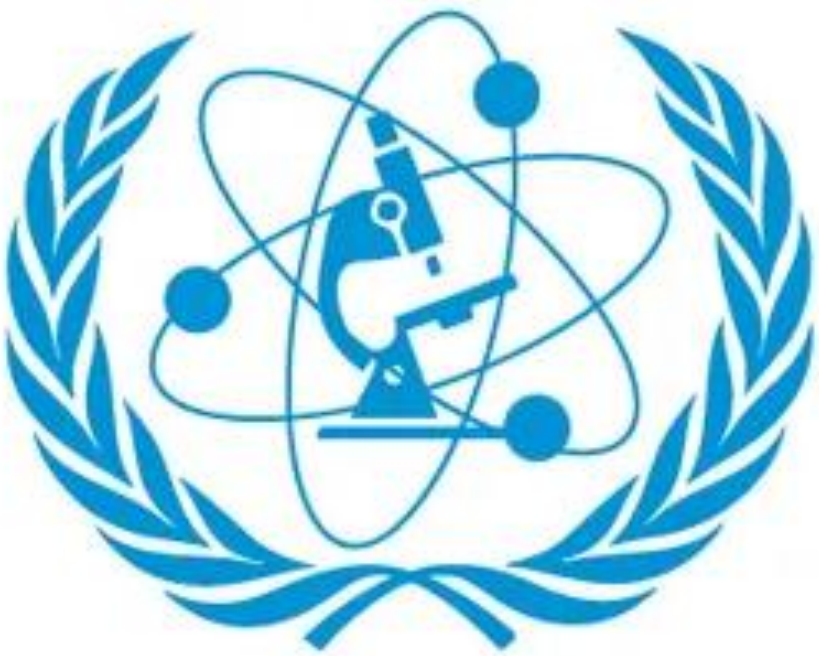
Commission on Science and Technology for Development



Combating Climate Change Through Renewable Energy and Ensuring Equitable Access for Developing Countries

-Committee Guide-

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1) Introduction

Climate change remains one of the most demanding global challenges of our century, with its impacts threatening ecosystems, communities, and economic stability, especially in vulnerable regions. Human activity is responsible for almost all of the increase in greenhouse gases (GHG) in the atmosphere from over the past 150 years. The largest source of GHG emissions from human activities are the United States, from burning fossil fuels for electricity, heating, and transportation. As the international community seeks effective solutions for a sustainable and adaptive future, renewable energy stands tall as a critical component in efforts to effectively mitigate GHG emissions, offering clean alternatives to fossil fuels.

Advancements in science and technology have made renewable energy more promising than ever, but access to these innovations still remains highly unequal. Developing countries, despite often experiencing the most aggressive side of climate change, are most of the times lacking the needed resources, infrastructures, and investments in order to fully benefit from the transition to renewable energy.

This report explores how renewable energy can be a powerful tool in combating climate change and why ensuring equitable access for developing countries is critical to achieving a fair and sustainable future for all involved.

2) Definition of key terms

- Climate change: changes in the world's weather, particularly an increase in temperature that thought to be caused by things such as carbon dioxide (CO_2) in the atmosphere.
- Renewable energy: energy that is produced using the sun, wind, etc., or from crops, rather than using fuels; energy that can be replaced if consumed.
- Alternative energy: energy from moving water, wind, the sun, and gas from animal waste.
- Equitable access: fair opportunity to benefit from a resource, regardless of the geographic location, economic status, or social background of a state.

- Greenhouse gas (GHG) emissions: the release of gases (CO_2, CH_4, N_2O) into the atmosphere that trap heat and contribute to global warming.
- Mitigation: the act of reducing how harmful, unpleasant, or bad something is.
- Below-market-rate financing: providing loans or funding at interest rates lower than what is available in the regular market.

3) Major parties involved

SEforALL: Sustainable Energy for All is an international organization founded in 2011, affiliated with the UN, that works to ensure further and faster action toward the achievement of Sustainable Development Goal 7 (SDG7), that calls for universal access to sustainable energy by 2030, and the Paris Agreement, that calls for reducing greenhouse gas (GHG) emissions to limit climate warming to below 2°C.

IRENA: The International Renewable Energy Agency is a lead global intergovernmental organization for energy transformation that serves as the principal platform for international cooperation, supports countries in their energy transitions, and provides member states with analyses on technology, innovation, policy advice, finance and investment. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy, with the aim of achieving sustainable development, energy access, and energy security.

IRENA's membership covers 169 countries and the European Union. Together, they decide on the Agency's strategic direction and further activities, in line with the global energy priorities to accelerate the transition to renewable energy systems worldwide.

UNDP: Active in over 170 countries and territories, The United Nations Development Programme helps eradicate poverty, reduce inequalities and exclusion, integrate energy access within sustainable development, and build resilience so countries can sustain further progress. As the UN's development agency, UNDP plays an important role in helping countries achieve the Sustainable Development Goals (SDG7).

BII: The British International Investment, established in 1948, is the development finance institution of the United Kingdom. Their focus is helping the countries they invest in to have a just transition towards net zero emissions by 2050, making them one of the world's largest climate finance investors in Africa. The institution's strategies towards combating climate change align with the Paris Agreement, supporting clean and inclusive growth.

SEFA: The Sustainable Energy Fund for Africa is a multi-donor fund administered by the African Development Bank that aims to unlock private sector investments in renewable energy and energy efficiency in Africa, provide technical support, and below-market-rate financing to overcome market barriers in more affected countries. SEFA's general goal is to contribute to universal access to affordable, reliable, sustainable, and modern energy services for all Africa, in alignment with the New Deal on Energy for Africa and SDG7.

