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Forum: Special Focus 2: Sustainable Development

Issue: Using sustainable energy to encourage sustainable industrialization and innovation in LEDCs

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Introduction

Industrialization and innovation have been the main sources for the development of any country throughout history. Through extensive industrialization and constant innovation, many countries have been able to develop on political, social and economic standards. However, despite global innovation and increase of industrial and economic value in many countries, LEDC's (Less Economically Developed Countries) continue to face challenges when it comes to the promotion of innovation and industrialization within their countries. The problem mainly occurs due to the lack of sources that cannot produce sustainable energy, which indeed is the main source of industrial development. The lack of effort that is being put to sustain energy in LEDC's causes these countries stray away from further political and economic development.

According to a recent article written by the board of African Studies at the University of Cambridge; "over two-thirds of Africa's vast population, an estimated of 600 million people, currently have no access to energy." In Sub-Saharan Africa, it is seen that the average electricity grid access is only 20%. Access to electricity is rather important for development, after all, it is used for powering water supplies, healthcare, telecommunication services and most importantly, industrial development. Additionally, electricity also allows the development of new economic sectors and jobs within that country. However, African countries have been dealing with supply shortages that have left them in critical circumstances recently. Even though many African countries have brought forward an application in order to obtain renewable energy, they still lack the amount required to develop new industrial sectors. It is also important to bear in mind that when industry and the domestic users of energy use these sources more efficiently, LEDC's begin to use more sustainable energy and they remain encouraged to develop more sustainable sources of energy.

Definition of Key Terms

Sustainability: The United Nations defines this term as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainable Energy: Sustainable energy is a form of energy that provides our need of energy without resulting in the expiration or depletion of resources, and hence it can be used numerous times. Sustainable energy should be widely encouraged as it does not have any side effects such as harming the environment and is often free of cost.

Industrialisation: The action or process of industrializing. The prevalent development of industries in a continent, country, region, etc.



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Innovation: Innovation is defined as "new idea, creative thoughts, new imaginations in form of device or method". Innovation takes place through the provision of more-effective products, processes, services, technologies, etc.

Fossil fuels: Fossil fuels are formed in the geological past from the remains of living organisms. Fossil fuels emit greenhouse gases, lead to global warming, reduce the oxygen in the atmosphere and spoil the ozone layer. To preclude the detrimental effects of fossil fuels, sustainable energy should be highly encouraged.

Less Economically Developed Countries (LEDCs): The Less Economically Developed Countries include countries which have a lower GDP and a lower standard of living than MEDCs (More Economically Developed Countries) countries. Indicators are used in order to classify countries as LEDC or MEDC, including industrial development and education.

Background Information

Sustainable Energy

After the first oil crisis in 1973, the importance of energy has begun to be better understood by all countries of the world. After this event, most of the countries have taken important steps to diversify their energy resources and use alternative energy sources, and specifically, energy importing countries have been seeking various policies for the sustainable use of energy.

In the 2000s, the search for alternative energy gained great momentum and the studies on sustainable energy started to increase. Sustainable energy sources are grouped as solar, wind, geothermal, hydropower and ocean energy. Even though sustainable energy sources have such a large potential, when the energy types consumed around the world are taken into consideration, oil is first and then coal and natural gas respectively. The share of sustainable energy in total primary energy consumption is 9.5 percent. It is observed that the use of sustainable energy has increased rapidly throughout the world. On the other hand, the rate of increase in the final energy consumption of renewable energy is not satisfactory. Considering the main reasons for this situation in terms of developed and developing countries; it is observed that in developed countries, energy demand is slowly increasing and it is time to change existing infrastructure and energy consumption habits.

In developing countries, energy demand is rapidly increasing and fossil fuels play an important role in meeting this demand. In addition, it is unlikely that energy produced by renewable energy sources can compete with fossil fuels in terms of pricing. In this respect, it is expected that the increase in the share of renewable energy in total energy consumption will take time. However, countries around the world are making government policies to increase the use of renewable energy and to develop their technologies in this area. This situation is important in terms of spreading the use of sustainable energy.

