Original Research Article

Impact of Technological Innovation for Clean and Green Production on the Environment J&K UT.

ABSTRACT

Mankind in recent times has realized the importance of environment and the current threat to it. A large portion of the innovation has now been applied towards the protection of environment. The public policy of the government has been instrumental in realizing the goals of Environment preservation and protection. The paper takes an attempt to highlight the key innovation in process making impact on environment. The study evaluates policy instruments for fostering environmentally beneficial technology change and makes recommendations for their creation and application. It makes the case for the application of policies that expressly address changes in technology and that go beyond the specifics of policy tools to address institutional arrangements. To do this, policymakers must play a variety of roles sponsors, planners, matchmakers, alignment actors, and "creative game regulators," among others. These policies that emphasize learning and alignment are an addition to those that change the frame circumstances, not a substitute for them. For an ecological modernization to be achieved, both types of policies are required. Sample of 197 people from Jammu state that includes experts from different fields were surveyed to know the impact of technological innovation for clean and green production on the environment. It is found that there is a significant impact of technological innovation for clean and green production on the environment.

Keywords: Carbon emissions, energy use, and green technology

INTRODUCTION

Technology is the term used to describe the application of scientific knowledge to real-world problems as well as the resulting equipment and devices. We are currently going through a time of rapid transition as technological advancements change the way we live and bring us closer to disaster due to climate change and resource scarcity. Following the "Paris Climate Conference

(COP21)," numerous nations begin to move closer to their carbon neutrality goals(Butt, 2016).Thus, renewable energy and green technology innovations (GTIs) are crucial components that can assist in achieving the carbon neutrality objective. A Granger causality test is used to examine the causative connection between the development of green technologies, use of energy, energy production, demography, each median spending, and greenhouse gas emissions. The empirical results demonstrate the long-term co-integration of green technical innovation, sustainable sources, energy usage, demographic, and greenhouse gas releases. Furthermore, the development of green technologies and the use of renewables reduce carbon emissions, although energy use, population growth, and carbon emissions per capita increase (Bhardwaj, 2015).

Every country must utilize socially equitable technology with the least amount of environmental harm while maintaining a consistent endowment of energy resources. Furthermore, the unstoppable destruction of the environmental pollution caused by the use of traditional fuels could only be stopped by separating the need for economic growth and a decrease in the use of fossil fuels. One of the primary contributions made over the past ten years has been assisting various economies in making knowledgeable decisions regarding energy technology and energy sources in order to achieve low carbon increase in the economy. The reckless lending practices of US banks caused a catastrophic economic shutdown that affected the whole world economy at the same time. The aftershocks of this recession cause price to drop precipitously and significantly reduce international trade. Finding a way to end this recession was crucial for almost all of the world's nations. Ever since, the use of environmentally friendly technologies has contributed to a win-win scenario because, in addition to being "green," the majority of them don't deplete when used. This has allowed countries to examine the appropriate balance of green technology, energy, policy, and the timing of the policy incentives in light of their unique socioeconomic and biophysical circumstances .(Du K, et. al, 2019).

Green technology innovations (GTIs), as opposed to traditional economic development models, are essential minimizing resources required to achieve sustainable development objectives of environmental harm. Researchers, politicians, and other environmental departments in developed and developing economies are very interested in the accomplishment of carbon neutrality, which is defined as reaching net-zero carbon dioxide emissions. The various energy- and trade-related sources that release CO2 into the atmosphere are known as greenhouse gases, on the other hand.

Presently, there are several talks on GTIs in which the term "environmentally sound technologies (ESTs)" is taken to be the initial idea. However, taking into account society, the economy, and the environment radically transforms the outdated idea of green technology into sustainable solutions. Several measures were adopted by various nations to promote green growth(Mueller, 2017).

LITERATURE REVIEW:

It has been discovered that technological advancement has changed sustainability's efficacy and goodness. Innovation in technology has also changed how individuals behave. The development of sixth generation technology has also been facilitated by the usage of technology. Redefining the relationship between society and nature involves many different factors. Technologies, modifications, renewals, and regenerations that deal with the construction of a green metropolis must be developed. It generally has a favourable impact on building the city into a better place(Aithal, et. al, 2016).

Environmental, social, and economic effects of energy from renewable sources. Although conventional energy based on fossil fuels like coal, oil, and gas is necessary for the economic development of every nation, the author made the case that its use should be restricted due to its unfavorable effects on the environment. As a result, sustainable green natural resources are now in the spotlight. Using endless energy sources, which are claimed to be environmentally friendly and don't produce carbon dioxide, sulphur dioxide, or carbon monoxide, can prevent financial, social, and environmental issues from occurring. Solar energy, photovoltaic solar cells, and wind energy are some of the most practical clean energy sources. Utilizing renewable energy sources effectively will support local jobs, better health, job prospects, business expansion, consumer choice, improved life patterns, the formation of social bonds, revenue generation, population impact, and public development(Bhardwaj & Neelam, 2015).