Germany: Germany is a leader in renewable energy, particularly in wind and solar power, and is actively working towards a fully renewable energy system. Renewable energy sources are some of the most important sources of electricity for Germany, and the expansion of renewables is one of the fundamental aspects in Germany's energy transition. Out of a desire to escape the dependence on fossil fuels, and with aim set out by the Renewable Energy Sources Act, Germany's electricity supply had become "greener" every year since 2000. With the goal of hitting 80% renewable electricity consumption by 2030, Germany is engaged in many international cooperations on renewable energy, including initiatives such as the Africa-EU Green Energy Initiative.

The U.S.: Fossil fuels have long produced most energy in the U.S., accounting for 84% of total production and 60% of electric generation as of 2023. Although costs for some fossil fuels are declining, renewables are becoming cheaper even faster. Despite this fact, use of fossil fuels has remained near 80% for the past 30 years, renewable energy generating just over 20% of all U.S. electricity, but that percentage continues to grow. The vast majority of carbon emissions in the U.S. come from fossil fuels. By 2035, the U.S. aims to achieve net zero emissions in the sector.

India: As the host country and also one of the co-founders of the International Solar Alliance (ISA) alongside France, India's commitment to the ISA reflects its broader

efforts towards renewable energy development and its leadership in promoting multi-lateral solutions to global challenges. By being the world's third-largest energy consumer, when the decrease in renewable energy costs started, India seized the opportunity to start making a change towards clean energy. But with India's expanding needs and increasing focus on clean energy, this has created the perfect space for investors to have the opportunity to contribute to a cleaner future, while also benefiting from the growing market, and making a change.

Under the leadership of Prime Minister Narendra Modi, India has set a target to install 500 GW of renewable energy capacity by 2030. This goal is supported by abundant solar energy capacity and local technology, essential in reducing carbon emissions and achieving energy independence, aligning with Prime Minister Modi's mission of an "Atmanirbhar Bharat", or a self-reliant India.

South Africa: 47% of households in South Africa are considered energy poor. Despite having a good geographical location, with promising solar and wind resources, South Africa's transition to renewable energy faces a significant challenge in addressing energy inequality. While renewable energy projects are expanding worldwide, not all segments are benefiting from these changes equally, as these measures mean rising electricity costs, technological access, and support from the communities of people. South Africa's rural areas are often lacking access to electricity, this including renewable energy also. Many households find themselves unable to pay the high costs of renewable energy technologies, and the programs meant for poorer families find themselves ineffective. Another problem that South Africa faces is its electricity grid. This was built to handle coal, which requires a centralized system, whereas solar and wind renewables require a system that can handle energy coming from many different sources.

4) Relevant UN Resolutions and Treaties

- **E/RES/1992/56 1992**
- **The Kyoto Protocol 1997**
- **A/RES/56/200 2001**
- **A/RES/60/199 2005**

- **A/RES/62/197 2007–2008**
- **Sustainable Development Goals 7&13 2015**
- **The Paris Agreement 2016**
- **A/RES/79/211 2024**
- **A/C.2/79/L.34/Rev.1 2024**

5) Previous attempts to solve the issue

While the general idea is that the search for renewable energy started in the 1970s due to the oil price spiking and energy crisis, as well as the resulting economical and geographical instability around the globe, the truth is, this all has started even before the Industrial Revolution in the 19th century. Renewable energy has been discovered a million years ago, when the first humans discovered *fire*. Not even solar energy is modern technology, as Romans and Greeks used to use burning mirrors (concave mirrors that directed sunlight onto a focal point) to light their torches. So, since the dawn of time humanity has been using renewable energy sources for mundane activities.

The technology we know and use today is not that much different from hundreds of years ago, but more modern, advanced and efficient solutions had been adopted and implemented since:

- **The UN Sustainable Development Goal 7 (SDG7):** launched in 2015 by the UN, its targets are to ensure equitable access to affordable, reliable, and modern energy, double the global rate of improvement in energy efficiency, enhance international cooperation, expand infrastructure and upgrade technology for supplying modern and sustainable energy services in developing countries, in particular least developed countries, small island states, and land-locked developing countries, all by 2030.
- **Mission 300 & the “Light Up and Power Africa” program:** The larger "Light Up and Power Africa" movement includes the goals of Mission 300 and other efforts to expand access to reliable, affordable, and sustainable energy in Africa. Mission 300 is a World Bank and African Development Bank initiative,

launched in 2024, with the goal of connecting 300 million Africans with electricity by 2030.

- **UN Framework Convention on Climate Change (UNFCCC):** The UNFCCC is the principal global treaty for coordinating international responses to climate change. It provides the foundation for subsequent legal instruments, including the Kyoto Protocol and the landmark Paris Agreement.
- **International Solar Alliance (ISA), Sustainable Energy for All (SEforALL), the International Renewable Energy Agency (IRENA).**

6) Other possible solutions

- Agreements between developed and developing countries in order to share renewable energy technology, knowledge, and skill.
- Partnerships between universities, research institutions, and industries, which would include training programs and local manufacturing support.
- Facilitating developing countries to join regional alliances on renewable energy generation and trade with more developed countries, especially for larger-scale solar or hydro projects, helping supporting smaller countries with limited natural energy resources.

7) Useful links

- https://www.irena.org/
- https://ndcpartnership.org/knowledge-portal/climate-funds-explorer/sustainable-energy-fund-africa
- https://www.climatecouncil.org.au/11-countries-leading-the-charge-on-renewable-energy/
- https://international-partnerships.ec.europa.eu/policies/global-gateway/africa-europe-green-energy_en
- https://isa.int/
- https://www.eib.org/en/essays/history-renewable-energy
- https://sdgs.un.org/goals

- https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change
- https://www.un.org/en/climatechange/paris-agreement
- http://digitallibrary.un.org/