Industrialisation

Industrialisation is an alteration period in which it transforms a human group from an agricultural society into an industrial society. And this period started when Industrial Revolution started in Europe, specifically United Kingdom. In the 18th and 19th centuries, United Kingdom went through a tremendous increase in agricultural productivity named as the British Agricultural



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Revolution, which allowed a massive population growth, freeing an apparent percentage of the workforce from farming, and lending assistance to drive the Industrial Revolution.

Belgium was the first to develop a proper industry in continental Europe however, was the second in the world. A real modern industrialisation started only in 1840s for Scandinavian countries and countries such as Germany and Austria. In Poland, Slovakia, Hungary it happened after 1880 and in Baltics, Ukraine and Russia after it happened after 1890.

Why did Africa Fail to Industrialize?

At no point in history did the continent of Africa ever reach the peak of Industrialization. The idea of industrialization has been a campaign promise across the African continent since it carries the ability to actually promote better political and economic standards within the continent. There have been contributions made in order to sustain the economic values of Africa's manufacturing sector, however, the countries gross domestic product actually has declined from 12% in 1980 and to 11% in 2013, where it continues to remain stagnant according to the statements made by the UN Economic Commission for Africa.

Based on recent studies made by The Economist Intelligence Unit, it is likely that Africa's manufacturing industry will remain quite small, and the state of the industry is likely to go on for a while. A poor and non-developing manufacturing industry is one of the main reasons why Africa has failed to industrialize. Another reason revolves around the fact that Africa does not have sufficient amount of natural resources. Experts argue that African countries have managed to waste their money on issues such as increasing salaries for civil servants or other non-productive expenditures rather than trying re-build or simply develop their manufacturing industry. In this scenario, it is important to understand that very little of what is sold on the market today are actually African goods that have been produced by developed manufacturing systems. Because of this, commodity prices are falling.

If African leaders heeded advice from experts and "pumped profits from the commodity boom" for the purpose of stimulating manufacturing companies, the economic results would've been different. Eventually, it all leads down to how a country decides to utilize its economy.

However, African countries attempt to promote new ways in order to obtain natural resources to increase the possibility of industrialization.

Timeline of Major Events

2000	the report of the World Commission on Dams: 'A new framework for decision-making'
2007	Article 208 of the Treaty on the Functioning of the European Union (TFEU) (as known as the Lisbon Treaty)
2011	The Sustainable Energy for All initiative launched by UN
2012	the Commission's 'Energising Development' initiative



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2014	Africa Clean Energy Corridor initiative
2015	the 21st Conference of the Parties (COP 21) to the UN Framework Convention on Climate Change (UNFCCC) in Paris
2015	United Nations Decade of Sustainable Energy for All' report
2015	The adoption of the Paris Agreement, the first-ever universal, legally binding global climate deal
2016	the Parties (COP 22) to the UN Framework Convention on Climate Change (UNFCCC)

Major Countries and Organizations Involved

Economic West African States (ECOWAS)

ECOWAS has developed rural renewable energy development agendas. Countries who are recognized as ECOWAS members have succeeded in establishing the Center for Renewable Energy and Energy Efficiency (ECREEE) which has formed new strategies that aim to sustain renewable energy.

Sub-Saharan Africa

The developed Hyperpower energy system has introduced new benefits to the Sub-Saharan African region. “The Grand Renaissance Dam in Ethiopia is expected to deliver up to 6,000MW to the country, with neighboring Djibouti and Somalia inquiring about the potential of importing such energy. However, countries such as Egypt, Ethiopia, and Sudan are expressing the challenges they are concerned about when it comes to sharing water resources, especially those pertaining to hyperpower potential. However, the process won't be cheap, hence, the region may need to focus on new strategies to gain better economic foundations in order to continue the promotion of the project.

The Democratic Republic of Congo

DRC plans to execute a large hydro-project on the Congo River and also focuses on developing Ethiopia's Renaissance Dam. The Democratic Republic of Congo believes that by cooperating on this project with Ethiopia, they will gain different benefits concerning the process of introducing renewable resources into its developmental line.

Senegal

Senegal wishes to find benefits in utilizing solar power in order to produce more goods and spend less money on energy that is not sustainable. They chose to rely on solar power in order to



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increase natural and factorial production. Mozambique and Zimbabwe plan on following Senegal's lead.

