
POLICY TRENDS OF RENEWABLE ENERGY AND NON RENEWABLE ENERGY

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Abstract:-

Despite their many differences, the development of green, renewable energy has been very limited across the board in Asia. There are many contributing factors, but the financial factor has consistently been the main factor in a country's decision to use such energy or not. Despite knowledge that energy mixes with a high proportion of fossil fuels are unsustainable for both economic and environmental reasons, this continues. The primary offender is Asia's bank-dominated financial system, which is characterised by a capital market that is underdeveloped. As a result, Asian banks serve as the primary source of funding for green renewable energy projects. The main obstacle to the development of green renewable energy in Asia has been investors' unwillingness to finance these projects due to their perception that they are extremely risky and have low rates of return on their invested capital. To remove the obstacle to the expansion of green energy in Asia, the financing issue must be resolved.

Keywords:- Green Energy, Oil, Renewable and Non Renewable

1. INTRODUCTION

Energy policy and energy conservation sparked a lot of national interest in the 1970s and early 1980s. This was primarily due to the sharp rise in oil prices that resulted from the 1973 OPEC oil embargo and the 1979 Iranian hostage crisis, which reduced oil supplies and increased oil prices. The increase in oil prices encouraged both private and public sector development of renewable energy sources like solar, wind, geothermal, and biomass. However, as the price of oil fell in the late 1980s, the nation's commitment to renewable energy waned. When non-renewable fossil fuels were so cheap, neither the government nor the general public were willing to invest in more expensive renewable energy sources and programmes. Interest in the subject of energy, particularly renewable energy, has increased recently. This interest is not a result of rapidly rising energy costs because nonrenewable energy sources, such as oil, are widely available and reasonably priced. Instead, environmental issues, particularly the burning of fossil fuels, which many believe has a significant impact on acid rain and global warming, have sparked a renewed interest in the topic. The realisation of America's growing reliance on foreign oil is another factor boosting interest in energy-related issues. The Persian Gulf War brought this to light [1]-[5].

Energy-related public policy concerns have significant economic repercussions. Citizens and decision-makers must not only be aware of the fundamentals of energy sources, but also be able to analyse energy concerns using fundamental economic principles. These fundamental energy sources are divided into renewable and nonrenewable categories. Quickly replenishable or non-depletable energy sources are considered renewable. Solar, hydropower, wind, geothermal, and biomass are a few examples. Resources for nonrenewable energy are limited. They will eventually run out if we keep using them like we are. Examples include natural gas, coal, and other fossil fuels [6]-[10].

2. RESOURCES OF RENEWABLE AND NON RENEWABLE ENERGY SOURCES

Since electricity is a secondary energy source, it must be produced from main energy sources. The United States uses around 28% of its total primary energy consumption to produce electricity. The top five major sources for generating energy are coal, nuclear, hydropower, natural gas, and petroleum. Electricity is not categorised as renewable or nonrenewable as the principal sources. Energy consumption has increased along with the growth of the American economy and population. But this growth has been accompanied by striking improvements in energy efficiency. For instance, the US used around 9% more energy in 1989 than it did in 1973, but its real gross domestic product (the sum of the value of all the products and services produced in the economy in a year) increased by 46%! As quickly as or perhaps more quickly than other industrialised nations, the United States has increased its energy to GDP ratio. The dramatic rises in crude oil prices in the 1970s had a significant role in this improvement in energy efficiency.

The federal government's programme for renewable energy expanded quickly in the 1970s to include not just involvement in private sector efforts but also fundamental and applied research and development (R & D). As the price of oil declined in the 1980s, this enthusiasm decreased. Government investment on research and development for renewable energy fell by 90% between a high of \$875 million in 1979 and a low of \$84 million in 1990, measured in constant currency (real) terms. This pattern was reversed in 1990. R&D expenditures were \$146 million in constant dollars in 1992, and it seems probable that more money will be provided for new renewable

energy initiatives. This funding rise reflects concerns about acid rain and global warming, two environmental effects of burning fossil fuels. Future debates will focus heavily on how much funding the US continues to provide for the development of renewable energy sources.

