

UNDERSTANDING CLIMATE CHANGE, DECARBONIZATION, RENEWABLES ENERGY TERMS AND CONCEPTS

Climate Change



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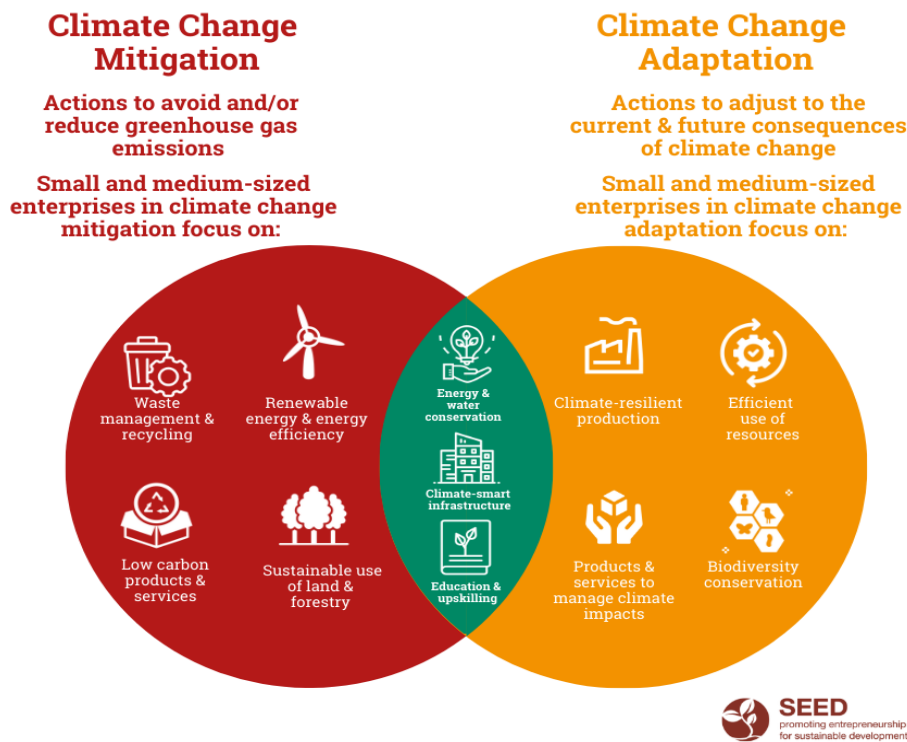
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Climate Change is a long-term shift in average weather patterns across the globe that results in some dire consequences to the environment and human population. It is characterized by changes in temperature, precipitation, humidity, wind patterns, and other indicators. These changes can be caused by natural factors, such as volcanic eruptions, changes in the Earth's orbit, or other natural events, flooding, air pollution, desertification and many other. However, most climate change today is due to human activities, such as burning fossil fuels, deforestation, and agricultural activities and other high

emission human activities. The effects of climate change include more extreme weather events, rising sea levels, and the disruption of ecosystems. This has affected the human life, global economic activities and many others. Climate change and the effects has emerged as one of the greatest threats to human existence and her activities. In Nigeria like other countries, Climate change which are already manifested in false start of the raining season, increasing frequency of dry season spell during the growing season, rising temperature and other extreme events.

Nigeria reaction through mitigation and adaptation will go a long way towards reducing the impact of climate change in livelihood and other important parts of SDG.

Climate Mitigation and Adaptation



Climate Mitigation and Adaptation are two strategies used to address climate change. Climate mitigation involves reducing emissions of greenhouse gases and other pollutants, and increasing the capacity of ecosystems to absorb those emissions. Climate adaptation involves taking steps to adapt to the