The usage of renewable energy does not dramatically affect the environment. The highlighted how using renewable energy may improve environmental standards. This study's conclusions

were based on data from 166 countries from 1991 to 2007. The degree of economic development affects how often renewable energy is used and how much EG is produced.Investigation of the factors influencing the demand for renewable energy in Africa's oil-producing nations. For the purpose of analyzing the empirical findings, the study used the panel model, fixed effect, and random effect models. The study's findings indicated that the primary factors influencing GE demand in the chosen sample are per capita real income, declining per capita energy resources, per capita greenhouse gas emissions, and energy pricing. Because it is generated from cleaner sources, the author thought that renewable energy is a solution to both environmental issues and the current energy crisis. Clean energy is referred to as renewable energy (Umar, et. al, 2013).

The debate of India's expansion of sustainable green energy, including its present notable accomplishments, projections, estimations, generation of electricity, challenges, supposition, and employment potential. The author is well aware of the various difficulties that the renewable energy industry faces. Two strategies can be used to achieve sustainable green energy growth: employing renewable green energy and ensuring that everyone has access to just, dependable, long-lasting, and contemporary energy (Salim & Rafiq 2012).India has become the leader in the most profitable green energy industries in the world as a result of robust government support and a continually growing economy. The governments have created plans, goals, providing a friendly environment to draw in international investment and hasten the nation's entry into the market for renewable energy. In the upcoming years, it is projected that the green energy sector would significantly increase the number of jobs in the area. The references based on the results of the analysis were beneficial to modernizers, legislators, project planners, investigators, firms, stockholders(Dhillon & Kaur, 2015)

It looked into how the development of renewable energy affects societal sustainability using data from six developing countries. The author substituted energy availability for social advancement. The study demonstrated the beneficial connection between socioeconomic advancement and renewable energy. According to the study's findings, the development of renewable and sustainable energy leads to the establishment of liveliness, which raises people's quality of life

and ultimately contributes to sustainability in society. The demonstrated how practices like green hospitals in the health industry are causing climate change. The amount of resources needed to deliver modern healthcare is really low. Hospitals work around-the-clock, 365 days a year, using the most recent medical technology to perform challenging procedures in medical science that demand the usage of suitable illumination and temperature. This is dreadful to accomplish without more power. Modern healthcare not only addresses but also exaggerates the serious problem of climate change, which cannot be avoided. It was discovered that hospitals use a lot of energy, water, food, and building materials to maintain their high standards of care as wealth institutions. Additionally, it was shown that by implementing short, immediate, and long-term actions, numerous healthcare facilities may dramatically lessen their environmental effect. Developing green hospitals might be challenging given the regional circumstances and expanding client options(Khan & Ulucak, 2020).

They described how green energy policies, planning, and management could aid Countries in long-term growth and the eradication of poverty. Because of the acceleration of global economic growth and the improvement of traditional living standards, carbon use has significantly increased. The search for alternative energy sources has become imperative due to the exponential growth in the use of fossil fuels and its consequences(Sohag, 2015).As its name suggests, green energy is a renewable source of power. Despite its inability to expedite its growth and expansion ideology, The country is ironic enough to support green energy. The utilization of renewable energy, proper administration, and the potential of the economy are all being looked at and understood. The study's conclusions showed that converting from fossil fuels to green energy promotes long-term development and reduces poverty (Bhattacharya et. al, 2016).

The link between green energy and green economic growth has not been well studied. used data, for instance, to assess the impression of green energy on green economic expansion. The study's conclusions demonstrated the beneficial effects of green energy on the expansion of the green economy. An active computed universal steadiness model to look at the financial impacts and environmental advantages of extensive use of sustainable energy foundations. The significance

of the impact of renewable energy on the expansion of the green economy. According to the study's findings, using renewable energy frequently fosters economic expansion while also safeguarding the environment(Dahal K, & Pandey PR (2018).

OBJECT OF THE STUDY

1. The primary objective of the study is to know the impact of technological innovation for clean and green production on the environment in J&K UT.

RESEARCH METHODOLOGY

Randomly a sample of 197 people from Jammu and Kashmir UT that includes experts from different fields were surveyed to know the impact of technological innovation for clean and green production on the environment. The primary data for this study was collected through random sampling method and structured questionnaire. Mean and t-test was applied to analyze and evaluate the data to reach to end results.