The following facts about various renewable energy sources are listed, along with some benefits and drawbacks for each one. The solar core is where solar energy is created. The sun's extreme heat causes hydrogen atoms to split apart and fuse together to generate helium atoms, a process known as nuclear fusion. In this process, a very little quantity of mass is lost. Radiant energy is released into space as a result of this lost matter. The world receives less than 1% of this energy, yet it is more than enough to provide all of the planet's energy requirements. The sun's energy travels to the earth in around eight minutes at the speed of light, or 186,000 miles per second. Since solar energy is dispersed across such a broad region, it is difficult to capture it. The amount of energy that a particular geographical region gets is affected by things like the time of day, the season, how cloudy the sky is, and how close it is to the equator. Solar energy is mostly used for house heating. Active and passive solar heating systems are the two main categories. In an active system, the solar energy is gathered and dispersed using specialised machinery (like solar collectors). The house is built to allow in a lot of sunshine through a passive system. The heat generated by the light is contained inside. A passive system doesn't need any specialised machinery.

Making electricity is one of the main uses of solar energy. Photovoltaic (PV) cells, which are used to power toys, calculators, and roadside call boxes, are the most widely used method. Solar thermal power plants are the primary alternative method of generating electricity. The sunlight is focused by large collectors onto a receiver, superheating a liquid to create steam that powers electrical generators. Contrary to popular misconception, renewable energy includes both non-polluting (such as wind, solar, and geothermal) and polluting (such as biomass and biofuel) forms of energy. Therefore, unless its mass is non-pollutive, the simple rise in their use is not always good news for tackling global warming and other environmental concerns. The greatest economy in the world with the fastest growth rate—which is anticipated to continue for the foreseeable future—is Asia. In addition to its rapidly growing economy, Asia's sizable and expanding population and generally rising living standards guarantee an increase in energy demand that will keep it at the top of the world's energy consumption rankings (6,602.2 million tonnes of oil equivalent, or mtoe,) for the foreseeable future. Similar to other continents, Asia's energy mix is dominated by fossil fuels, whose unsustainable nature is not up for debate among the governments of the continent as a result of the mounting environmental, economic, and health costs associated with their heavy reliance on oil, gas, and coal. In order to motivate their efforts to include green energy, particularly renewable types, but also non-renewable, nuclear energy in some cases, or increase its share in their countries' energy mixes, they acknowledge the need to move away from such polluting energy in favour of environmentally clean types of energy. It goes without saying that each Asian nation's development in this area has varied, putting some of them in the forefront of efforts to combat global warming by reducing their greenhouse gas (GHG) emissions (such as the PRC) and others on the list of those lagging behind.

Despite these stark disparities, Asia as a whole remains well behind where it ought to be in the development of green energy, echoing the regrettable state of affairs on the world stage. This is demonstrated by the meagre contribution of non-fossil energy (including nuclear and renewable) to the world's energy mix in 2016 (14.47%, or 1,922 mtoe), of which the total contribution of renewable energy sources, including those that emit pollutants like biomass, is even lower (10.01%), or 1,329.9 mtoe . In that year, Asia's energy mix included a total of 9.58% (642.9 mtoe) non-fossil energy and 8.11% (535.6 mtoe) renewable energy. Regardless matter how important it may be, more than one element is likely to be responsible for this unsatisfactory outcome. However, it seems that the financial aspect has the biggest bearing. Even though more Asian nations, including the PRC and India, are making significant efforts to change this reality, the relative affordability of fossil energy, including the availability of funds for realising its projects, has been the single most significant factor in the region's limited success in developing their green renewable energy sectors. Despite this encouraging Asian trend, the primary challenges to developing environmentally clean renewable energy and therefore green energy (sometimes referred to as environmentally clean renewable energy, green renewable energy, or green energy) projects in Asia are financial. The most important of them is the problem of funding such projects, which are often capital intensive and hence need significant borrowings. Due to the underdeveloped venture capital market in many Asian nations and the predominance of banks in the Asian financial system, the continental banks serve as the primary source of financing for these initiatives. However, due to two interrelated factors—high risks and a lower rate of return on invested money than fossil-energy projects—many Asian banks are hesitant to fund them.