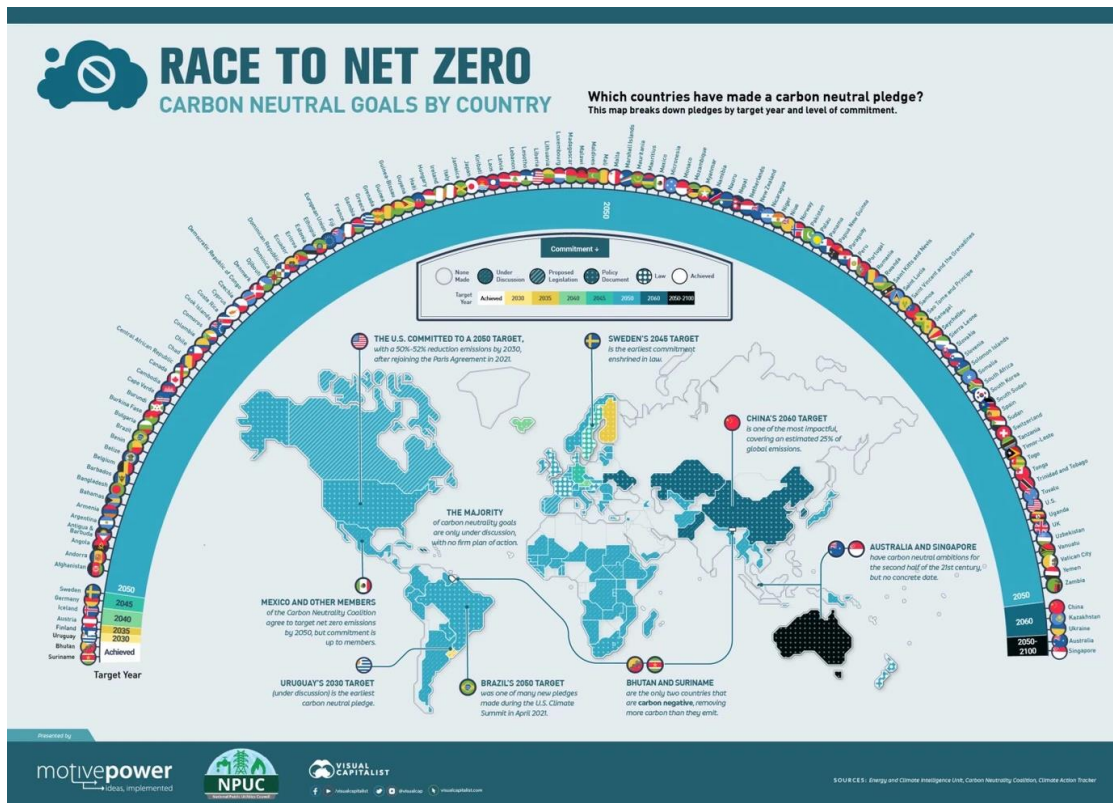
effects of climate change, such as sea level rise, changes in precipitation, and more extreme weather events. Examples of climate adaptation include developing early-warning systems for disasters, building infrastructure to withstand extreme weather, and developing plans for managing water resources.

Climate mitigation is the process of reducing emissions of greenhouse gases and other pollutants, and increasing the capacity of ecosystems to absorb those emissions. This is done by reducing the use of fossil fuels (Coal, Oil and Gas) and increasing the use of renewable energy sources, such as solar, wind, and geothermal, hydro and others . Other strategies include reforestation, improving energy efficiency, and reducing the emissions associated with agriculture and transportation.

CLIMATE ADAPTATION.

Climate adaptation is the process of taking steps to adapt to the effects of climate change. As one has no control over climate change one needs to adjust to fit in. Adaptation is with the aim of reducing the effects to the environment and exploring new opportunities to make things better. This includes developing early-warning systems for disasters, building infrastructure to withstand extreme weather, and developing plans for managing water resources. Adaptation also includes improving agricultural practices to reduce emissions and increase yields, and developing policies to help communities and businesses become more resilient to climate change.

Decarbonization



Decarbonization is the process of reducing the amount of carbon in the atmosphere. This is usually done by decreasing the amount of carbon emitted from human activities, such as burning fossil fuels and deforestation and many other human activities and production that produces harmful gas to the environment. Decarbonization also includes increasing the capacity of ecosystems to absorb carbon, such as through reforestation and improving soil health and deliberate introduction of activities that reduces carbon. Decarbonization is an essential part of climate change mitigation and adaptation process. This can be applied in all human activities especially those once with him carbon emission like fossil fuel reduction, manufacturing and other sectors of the human economic activity and production.

Decarbonization in the energy sector

A NEW DECADE IN RENEWABLE ENERGY

The energy sector is set for its most exciting period yet. What can we expect?

