

**Energy Democracy and Social Acceptance of Energy Transition:
A Review**

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In

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By

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DECLARATION

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I **Akshay C C** hereby declare that this dissertation entitled '**Energy Democracy and Social Acceptance of Energy Transition: A Review**' submitted by me under the guidance and supervision of **Dr. Satyapriya Rout**, Department of Sociology, School of Social Sciences, University of Hyderabad, for the award of Master of Philosophy in Sociology, is an original research work of mine and to the best of my knowledge, no part of this dissertation has been submitted for the award of any research degree or diploma at any other University or Institution. I also declare that this is a bonafide research work which is free from plagiarism. I hereby agree that my dissertation can be deposited in Shodhganga/INFLIBNET.

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Further, the student has passed the following coursework requirement for the M.Phil.:

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ABBREVIATIONS

ADB	Asian Development Bank
BEE	Bureau of Energy Efficiency
BOOT	Build-Own-Operate-Transfer
CPHEEO	Central Public Health & Environmental Engineering Organisation
CSPP	Community Solar Power Plant
ECOSOC	Economic and Social Council
EMT	Ecological Modernisation Theory
ESIA	Environmental and Social Impact Assessment
FAO	Food and Agriculture Organization
GW	Giga Watt
IREDA	Indian Renewable Energy Development Agency
IEA	International Energy Agency
IUCN	International Union for Conservation of Nature
LPG	Liquified Petroleum Gas
MP	Madhya Pradesh
MW	Mega Watt

NAPCC	National Action Plan for Climate Change
NEP	National Environment Policy
NGO	Non-Governmental Organization
NGT	National Green Tribunal
NIMBY	Not in My Back Yard
NMGI	National Mission for Green India
NMSA	National Mission for Sustainable Agriculture
NMSHE	National Mission for Sustaining the Himalayan Ecosystem
NMSKCC	National Mission on Strategic Knowledge for Climate Change
UN	The United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USA	United States of America
VEC	Village Energy Committee

WCED

**World Commission on Environment and
Development**

WMO

World Meteorological Organization

WWF

World Wildlife Fund

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Chapter I

Introduction

1.1 Introduction

Life on earth with its innumerable opportunities for growth have evolved over time. Like a baby, growing its limbs strong enough to move on its own, humanity has flexed its muscles over time. The world runs at the fingertips of human beings in the present era, quite ironically of a few nevertheless. Before we indulge in who runs the world, let us address the elephant in the room; What runs the world? Because, whoever runs the world has access to what they possess to run the world. Let us take the most imaginable example of a forest as a form of life on earth. Forest as a living entity sustains itself with the natural cycle of seasons and what seasons have to offer, in terms of the climate. It gets rain, sunlight and sustains itself through the basic process of photosynthesis.

K V Dayal, from Kerala, is known for his efforts to nurture forests in his land and informs about the self-sustaining nature of forests. Dayal in a digital news platform ‘The Cue’, in 2021, says that sunlight is key to the growth of a forest and it, in turn, passes onto the earth as well. This insight from a very rudimentary example of forest taken as a form of life, indicates that the sun enables the sustenance of trees. There is something that fuels growth in a tree and that is our matter of concern here. The fuel to which we are shifting our focus is energy and in the particular case of this scholarly endeavour, it is renewable energy. As an example, solar energy is found wherever the sun rises and fortunately for life on earth, it is almost everywhere on the earth.

In the context of modernity, sociological endeavours have tried to comprehend the importance of natural resources for societal needs and how society is tied to the need to depend on the environment. Moving away from earlier forms of ecological formulations that are rooted in natural sciences, social sciences have recognized the imperative requirement to understand the intrinsic relationship between nature and the social. Identified as a transformation from conventional energy to natural resources, the contemporary world is relying on renewable energy with the hope of surviving the calamity of climate change. Placed in the context of modern crises and solutions for survival, this research tries to understand how society plays a crucial role in the phenomenon of the renewable energy transition. From the societal realm of energy transition, social acceptance and energy democracy are explored as core contributions by society.

This research is a work of review without any fieldwork. It has depended on already existing secondary literature to review the relevant knowledge that engages with renewable energy transition at multiple levels. This study is looking at how real-world scenarios of renewable energy policy implementation showcases the importance of societal factors. Empirical cases are reviewed in this study, with the background of policy frameworks and tries to understand how social acceptance and energy democracy are integral to evaluate societal contributions to the renewable energy transition. By placing this study in the theoretical context of modernity, it is an attempt to comprehend social change in the form of energy transition to renewable energy systems. As this research concerns the relationship between society and energy, let us look at what historical negotiations are relevant to be mentioned to understand that synergy.