Of course, different countries have different contributing elements to such relatively high costs. This is primarily because only a limited number of technologically sophisticated Asian nations, including Japan, the Republic of Korea, Taipei, China, and the PRC, are able to produce the necessary locally-made technology. However, other Asian nations, including those with significant industrial capacities and some success in developing domestically produced green, renewable technologies (such as Iran and India), are forced to rely on imports of these technologies from the aforementioned Asian or Western suppliers for all, most, or even some of their needs. For instance, India's domestic wind and solar manufacturing industry is thriving, but the country still needs to import these technologies due to a number of factors, including the fact that the industry is currently unable to keep up with the rising demand as a result of the numerous wind and solar projects being undertaken in the nation. Due to their varying degrees of dependence on foreign technology, some Asian nations find it difficult to fund green energy projects while others are limited from doing so, particularly when it comes to large-scale projects. The cost of a large-scale changeover to green energy may be too high for the technologically competent Asian nations with locally accessible clean renewable energy technology when they have the choice of comparably less expensive fossil-fueled alternatives. Despite the fact that oil, gas, and coal are polluting and unsustainable for the environment, they believe that the latter is more economically rational for widespread use owing to, generally speaking, the poor yield of clean renewable technologies compared to those that use fossil fuels.

In this situation, creating green energy projects can include creating the necessary technology locally and constructing green energy facilities using these homegrown ones. Government-provided capital will be returned in the form of renewable green energy as an economic incentive, reducing the beneficiary countries' reliance on domestically produced or imported polluting energy to sustain their economic development while expanding their industrial activities and creating long-term, productive employment.

The interested Asian governments might concentrate on certain green energy projects whose respective technologies are locally accessible or could be created domestically, depending on the particulars of their country, including industrial and technical development. This is a step in the right direction, especially for Asian nations, who do not presently provide technology and lack the strong industrial and scientific sectors needed to launch independent renewable energy projects that call for already-realized advanced technologies. The emphasis should be on small-scale manufacturing of certain green energy technologies, which, given their unique circumstances, are more appropriate for these nations, both technologically and financially, while also assisting in their industrial and scientific development. They can be created, installed, maintained, and repaired considerably more quickly and cheaply locally than those made in nations that manufacture green energy technologies. As an example, consider small and medium-sized wind turbines with vertical blades, which can function in considerably less wind conditions than the enormous, pricey horizontal turbines. Other examples are tiny hydro generators (run-off hydro generators), which do not need rivers to be diverted, which would have unquestionably detrimental environmental effects and be very expensive. Furthermore, unlike solar panels and concentrated solar facilities, which employ complicated technology to convert sunlight into electricity, solar water heaters for domestic, commercial, and industrial usage do not. As a result, they may readily be constructed in many Asian nations. The need for energy to boil water, which is high across Asia, is decreased by these boilers in liquid, gaseous, and electric form.

Numerous obstacles have hampered the growth of green renewable energy projects in Asia, as is the case with all other occurrences. However, out of all of them, the financial aspect has been the one that has had the most impact by making the start of such projects more complex and challenging than those using non-renewable energy, if not outright unattainable in many instances. The primary factor, in particular, is that the Asian financial system is controlled by banks. With a few notable exceptions (namely Japan and the Republic of Korea), its capital market is underdeveloped, leaving Asian banks as the major source of finance for these projects, who are hesitant to support them for the aforementioned reasons. It has become exceedingly difficult to finance the capital-intensive green energy projects due to a lack of venture capital, the insufficiency of venture capital, and the restricted funds allocated by the government. This challenge has acted as a deterrent for those considering launching these projects, leading to a generally restricted growth of green renewable energy in Asia. It goes without saying that many Asian nations are aware of this unsustainable reality and are taking admirable steps to greatly develop their green energy sectors, even if they have a long way to go before significantly reducing the amount of fossil fuels in their energy mixes. While many other nations are working to catch up, the PRC and India are the two main movers in this field. This fact has maintained the dominance of fossil fuels in the energy mixes of Asian nations, which are bad for the environment. In addition to having limited resources due to their non-renewability, fossil fuels are also unsustainable sources of energy due to their pollution, as seen by the growing environmental issues brought on, in particular, by

CO₂ emissions. As a result, global warming, the most obvious sign of this unsustainable condition, is having a detrimental impact on not just the environment but on the economies of Asia, as it does on other continents. Of course, the severity of these harms varies according to the level of each nation's use of fossil fuels, the impact that other nations' use has on them, the success of their efforts to combat global warming and, more broadly, climate change.

