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**POLICY FRAMEWORK FOR CLEAN ENERGY TECHNOLOGY****<sup>1</sup>Nikhil S. Dhage and <sup>2</sup>Kalyani Joshi**<sup>1</sup>Department of Dr. Babasaheb Ambedkar Studies, SPPU, Pune, Maharashtra, India<sup>2</sup>Department Botany, SDSM, Palghar, Maharashtra, India**ABSTRACT**

*The present paper, Policy framework of Clean Technology: Policy Framework is prepared with the objectives to understand present issues and how to use clean Energy technology to overcome them and achieve Sustainable Development Goal. Environment and Economic development conflicts results in degradation of valuable natural asset. This paper discusses about Renewable Energy technologies -how to utilize them, how to frame policy in today's context of Covid 19 Pandemic, Economical business modelling etc. Policy framework for Clean Energy Technology is need of Hour. We are software expert in Global market. Clean Energy Technology necessity, present issues and their effects on Environment Education. This research paper tells Renewable Energy, Internet of Things, Data Analytics, Ground water management, Gas Management etc to Bring New Policy With special emphasis on Environmental Issues. How to Analyse Data to improve Natural resources through Policy Framework and it also includes Practical Analysis of Renewable Energy, Internet of Things, Data Analytics. Also, Policy Frame work to combat climate change, Clean Energy Technology action plan Development, Review of Indian Government Polices, International Standards, Sustainable Goal critical analysis. This research paper is practical deals with practical approach to tackle resource management using technologies. How should we plan our economy like water resource? This Research paper makes policy recommendations based on Socio-Economical approach. This Policy Framework has potential to strengthen our path to achieve Sustainable Development Goal to achieve our Sustainable Development Goal to Promote prosperity while protecting our planet.*

*Keywords: Renewable Energy, Internet of Things, Data Analytics, Policy Framework.*

**RESEARCH OBJECTIVES**

1. To understand energy policies, technology policies, and environmental policies with reference to clean energy technologies.
2. To bring out practical discussion on how software technologies works, and how to manage digital transformation- Data science.
3. To come with concept of policy framework for clean energy technology, recommendations and way forwards.

**RESEARCH METHODOLOGY**

The paper titled 'policy framework for clean energy technology' is an output of descriptive research as we as practical energy analysis which done using software. The primary data sources are official documents released by Government of India on energy consumption and energy policy, news articles, journals, and various reports released by authorised institutions. To analyse energy utilization cloud based software is used.

**INTRODUCTION**

"Energy neither be not created nor be destroyed; it can only be converted from one form into another"- first law of Thermodynamics given by Rudolf Clausius in 1850. Though the statement of 1<sup>st</sup> law is correct, it pointed out the energy conversion, 'The Key Phenomenon' which is responsible for life sustaining on earth. The energy we (humans) received from nature gets back to environment after its consumption in different form. The entire world is facing energy crisis due to rapid increase in population, over exploitation of natural resources, reliance on fossil fuel to overcome energy demand (Coyle, Eugene D. and Simmons, Richard A. 2014). The government authorities of many countries and non-governmental organizations are continuously working to tackle the problem of climate change and global warming. The governments are forming the different policies for sustainable and rational utilization of energy resources. The technologies and the policies and can be proof as the best tools in problem handling (Coyle, Eugene D. and Simmons, Richard A. 2014). There are some major challenges and issues in energy management which should be treated at priority which are classified in following table.

Sr. No.	Huge Electrical Power Demand	Technological Challenges	Environmental Issues
1	Increasing industrialization, urbanization.	Indigenization of technologies	Burden on primary, secondary and tertiary sector
2	Increasing import bills.	Increasing semiconductor material demand	Climate change impacts: urban floods, landslides

**Table 1.1:** Major challenges and issues in energy management

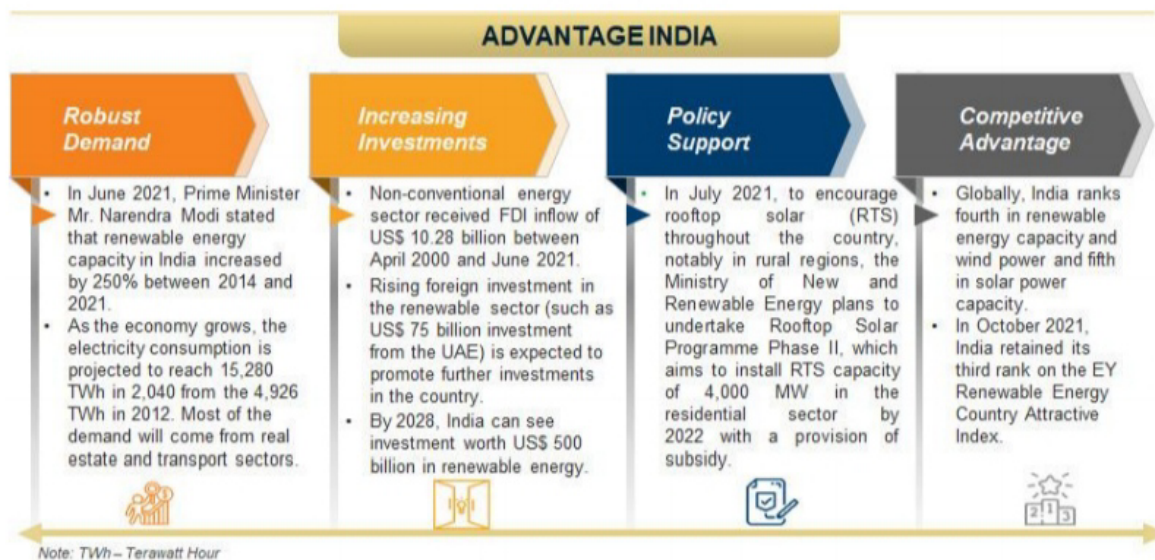
The only way to handle above issues is utilization of clean energy sources by using modern technologies and integrated policies through which the sustainable energy management can be possible.