FINDINGS OF THE STUDY

Table below is showing demographic details of the respondents. In total 197 respondents 62.45 are male and 37.6% are female. Among them 35.0% are below 38 yrs of age, 44.2% are from the age group of 38-43 yrs and rest 20.8% are above 43 years of age. 26.4% of the respondents are the experts from the academic field, 40.1% from the industries and rest 33.5% are environmentalist. 19.3% of them are working in their respective field from less than 5 years, 46.2% of the respondents are having the work experience of 5-8 years and rest 34.5% are working in their respective field from more than 8 years.

Table 1 Demographic Details

Variables	**Respondents**	**Percentage**
Gender		
Male	123	62.4
Female	74	37.6
Total	**197**	**100**

Age		
Below 38 yrs	69	35.0
38-43 yrs	87	44.2
Above 43 yrs	41	20.8
Total	**197**	**100**
Field of expertise		
Academics	52	26.4
Industry	79	40.1
Environmentalist	66	33.5
Total	**197**	**100**
Work experience		
Less than 5 yrs	38	19.3
5-8 yrs	91	46.2
More than 8 years	68	34.5
Total	**197**	**100**

Table 2 Impact of technological innovation for clean and green production on environment

S. No.	Statements	Mean Value	t value	Sig.
1.	Renewable energy sources have generated Local jobs, business expansion, revenue generation and public development	3.62	1.714	0.044
2.	Green technology does not emit carbon dioxide, Sulphur dioxide, or carbon monoxide and prevent environmental issues	3.71	3.018	0.001
3.	Technological inventions are recycling the waste to be used for beneficial purposes	3.75	3.650	0.000
4.	Green hospital practices in the health industry are helping to change the climate	3.84	4.864	0.000
5.	Development of renewable and sustainable energy is improving life's quality and contributes to sustainable society	3.69	2.763	0.003

6.	Technological invention helps to convert fossil fuels to green energy and leads to long-term development	3.91	5.862	0.000
7.	Use of renewable energy is fostering economic expansion and safeguards the environment	3.66	2.309	0.011
8.	Use of green technology is reducing our dependency on Non-Renewable resources	3.89	5.654	0.000
9.	Technological inventions help to reduce Global warming and environmental pollution	3.70	2.864	0.002
10.	Technological innovation for clean and green productions promoting the use of solar energy and consumes fewer fossil fuels	3.93	6.266	0.000

Table 2 is demonstrating the impact of technological innovation for clean and green production on environment. It is observed from the table that Technological innovation for clean and green production promoting the use of solar energy and consumes fewer fossil fuels with the mean value 3.93 and Technological invention helps to convert fossil fuels to green energy and leads to long-term development with the mean value 3.91. Use of green technology is reducing our dependency on Non-Renewable resources with the mean value 3.89 and green hospital practices in the health industry are helping to change the climate with the mean value 3.84. Technological inventions are recycling the waste to be used for beneficial purposes with the mean value 3.75 and green technology does not emit carbon dioxide, Sulphur dioxide, or carbon monoxide and prevent environmental issues with the mean value 3.71. It is also found that Technological inventions help to reduce Global warming and environmental pollution with the mean value 3.70 and Development of renewable and sustainable energy is improving life's quality and contributes to sustainable society with the mean value 3.69. Use of renewable energy is fostering economic expansion and safeguards the environment with the mean value 3.66 and Renewable energy sources have generated Local jobs, business expansion, revenue generation and public development with the mean value 3.62. In order to check the significance of the statements, t-test was applied in which it is observed that the value under significance column for all the statements is below 0.05.

CONCLUSION

Due to pollution and other negative environmental externalities, our planet is in danger of collapsing. As we are becoming more conscious about the damage we are inflicting, the demand for green technology is at an all-time high. This awareness is driving companies to release updated and better green technologies. Different facets of green technology include those that lessen the effects of humankind on the atmosphere and create new frameworks for supportable growth. Environmental protection has increasingly evolved in recent years from well-known traditional techniques to environmentally friendly, economically viable, and sustainable technologies, sometimes known as green technologies, which may offer exceptional benefits. Although many effective treatment methods have been suggested and put into use, green technologies are now the most appealing for the environment (Sinha et. al, 2018).

The study concludes that Technological innovation for clean and green production promoting the use of solar energy and consumes fewer fossil fuels, convert fossil fuels to green energy and leads to long-term development, reducing our dependency on Non-Renewable resources, helping to change the climate recycling the waste to be used for beneficial purposes and reducing Global warming and environmental pollution. It is found that there is a significant impact of technological innovation for clean and green production on the environment.

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