Given this fact, it is essential to eliminate the financial obstacles preventing the growth of environmentally friendly renewable energy. Of course, the optimal strategy for achieving this depends on the particulars of each Asian nation. As was already said, in this context, the particular solutions that are provided in subsequent chapters encompass a broad variety of ways to address the financial problem, which the Asian nations might use to suit their unique requirements and circumstances. All Asian nations, particularly those seeking to solve their development issues and achieve sustainable development, may benefit from the local development of certain kinds of green energy technology. Throughout conclusion, while there are significant financial impediments to the development of green renewable energy projects in Asia, these barriers are not insurmountable. They can be eliminated at least by the methods outlined in this book, in addition to any others that are put forward by all parties with an interest in environmental protection and sustainable development. There is a worldwide concern about lowering carbon emissions since carbon dioxide makes up the majority of greenhouse gases (GHGs). In this context, many strategies might be used to lower carbon emissions, such as promoting the use of renewable energy sources and supporting technical advancements. Governments also utilise supporting tools including feed-in tariffs, renewable portfolio requirements, and tax policies to promote the production of renewable energy as well as energy consumption efficiency measures. Many nations have begun to set up infrastructure for the production of electricity from renewable energy sources. The relevance of alternative energy sources is related to the problems with climate change brought on by overuse of fossil fuels. Energy security, economic benefits, and carbon dioxide emission reduction are the three main drivers that propel the development of renewable energy technologies. Any source of energy other than the traditional sources, such as hydropower, is referred to as "alternative energy." The emphasis has recently been on renewable energy sources.

Two significant global trends that should define the adoption of renewable technologies over the medium term are mentioned by IEA. First, as the global supply of renewable electricity grows—from 1,454 GW in 2011 to 2,167 GW in 2017—these technologies ought to be geographically dispersed. Second, in a number of nations and situations, renewable technologies are becoming more cost-competitive with their alternatives as a result of the recent high levels of fossil fuel energy use. If local factors like funding, CO₂ emission levels, and the price of fossil fuels prove favourable, wind is the most competitive type of renewable energy technology among the alternatives, according to IEA calculations is shown in Figure 1.

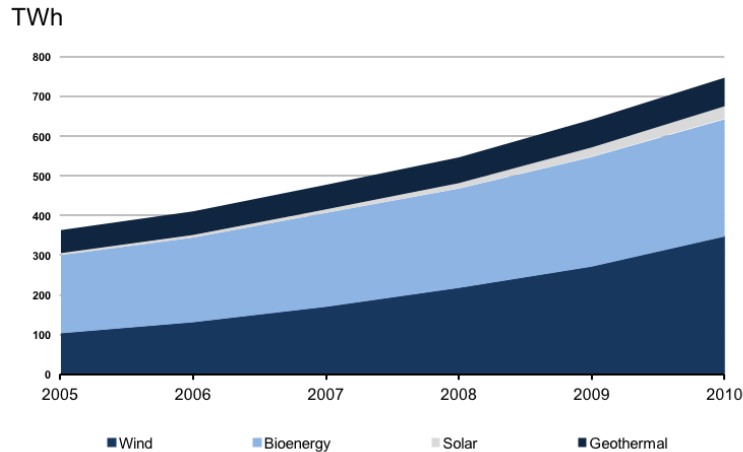


Figure.1. Energy Resources

3. CONCLUSION

Energy supply technologies, also known as non-conventional renewable energy sources like wind and solar power, and energy efficiency technologies, also known as those employed to increase energy use efficiency, such as combined heat and power (CHP), virtual power plants (VPP), and smart metres, are the two main concepts of energy technologies when discussing clean technologies. It should be noted that changing the energy industry and substituting renewable energy for conventional energy is an evolutionary process linked to technological advancement and the creation of markets. According even though the growth rate of consumption is projected to increase significantly over the following ten years, the transformation process for some renewable energy sources, such as wind and solar, will take place after 2020. Additionally, markets for renewable energy are difficult to establish because of the high costs and fossil fuel subsidies.

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