How significant are economic and social barriers with respect to the implementation of renewable energy?

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Introduction

The exigent need for a renewable approach to global development is a recurrent topic of discussion at international, national, and regional levels, following December 2015's Paris Climate Agreement on the detrimental effects of Climate Change.[1] Sustainability is defined as 'meeting our present needs without compromising the ability of future generations to meet their own needs.' The term is built upon the three pillars - social, environmental, and economical often referred to as people, planet and profit.'[2] Renewability relates to a commodity or resource, such as solar energy or firewood, that is inexhaustible or replaceable by new growth.[3] A collection of renewable resources in an area makes it a sustainably developed region. Being a resident of Mumbai, my rationale for selecting this question was to investigate more on the issue of my city's lacking renewability. After Greta Thunberg's[4] speech on climate change, sustainability has become a household term. But often, people do not know the basis of it and challenges the government can face on implementing it. The main benefit for exploring this issue is to be able to educate the people around me about the reasons why we do not have enough renewable resources.

Through this paper, I will be exploring the following key issues:

- The challenges a nation can face on not being able to financially afford adequate renewable energy.
- Dealing with social complications of public disagreement and preference on the matter of renewable energy.

Global Perspective

Issue 1

'Renewable energy sources are among the most promising and significant assets that could have a multiplier effect on any nation's development,' says Dr. Perry Sadorsky, an energy economics researcher from Toronto, Canada.[5] The doctor's source is reliable as he is a renowned writer with great experience on the matter. While what he says is in fact true, there are several developing nations like Uganda, Brazil, Nigeria and Chile that have economic barriers with respect to implementing renewable energy.

In Nigeria[6] for one, there is an immense economic barrier when it comes to spending on renewable energy. The cause for this is Nigeria's rapidly rising population which links to a subsequent increase in energy

[1] "The Paris Agreement | UNFCCC". 2019. *Unfccc.Int*. Accessed December 4 2019. https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.
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[5] Sadorsky, Perry. 2009. "Renewable Energy Consumption and Income in Emerging Economies". *Energy Policy* 37 (10): 4021-4028. Elsevier BV. doi:10.1016/j.enpol.2009.05.003.
[6] "Renewables Are The Key For Africa". 2019. *The Telegraph*. Accessed December 4 2019. https://www.telegraph.co.uk/business/how-to-be-green/renewable-energy-to-fuel-african-growth/.

demand. The consequence is counter-productive, as now not only can the government not afford renewable resources for everyone but, there is also an increase in population which is now parallel to the increase in the use of non-renewable resources by the populace.

Another cause is the lack of subsidies present for the manufacture and importation of renewable energy technology. The DC bulbs and solar PV components attract up to 24%[7] import duties. This results in projects being carried out with low – standard or fake appliances. This is counter-productive, as the government now has to make regular small term investments. The consequence of this being that more money is drained in intervals rather than a single long-term investment of high-quality products.

The first course of action would be tackling the rapidly increasing population. The government should increase the promotion of contraceptives and the provision of free family planning for citizens. This will help educate people about choosing financial stability over more children. The control of population will ease the government's job in providing substantial renewable energy. Another course of action is to tackle the high import duties by promoting the creation of small – scale renewable industries within the country itself. This is worked in Sweden,[8] where small companies have come together to promote national renewability I believe this tactic can work for Nigeria too.

A contrasting perspective comes from Masdar City[9] a place in United Arab Emirates which proves that economic problems aren't a globally prevalent barrier. The cause for it not impacting UAE is that the Emirati Government has had a focused approach to sustainability after having invested around 163 billion dollars[10]. The consequence of UAE's investments as per BBC is that, "half the nation's power needs will be generated from renewables." Due to being a respected online news platform and also since the article is based solely on verifiable facts, the source can be evaluated as reliable. From this, it is estimated that UAE will make a profit, as the country will not have to invest anymore in non-renewable resources.

To compare both the case studies, one can observe that the causes differ on the country's economic stance proving the barrier to be significant. The first case study on Nigeria showcases how the high birth rate diverges the governments funds from renewable energy as compared to UAE where this is not a problem. The consequences in the Nigeria case study, are both similar - disadvantages. However, for UAE they are solely positive outcomes, essentially because it is a region which is not impacted by an economic barrier.

Issue 2

The Penan tribes live in the rainforests of Sarawak, Malaysia. They have inhabited that land for over centuries now. However, there have been a number of conflicts relating to the implementation of renewable energy there. The reason for this is social disagreement on the matter of implementation. The Malaysian Penan Tribe, like others in South Africa, and Indonesia – are strongly against renewable energy, as they believe it is a threat to their ancestral culture and lifestyle. For instance, a Penan Man Ba Lai quoted, "We're not like the people in the towns, who have money and can buy things. If we lose all the things the forest gives us, we die." This source is a primary source quotation from a tribal person. It is good when being used as an opinion but is nothing more than that. It has a major bias and cannot be held reliable. Yet, it shows their dependency on the forest land, thus elucidating why any implementation of renewable energy resources may arise conflict. Another cause is the plan Malaysia has come up with to cut down the rainforest land to plant palm trees which can be used as biofuels. This is a commendable renewable approach as it is not doing any harm to the environment, but, the rainforest is the home to all these tribes, which is where and why the conflict comes in. The consequence is

[7] Fashina, Adebayo, Mustafa Mundu, Oluwole Akiyode, Lookman Abdullah, Dahiru Sanni, and Living Ounyesiga. 2018. "The Drivers And Barriers Of Renewable Energy Applications And Development In Uganda: A Review". *Clean Technologies* 1 (1): 9-39. doi:10.3390/cleantechnol1010003.

