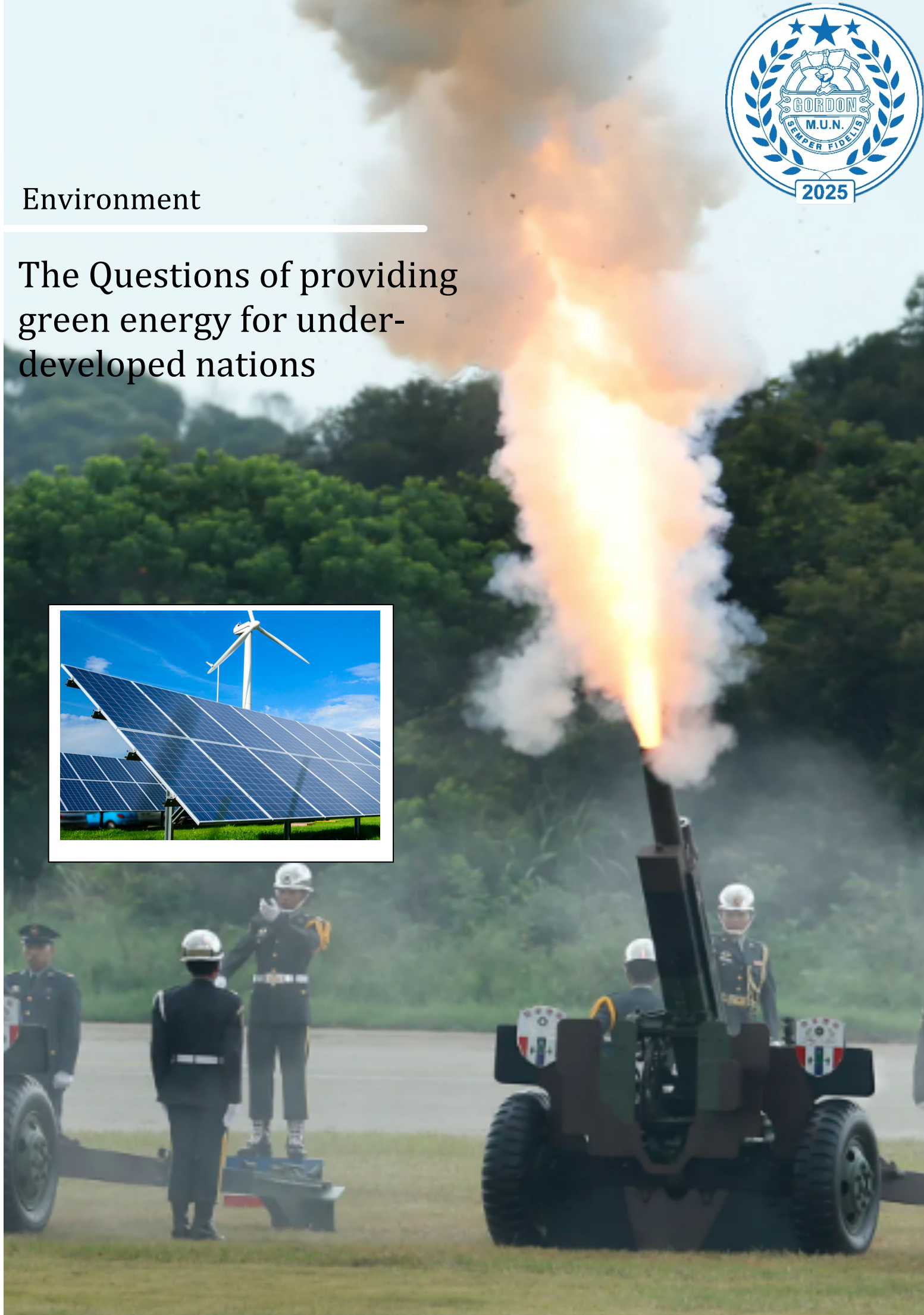




Environment

The Questions of providing green energy for under-developed nations





Committee: ENVIRONMENT

Topic: The Question of providing green energy for under-developed nations

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Summary

Introduction

The shift towards green energy is vital to ensure global sustainability, but underdeveloped countries have limited means of adopting renewable energy options owing to economic, infrastructural, and technological challenges. It is imperative to overcome these challenges in order to promote economic growth, environmental sustainability, and energy security. This study discusses the significance of green energy for underdeveloped countries, the issues they encounter, and the possible remedies for enabling a transition towards it. Introduction The shift towards green energy is vital to ensure global sustainability, but underdeveloped countries have limited means of adopting renewable energy options owing to economic, infrastructural, and technological challenges. It is imperative to overcome these challenges in order to promote economic growth, environmental sustainability, and energy security. This study discusses the significance of green energy for underdeveloped countries, the issues they encounter, and the possible remedies for enabling a transition towards it.

The Importance of Green Energy Green energy, derived from renewable sources such as solar, wind, hydro, and geothermal energy, has various benefits for developing nations. Firstly, it reduces the dependence on fossil fuels, which are usually expensive and destructive to the environment. Renewable energy also guarantees electricity access, which is essential in the provision of healthcare, education, and economic development. According to the International Energy Agency (IEA), nearly 775 million people worldwide lack access to electricity, with most residing in sub-Saharan Africa and South Asia. Green energy can fill this gap without reducing carbon emissions and the battle against climate change. Challenges in Implementing Green Energy The Importance of Green Energy Green energy, derived from renewable sources such as solar, wind, hydro, and geothermal energy, has various benefits for developing nations. Firstly, it reduces the dependence on fossil fuels, which are usually expensive and destructive to the environment. Renewable energy also guarantees electricity access, which is essential in the provision of healthcare, education, and economic development. According to the International Energy Agency (IEA), nearly 775 million people worldwide lack access to electricity, with most residing in sub-Saharan Africa and South Asia. Green energy can fill this gap without reducing carbon emissions and the battle against climate change. Challenges in Implementing Green Energy