Renewables in the 2020s

- Demand for fossil fuels will stall after **200** consecutive years of growth
- Energy production from solar and wind will rise at a rate of **15-20%** per year for the foreseeable future
- Renewables will become **cheaper than fossil fuels** in every major region of the world

Energy storage and power

- The planet's renewable power capacity will grow by **50%** between **2019** and **2024**
- Decarbonisation goals will lead to greater opportunities
- Amazon has now pledged to be carbon neutral by **2040**

The Financial Aspect

- A new era of competition will **emerge around renewables**
- Weighted solar project costs have dropped by **37%** in the last seven years
- In the year 2020, the EU plans to hit its target of **20%** of renewable energy consumption — an increase of **2.5%** over the year before

What about future fuels?

- Tokyo **2020** Olympic Village to be powered entirely by hydrogen
- The World Energy Council estimates global demand for carbon-neutral synthetic fuels of **10,000-20,000** terawatt hours by 2050
- Fossil fuels produce **less electricity** in the UK than zero carbon sources

Sources

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- The Guardian
- IEA
- World Energy Council
- Smart Energy International
- reuters.com
- smart-energy.com
- Carbon Tracker Initiative
- S&P Global Platts
- MAN Energy Solutions
- The Guardian
- Deloitte
- European Union

WÄRTSILÄ

Decarbonization in the energy sector is the process of reducing the carbon emissions associated with producing and consuming energy. This is usually done by replacing fossil fuels with renewable energy sources such as solar, wind, and geothermal, hydro and nuclear energy . It also includes improving energy efficiency, such as through more efficient appliances and better insulation. Decarbonization in the energy sector is essential for achieving the goals of the Paris Agreement and limiting climate change. There are also several advantages of decarbonization in the energy consumption as it increases energy access, job creation, innovation and expansion of different economic activities.

Decarbonization in the power sector

Decarbonization in the power sector is the process of reducing the carbon emissions associated with producing and consuming electricity. This is usually done by replacing fossil fuels with renewable energy sources such as solar, wind, and geothermal. It also includes improving energy efficiency, such as through better

Alternative Energy.

Alternative energy is a term used to describe any energy source that is not derived from fossil fuels. Fossil fuels are coal, oil and gas. Although due to the low carbon content of gas it is increasingly regarded as a transition gas as moved by gas rich developing country and the not yet fully developed and commercially available alternative forms of energy that can effectively replace fossil fuels. Examples of alternative energy sources include solar, wind, geothermal, and hydropower. Alternative energy sources have the potential to reduce greenhouse gas emissions, improve air quality, and create more resilient energy systems.

Renewable Energy

Renewable energy is energy produced from sources that are naturally replenished, such as the sun, wind, and water. Renewable energy sources have lower carbon emissions than fossil fuels, and can help to reduce the effects of climate change. Examples of renewable energy sources include solar, wind, geothermal, hydropower, hydrogen and other forms of energy been developed.

what is Solar system and solar energy



Solar system is a system of objects in space, such as planets, moons, asteroids, and comets, that orbit a star, such as the Sun. Solar energy is energy produced from the Sun. Solar energy can be used to generate electricity, and is a renewable source of energy. Solar energy has lower carbon emissions than fossil fuels, and can help to reduce the effects of climate change. Although also increasing the process of producing solar panels involves the use of other forms of production that also emit carbon.

Wind energy



Wind energy is energy produced from the movement of air. Wind turbines capture the kinetic energy of the wind and convert it into electricity. Wind energy is a renewable source of energy with lower carbon emissions than fossil fuels, and can help to reduce the effects of climate change.

Nuclear energy .