[8] "Energy Use In Sweden". 2015. *Sweden.Se*. Accessed December 4 2019. https://sweden.se/nature/energy-use-in-sweden/.

[9] "Masdar Clean Energy - Deploying Renewable Clean Energy Worldwide". 2019. *Masdar.Ae*. Accessed December 4 2019. https://masdar.ae/.

[10] "The Green Economy: An Ecosystem Of Business That Also Saves The World". 2019. *Your Site NAME Goes HERE*. Accessed December 4 2019. https://thedubaiadvantage.ae/2019/10/03/the-green-economy-an-ecosystem-of-business-that-also-saves-the-world/.

that the government struggles to implement renewable energy alongside the public rebellion. To explain, Malaysia will essentially have a lot of land with potential for renewable energy going waste.

The courses of actions suggested are, firstly utilizing other regions of Malaysia to its full capacity. This can be done by efficient planning by the government. Secondly, suggests the utilization of dams and water turbines due to the abundance of water around the nation. This has worked in The Pacific Northwest of Washington, and thus may work here too.

The causes for the problems in Malaysia compared to the above claim on Nigeria for example showcase that they both face problems in the implementation of renewable energy - just in different ways. While Malaysia's causes are socially based, Nigeria has widely economic problems.

National Perspective

Issue 1

India's lack of economic attention to sustainable energy due to the Governmental corruption stands to be a barrier to the implementation of renewable energy. "Persistent corruption is usually a big impediment to spreading the benefits of economic growth from a narrow elite to the masses," says Panos Mourdoukoutas a reporter from The Forbes Magazine. However, a contrasting argument is that despite India's corruption level, installed renewable energy generating capacity in India has risen rapidly, recording a 19.78 percent CAGR[11] between FY14–18[12]/[13], after the ratified Paris Agreement. But there is still an economic barrier that comes in the way. The cause for this being that the country elects ministers and parties who focus less on environmental matters. Due to this, there is a lack of economic planning for renewable resources, consequentially resulting in no sustainable development, and a further drain in non-renewable resources.

The following courses of actions are recommended to India. One, there should be a spread of awareness about voting for the right parties who will give attention to sustainability. This will help in the long term as the citizens can rely on the correct government to provide incentives. Two, I would urge governments to provide budgetary, open-to-public reports ratified by the MRNE[14] about how much of the taxpayer money is going towards renewability. This will help decline the corruption level.

Issue 2

India is home to about 700 tribal groups with a population of 104 million[15]. "By depriving tribes of their forest lands by using it for industries and renewable energy lands, the government is taking away what can be their entire livelihood,"[16] says an article by Karnika Bahungana on downtoearth.org.in. The author may not be reliable considering her article comes from a free-for-all blog, but, she does convey the second issue, of social objections. India does have indigenous tribes that provide social complications, as they are inclined to believing that the land is theirs. For instance, the Baiga[17] Tribe of Madhya Pradesh fought at India's supreme court to gain control of land, which could have been used for renewable energy back in 2015. The cause for this is essentially psychological as the tribes believe that the land belongs to them and that the renewable energy will negatively impact their lives. "I just don't understand why our own tribal council representatives want to initiate a renewable industry with machines proven to detrimentally affect our human health," said Jody White[18], a

[11] Compounded Annual Growth Rate
[12] Five Year Plan 2014 - 2018
[13] India, and Renewable India. 2019. "Renewable Energy Industry in India: Overview, Market Size & Growth | IBEF". *Ibef.Org*. Accessed August 10 2019. https://www.ibef.org/industry/renewable-energy.aspx.
[14] Ministry of New Renewable Energy
[15] "Baigas Get Home". 2019. *Downtoearth.Org.In*. Accessed December 4 2019. https://www.downtoearth.org.in/news/governance/baigas-get-home-52666.
[16] ibid
[17] Ibid
[18] "Energy Development In Indian Country | Indigenous Environmental Network". 2019. *Ienearth.Org*. Accessed December 4 2019. https://www.ienearth.org/energy-development-in-indian-country/.

concerned tribal member. Considering she no evidence backing up her claim, her quote can be labelled an unreliable source. But, it does provide a valid insight on tribal mindsets. The consequence for this, is public instability as even though the government might ratify the building of renewable energy sources, tribes might protest and their might be social unrest. In practicality, this will affect the government's decision on whether or whether not to actually implement the resources, keeping in mind the risk of rebellion. Thus India will go on harming its ecosystem for non-renewable resources like coal and natural gas, worsening climate change.

The courses of action that can be taken to prevent tribal and social objections are as follows. One, is simply educating these indigenous people about the benefits renewable energy. As to quote, Jody White again, she says, "it is detrimental to human health."[19] Which as per verified research from the World Health Organization is not. They state that, "the transition to renewable energy will reduce occupational respiratory diseases and cancers related to fossil fuel extraction."[20] This source can be evaluated to possibly be one of the most reliable and credible sources, considering it is coming from an unbiased global body who's objective is to research health. The second viable course of action is to limit the amount of renewable energy introduced at a certain time. As big changes in their surroundings, causes unrest amongst them.

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