**Policy Analysis**

The world scenario shows the developed nations are the biggest polluters in USA ranked first in list, in 2011 the per capita carbon dioxide emission in USA was 16.94 t/capita followed by Russia 11.65 t/capita. India with population 1,241 million per capita carbon dioxide emissions in 2011 was only 1.41 t/capita. (Coyle, Eugene D. and Simmons, Richard A. 2014). With this data it can be conclude that though nation is growing there is still chances of sustainable energy management.

“Policy for Clean Energy Technology is a statement for integration of Economy, Environment, New Advanced technologies for efficient Resource management like Water, Air, and Land etc.” It means the policy should be integrated. According to John Phillips and Peter Newell (Aug 2013) in India the political powers put influence on the clean energy governance hence understanding towards the landscape of political powers must be understood for climate and carbon finance intervention as political powers in India characterizes the energy sector of country.

From last decades India is focusing on achieving sustainable goals with prior focus on SDG 7 affordable and clean energy. The data of India Brand Equity Foundation which is a initiatives of government of India shows that, by 2022 nation is aiming to achieve target of 227 GW renewable energy capacity and this number is more than target of Paris agreement that is 175 GW. Several companies are working to contribute in renewable energy production among that TATA Power stood 1<sup>st</sup> in list followed by Suzlon and renew power ventures, these works on solar and wind powers. Following flow chart shows summery of renewable energy development of India.



**Image 1.2 source:** www.ibef.org

In NITI aayog in 2017 mentioned in report that by targeting year 2040, Ambition Scenario aimed to present a range of possible energy implications to nation. The reports of NITI Aayog, Govt. of India, proofs that authorities are working on policy making which will be sustainable, clean technology reliance and by which the target of affordable and clean energy to all can be targetable. As further the paper is concern with the IOTs and modern probes these are important tools in modern technologies by which the analysis and interpretation of data can be done in effective way. Following images of graphs are some examples of energy utilization analysis done by various ways using cloud based software.





No.	Name	Status	Model	Installation Date	Action
1	MSEDCL Incomer 1	ON	Schneider Conserve 6400NG	11/27/2020, 3:45:34 PM	
2	400 Kva DG	ON	Schneider Conserve 6400NG	11/27/2020, 3:47:15 PM	
3	750 Kva DG	ON	Schneider Conserve 6400NG	11/27/2020, 3:48:39 PM	
4	MSEDCL Incomer 2	ON	Schneider Conserve 6400NG	11/27/2020, 3:50:08 PM	
5	Moulding 1	OFF	Schneider EM 1200	11/27/2020, 3:54:58 PM	
6	Moulding 2	ON	Schneider EM 1200	11/30/2020, 3:02:08 PM	

**Development**

kW (Total) 0.00

12:12 AM

**Utilities and Boiler**

kW (Total) 15201.96

12:12 AM

**PDB-01 (Extruder)**

kW (Total) 29.87

12:02 AM

**750 Kva DG**

kW (Total) 0.00

12:00 AM

**PDB - 05 (Fibreline)**

kW (Total) 0.00

12:01 AM

**PDB-08 (Chillers)**

kW (Total) 60591.98

12:12 AM

**Fire Pump load**

kW (Total) 0.00

12:12 AM

**PDB-04 (Chiller)**

kW (Total) 0.00

12:12 AM



**Note: all graphs are developed using cloud based software by Mr. Nikhil S Dhage.**

Above graphs are the interpretations of energy utilization of solar power installations. The consumption is categorised as insulation area, baffle area, utility area, and POB-10.

**Steps to be Taken:**

1. **Development of Technologies at Local Level so Economical Financial funding patters new to Redefine** so sustainable employment, reduction in Poverty, Hunger –social economical problems must be resolved.
2. Industrial development need to reach Common man for Quality life as Energy is one of parameter of Per capita Income – Income Increment Model.
3. Bottom to Up Approach in Legal action, Educational Intuitions, Village to Parliament model – Complete Natural Resources Management.
4. Data Management for Water security, Food Security, Climate Security, Energy Security, Urban Developments.
5. Clean Energy Technology is Only Option huge insight, Introspections required to reach at bottom Level so Operational and Functional development of Institutions via Academics, Skill Development, Manufacturing Units Integration, Redefining Growth Model.
6. Covid 19 Pandemic is one of emergence to save Human Generations. We have to ACT – Action Plan of Clean Energy Technology required as compulsions.
7. Redefine and Redesign Infrastructure-Environmental services.
8. Strategic Partnership development should be done.

**Way Forward:**

1. Redefine Development Model based on Sustainable Development must be achieve through the integrated policy.

2. FDI should included in Environmental Projects
3. Academics research on Basics and New Technological advancements must be carried out.
4. Focus on Funding in Academics is today's necessity.
5. Environmental Skill Development

**Yes we can achieve target of \$ 5 Trillion Economy, We need Policy for Clean Energy Technology!!!**

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