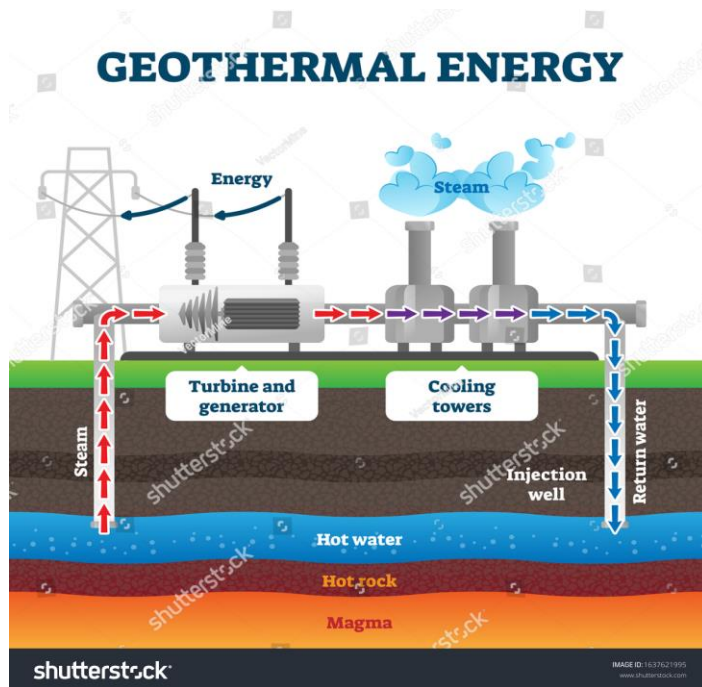


Nuclear energy is used to generate power through a process called nuclear fission. This is when a nucleus is split into two smaller nuclei, releasing energy in the process which is then converted into electricity. This is done by using a nuclear reactor, which contains uranium or plutonium fuel rods. When an atom is split, the released energy is used to heat water which is then turned into steam. This steam is used to run a turbine, which spins a generator and produces electricity.

Can Nuclear energy solve the energy access in Nigeria?

Nuclear energy has the potential to help solve the energy access problem in Nigeria, as it is a reliable and efficient way of generating large amounts of electricity. However, there are a number of challenges that must be addressed before nuclear energy can be used to solve the energy access problem in Nigeria. These challenges include the high cost of building and operating nuclear power plants, the risk of nuclear accidents, and the need for adequate safety and regulatory measures. In addition, Nigeria must have access to the necessary uranium ore to fuel nuclear reactors.

Geo thermal energy

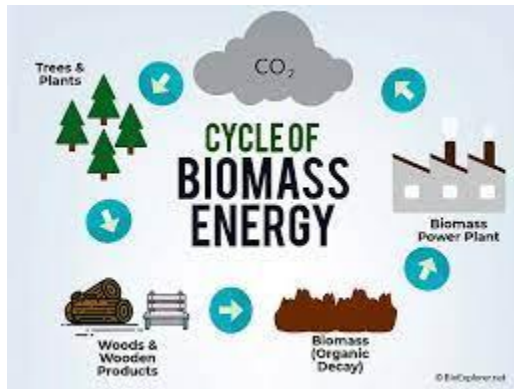


Geothermal energy is a form of renewable energy that is generated by tapping into the Earth's internal heat. This energy is released in the form of hot water or steam, which can be used to generate electricity and to provide direct heat and hot water. Geothermal energy is a clean, reliable, and cost-effective source of energy that can be used to generate electricity and provide direct heating. It is also a sustainable source of energy, as it does not produce any air or water pollution.

Can Geo thermal energy help in energy access ?

Yes, geothermal energy can help in energy access. Geothermal energy is a reliable and sustainable source of energy that can be used to generate electricity and provide direct heat and hot water. It is a cost-effective and clean source of energy, and does not produce any air or water pollution. Geothermal energy can help in providing energy access in rural and remote areas, where other forms of energy may not be available. Additionally, geothermal energy can be used to provide energy access to communities that are currently underserved by traditional energy sources.

BIO MASS



Biomass is organic matter that comes from plants and animals. It is a renewable source of energy that can be used in a variety of ways, such as burning to generate electricity or heat, or converted into biofuels such as ethanol or biodiesel. Biomass is considered a clean energy source because the carbon dioxide released when it is burned is the same amount that was absorbed by the plants during photosynthesis. Can bio mass be used to generate enough electricity? Yes, bio mass can be used to generate enough electricity. Biomass power plants are capable of producing large amounts of electricity, and many are already in operation around the world. The technology is mature enough that biomass-generated electricity can be fed into the grid and used to power homes and businesses. However, biomass is not as efficient as other sources of renewable energy, such as solar and wind, and it can be more expensive. Which countries use bio mass to generate electricity? Many countries around the world are using biomass to generate electricity, including the United States, Canada, India, Brazil, China, Japan, Germany, and the United Kingdom. In the United States, biomass accounts for about 5% of the total electricity generation.