiding its dependence on the case of an unsustainable sort of energy that characterizes this development path of the northern country. Providing the energy needed, supporting development at an appropriate cost, ensuring efficient use while protecting the local environment are going to be an excellent challenge. It would be more challenging for the countries striving to serve the general public interest of the planet, which restricts the utilization of fossil fuels. Various technical approaches and economic regulatory measures are needed in many countries.

## Possible Solution

By increasing energy efficiency, a discount of energy consumption is often achieved. This can be done by better designing equipment, engines and particularly buildings, during which the energy represents one among the key consumption shares. Reducing energy consumption in lighting and in heating and air conditioning systems, using more sustainable materials, harvesting locally water and energy for self-consumption, etc., are possible ways

of increasing energy efficiency, towards near zero energy buildings (NZEB) or maybe zero energy buildings (ZEB). Also, it's important to higher plan cities and also the mobility inside them, so as to cut back individual use of vehicles, thus reducing not only the associated GGE( gasoline gallon equivalent) but also the share of energy use for transportation. Production of products must be equated differently, with a discount of the space from the place of production to the place of use, which will contribute to cut back the energy for transportation, and more efficient systems of production. This reduction of energy consumption also will be translated into lower energy incorporation within the goods, that is, lower energy intensity. Better waste management systems, with resource and energy recovery also are mandatory, so as to extend energy efficiency and to scale back energy intensity..

International relief targeted at poverty reduction could even be redirected towards subsidizing renewable energy projects. thanks to the integral role that electrification plays in supporting economic and social development, funding of rural electrification may be seen because of the core method for addressing poverty. Radios, televisions, telephones, computer networks, and computers all depend on access to electricity. Because information services leave the proliferation of education resources, funding the electrical backbone to such systems contains a derivative effect on their development. During this way, access to communications and education plays a serious role in reducing poverty. Additionally, international efforts that offer equipment and services instead of money, are more proof against resource misappropriation issues that pose a problem.

## Timeline of Events

Date	Description of event
1938	Gas Act: First Direct Federal Regulation of fuel Industry. In 1938, the centralized became involved directly within the regulation of interstate fuel with the passage of the Gas Act (NGA). This act constitutes the primary real involvement of the federal within the rates charged by interstate gas transmission companies.

<p><b>1960</b></p>	<p>Formation of the Organization of Petroleum Exporting Countries (OPEC) in Baghdad, Iraq 'The Organization of the Petroleum Exporting Countries' (OPEC) could even be a permanent, intergovernmental Organization, created at the Baghdad Conference on September 10~14, 1960, by Iran, Iraq, Kuwait, country and Venezuela</p>
<p><b>1977</b></p>	<p>Formation of the solar power Research Institute In 1977 the US Department of Energy launched the selection energy Research Institute [Golden, Colorado], the primary federal facility dedicated to harnessing power from the sun. In 1991 it was designated as a national laboratory by the US Department of Energy and renamed the National Renewable Energy Laboratory.</p>
<p><b>2009</b></p>	<p>American Recovery and Reinvestment Act of 2009 Contains Billions of Dollars for Renewable Energy and Energy Efficiency Developments. It includes billions in energy investments, including grants and loan guarantees for renewable energy development, fuel development, energy efficiency programs, energy storage technology, and electric grid modernization.</p>
<p><b>2009</b></p>	<p>The US Invests \$3.4 Billion to Modernize Energy Grid. President Obama funded a broad range of technologies that might spur the nation's transition to a better, stronger, more efficient, and reliable electric system. The tip result will promote energy-saving choices for consumers, increase efficiency, and foster the expansion of renewable energy sources like wind and solar.</p>
<p><b>2020</b></p>	<p>Oil and Electricity Demand drops during COVID-19. The IEA expects Apr. 2020 oil demand to be at lows not seen since 1995. Meanwhile, although reliable electricity has become important as people are confined to reception, whether working, online shopping, or bingeing TV shows, overall electricity use has dropped around 15% as factories and other businesses close for stay-at-home orders.</p>



## Major parties involved

### Pakistan

There are some efforts to put in and expand the employment of alternative energy in Pakistan. The typical amount of daily sunlight in Pakistan is eight and a half hours. There are some cloudy days even within the wettest regions. Eight power generation plants are installed and eleven are in various stages of completion. Further feasibility studies are undergoing. In December 1981, the primary solar photovoltaic system was commissioned, located in Manila (a village 60 km from Islamabad). A practical example of the employment of solar power may be seen in some rural villages of Pakistan where houses are given solar panels that run electric fans and energy-saving bulbs.

### India

Ensuring Indian citizens have access to electricity and clean cooking has been at the top of the country's political agenda. Around 750 million people in India gained access to electricity between 2000 and 2019, reflecting strong and effective policy implementation. The IEA highly commends the Government of India for this outstanding result and supports its efforts to shift the focus towards reaching isolated areas and ensuring round-the-clock reliability of electricity supply.

The government of India has also made significant progress in reducing the use of traditional biomass in cooking, the chief cause of indoor air pollution that particularly affects women and children. The government has encouraged clean cooking with liquefied petroleum gas. India continues to promote cleaner cooking and off-grid electrification solutions

### China

China has started a process of adding energy sources other than oil and gas to its energy production capacity. Despite the fact that coal still accounts for the vast majority of electricity generation, renewable energy will play a central role for China in this effort, allowing for a transition towards less carbon-intensive growth. According to the World Energy Outlook 2010, the International Energy Agency estimates that between 2008 and 2035, the share of

coal in China's electricity generation will drop from 79 % to 55 % with a respective increase of the share of renewables.

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