Despite its benefits, various challenges hinder the adoption of green energy in developing nations:

1. Financial Restraints – Investing in the infrastructure of green energy in the initial stage itself may be costly. The majority of underdeveloped nations lack financial resources and foreign funding capabilities to construct bulk green energy programs.
2. Infrastructure Shortage – The majority of regions have low-developed power grids or literally no energy grid to talk of. Without effective transmission and storage facilities, incorporating renewable energy resources becomes difficult to do.
3. Technological Barriers – Green technology requires expertise to operate, maintain, and install. Less developed countries do not have the technical personnel to facilitate such projects.
4. Political and Regulatory Issues – Ineffective administration, corruption, and unstable policies could discourage foreign investment and adoption of sustainable energy programs.
5. Grid Stability and Energy Storage– Solar and wind energy are intermittent energy sources. Without good energy storage systems or grid improvements, energy supply can be unreliable.

Solutions and International Support

International cooperation, investment, and innovation are needed to solve these problems. Some methods can make green energy available in underdeveloped nations:

1. Investment and Finance from Overseas – Organisations like the World Bank, Green Climate Fund, and International Renewable Energy Agency (IRENA) provide investment and funding assistance for renewable energy schemes. Incentives and assurances can stimulate further private sector financing to give that extra push.
2. Decentralised Energy Systems – Small-scale, off-grid renewable energy systems such as solar micro-grids and wind turbines can provide energy to remote communities without the necessity of large infrastructure.
3. Technology Transfer and Capacity Building – Advanced countries can assist by exporting renewable energy technology and providing training to local technicians in installation and maintenance. Public-private alliances can facilitate knowledge transfer and skill development.
4. Policy and Governance Reforms – Governments must implement clear, consistent policies for the encouragement of green energy investment. Regimes that support

independent power producers and provide subsidies for renewable energy can accelerate progress.

5. Innovations in Energy Storage – Advances such as lithium-ion and solid-state batteries could improve energy storage capacity, ensuring a consistent flow of renewable energy. Investment and research in low-cost storage alternatives must be the focus.

Conclusion

Providing green power to underdeveloped nations is crucial for financial growth, societal progress, and sustainable development. Despite challenges, global cooperation, funding support, technology, and policy reforms are possible to create a smooth switch. Focusing on renewable power, the world can bridge the energy gap and create a healthier future for generations to come.

Definition of Key Terms

- **Green Energy:**

Energy produced from non-polluting, replenishable resources such as solar, wind, hydro (water), and geothermal power. It is also eco-friendly as it emits negligible to no greenhouse gases.

- **Renewable Energy:**

Energy that comes from processes in nature which are continually replenished, e.g., sunshine, wind, rain, tides, and geothermal heat. Unlike fossil fuels, renewable resources never deplete over a period of time.

- **Fossil Fuels:**

Non-renewable sources of energy constituted the decomposed remains of prehistoric plants and animals, including coal, oil, and natural gas. Fossil fuel combustion releases greenhouse gases, which cause climate change.

- **International Energy Agency (IEA):**

An organisation that provides data, analysis, and policy advice to assist with secure, clean, and affordable energy for its member countries and the global community at large.

- **Infrastructure:**

Fundamental physical and organisational structures required for the operation of a business or society, e.g., power supply grids, roads, buildings, and energy networks.

- **Micro-grid:**

A decentralised small-scale electricity system with the ability to operate independently or in parallel with the grid. Micro-grids are typically used to provide steady electricity to off-grid areas.

- **Energy Storage:**

Technologies and devices used to hold energy in reserve for future use, yielding a constant output of power even when renewable resources like solar and wind are not producing electricity in real time.

- **Capacity Building:**

Process of developing and strengthening the capacity, knowledge, and expertise of people and institutions to operate efficiently, particularly in technology adoption and infrastructure development.

- **Technology Transfer:**

The transfer of technological advancements, information, and competence among countries or organisations for the facilitation of less developed regions in the uptake of new technologies.

- **Policy and Governance Reforms:**

Parliamentary, regulatory, and administrative reforms to increase the efficiency of the government, transparency, and incentive to sectors like renewable energy.

- **Grid Stability:**

A measure of an electric grid's ability to deliver stable and consistent power, even in cases of fluctuation in energy demand or intermittent production by renewable sources.

- **Lithium-ion and Solid-state Batteries:**

Energy storage technologies forms. Lithium-ion batteries are used on a widespread scale owing to their recharge-ability and high energy density, while solid-state batteries are offering greater safety and extended battery life.

- **Subsidies:**

Financial aid provided by governments to minimise the cost of renewable energy technologies and make them cost-effective for more extensive usage.

- **Decentralised Energy Systems:**

Energy systems where power production is local to the point of consumption, keeping the need for large transmission infrastructure to a bare minimum. It is especially advantageous in rural or distant areas.

- **Public-Private Partnerships (PPPs):**

Joint ventures between public authorities and private firms to finance, construct, and operate projects of public value, including renewable energy projects.

Major Countries / Organisations Involved

1. **Sub-Saharan African Countries:**
 - Nigeria
 - Kenya
 - Ethiopia
 - Tanzania
 - Democratic Republic of the Congo
2. **South Asian Countries:**
 - Bangladesh
 - Nepal
 - Afghanistan
 - Pakistan
3. **Southeast Asian Countries:**
 - Myanmar
 - Cambodia
 - Laos
4. **Small Island Developing States (SIDS):**
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 - Solomon Islands
 - Papua New Guinea
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