Previous Attempts to Solve the Issue

Many LEDCs have retorted to using hyperpower, biofuel, wind, solar and geothermal energy. The outlook has brought back positive results when it comes to the development of innovation and industrial sectors. As a citizen from Rwanda's capital Kigali has described, "Investors are not talking about renewable energy like oil and gas, but renewable energy

Another important note is that Kenya was one of the first advocates in the continent of Africa to promote the idea that the use of plastic bags should no longer be common amongst the public since it is one of the main sources of waste, which eventually affect the usage of natural resources and sustainable energy rather negatively. Many African countries are also keen on focusing to find new ways in order to avoid constant power outages, especially within the Sub-Saharan regions. Regarding these attempts, Ethiopia has completed the Reppie thermal plant, which happens to be Africa's first waste to energy plant, that has the capacity to incinerate, 1,400 tons of waste per day. With the elimination of waste, African continents are more likely to develop sustainable energy that may eventually lead to industrialization and a better manufacturing sector. Biofuel productions in Zambia Cote d'Ivoire and Tanzania are continuing their investments while Zimbabwe has constructed a plant to convert organic waste to energy. Mozambique is noted for investing 15 million dollars on solar energy, hoping to utilize it for better causes. Trade has also been pinpointed as a foundation that may develop Africa's manufacturing sector. Renewable energy has also been created through geothermal and wind power. These developments are factors that can provoke industrialization at a much faster pace.

Aside from these developments, the use of renewable energy has now spread through a wide range of diverse environments. A notable one being the "giant Dutch wind farm" that has been built in the North Sea, which is capable of producing 600 megawatts, enough to power 785,000 homes. That covers 13% of the Netherlands' renewable energy and about 25% of it is wind power. Such developments in Europe and the United States set exemplifying models for LEDC's to develop their own systems in order to maintain their sources and sustain their energy. Countries like Ethiopia, Mozambique, Zambia, and Kenya have recently taken and are continuing to take the necessary measurements and regulations in order to productively use and increase their renewable energies.

Experts also state that linkage development could be seen as a window of opportunity in order for Africa to finally go through a period of industrialization. Regarding the fact that Africa's economic growth has mainly been driven by primary commodity exports, it is important to maintain trade between Africa and other nations in order to get a hold of products that may provide beneficial outcomes in order to proceed on with industrialization and innovation. Thanks to trade and the exporting of certain products, Africa has built up its economy since 1995. Despite all the work done to sustain innovation in LEDC's, Certain exports are able to show how LEDC economies mainly rely on natural resources and have a weak industrial sector. If trade and other scientific achievements continue to increase, then there may be hope for less developed countries.



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Possible Solutions

When tackling this issue, there are a few ways that could ensure, encourage and promote sustainable energy in Less Economically Developed Countries,

As for solving the issue, raising awareness is a necessity since the lack of awareness is an apparent problem in these countries. An awareness-raising program on renewable energy with allocation of adequate financial and other resources that would contribute to the public to support the adoption of renewable energy is an urgent need to raise awareness.

A Renewable Energy Act could be extremely beneficial since renewable energy policies are not sufficient enough by themselves, therefore need to be supplemented.

Smart grid technologies can be developed to support grid connections with renewable energy and enhance the use of renewable energy since exploitation of renewable energy is often constrained because of grid limitations.

Renewable Energy Sources should be mapped. Governments should undertake resource mapping and publish it in the public domain to attract the interest of entrepreneurs in exploiting the potential.

Useful Links For Further Research

<http://www.wikizero.biz/index.php?q=aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvUmVuZXdhYmxlX2VuZXJneV9pbl9kZXZlbG9waW5nX2NvdW50cmllcw>

<http://www.worldbank.org/en/news/feature/2017/02/13/making-renewable-energy-more-accessible-in-sub-saharan-africa>

<https://journals.openedition.org/sapiens/823>

<https://www.un.org/ecosoc/en/content/promotion-du-développement-durable>
https://www.sciencedaily.com/terms/fossil_fuel.htm

<https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/hidden-cost-of-fossils>

<https://www.un.org/sustainabledevelopment/blog/2016/08/un-assembly-adopts-resolution-proclaiming-third-industrial-development-decade-for-africa/>

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