1.2 Historical Synergy Between Society and Energy

Energy is something that fuels an activity in time. Eugene A Rosa and others have looked at the sociological aspects of energy. They have talked about the pervasiveness of energy in the social domain. “Energy, though fundamentally a physical variable, penetrates significantly into almost all facets of the social world” (Rosa et al., 1988, p. 149). As we take any social arena that concerns some activity, the presence of some form of energy can be witnessed. Especially in the modern world, energy becomes more relevant as we witness calls for rapid growth. The present world also has acquired skills and knowledge to harness more kinds of energy than ever before. With more options of energy for use, its availability cannot be said to be scarce and is only subject to improved harnessing technologies. Availability of energy, means to convert that energy into usable entities and the methods in which the energy is utilized at the end is significant to establish a connection between society and energy.

Herbert Spencer in his writings has argued that the material condition of societies and differences between them would ultimately depend on the factor of energy, to a large extent (Spencer, 1862, as cited in Rosa et al., 1988, p. 150). He was referring to energy in the context of something required to carry out work. The vast disparity between countries, the socio-economic conditions and development graphs can be associated with the deciding factor of energy. The economic system of conventional fossil fuel has powered developmental projects across the globe. The present era is constituted of alternatives to fossil fuel systems but energy nevertheless proves to be an important driving force for social change. Discussions on the importance of energy in the domain of sociology itself date back to the 19th century and have gained prominence since.

Bowman and others have written about fire and its importance on earth. They note that energy in its most primitive state was known to humankind in the form of fire. Fire as an invention catered to the use of cooking food, controlling the temperatures in cold conditions and is at least four lakh years old. A simultaneous development of learning the benefits of sun, wind and water as a source of energy came along with mastery of fire as a major source of energy. Animals were also employed to ease transportation; another means to run to chores of human beings (Bowman et al., 2009). Although historically fire can be witnessed as a source of energy for a long time, things changed as societies started to develop.

It was when the industrial revolution unfurled its feathers of development with much greater pace and effect, steam as a major source of energy made its entry. Steam-powered engines had a vital role to play in the industrial age and remained a major source of energy by replacing wood. The Department of Energy or DoE of the United States, has issued a report citing the guidelines for energy literacy. It talks about how the steam engine operates. “The steam engine converted the chemical energy stored in the wood or coal into motion energy” (DoE, 2017, p. 3). With time, the generation of electricity and its transmission was made possible in the 19th century. As hydroelectric energy became a viable source of production and transmission of energy, it also became popular. The guide also suggests that, by 2010, fifteen per cent of electricity produced globally was from hydropower plants. But the energy use patterns are changing and new entrants in the form of renewable energy are very slowly starting to show their presence.

The contemporary world is witnessing a radical shift in the patterns of energy use and the ideological stand on energy production. With the advancement in the arenas of

science and technology in the industries, it has resulted in massive-scale production. The downside of this development in the energy production system is reflected as woes for the environment. This study does not deny the contribution of industries in the deteriorating environment from the time of its inception. But it observes the accentuation of environmental challenges caused by the pacy nature of development in contemporary times.

It is also to be duly noted that technology and scientific progress is offering solutions to the environmental mess orchestrated by the human community over the years. Life on earth as a society has evolved with the degrees of transformation energy has undergone. As we comprehend the importance of energy, we will look at the main conceptual frameworks that will help comprehend this study.

1.3 Main Concepts

As already mentioned, this research work intends to understand how society influences renewable energy transition. It is important to traverse through some conceptual definitions and clarification that will enhance the understanding of this research work. In the following sections, this research will briefly introduce certain conceptual definitions that help to comprehend this study. It has already been discussed how society perceives energy in general and argued regarding the centrality of energy in human life and sustenance of societies.

This chapter, in coming sections, will go on to describe renewable energy and categorically differentiate two forms of energy production and consumption methods. To address this objective, the following section will try to understand both centralized and decentralized forms of renewable energy production.

1.3.1 Renewable Energy

Environmental degradation has become a matter of concern for the common public as the world has started to witness its repercussions in various forms. Starting from the ozone depletion levels to the pollution in the oceans to the melting of polar ice, much has happened over the years that have made people environmentally concerned. To mend things, an alternative energy solution was proposed, famously called green energy. Green energy or renewable energy is something that will not run out over a period of time. In a way, it can be said that it is inexhaustive, like the energy derived from the sun. In contrast, non-renewable energy bears the threat of exhaustion as it does not guarantee an unlimited supply of material for harnessing energy. Adding to that, it is a polluting agent that harms the environment and questions the survival of life on earth.

Fossil-based petroleum products gained currency in the beginning of the 20th century. Consumption of petroleum as fuel saw a steady growth globally, for nearly a century with a minor hiccup during the oil crisis of 1973. Although seeing a decline in its consumption from the 21st century, it remains one of the major sources of energy for consumption across industries and households alike. Similar to petroleum products, consumption of coal also has seen a decline around the same time (Alvarez and Arnold, 2020, see IEA website). In this period, renewable energy started to gain its footing in several countries. As discussed earlier, renewable energy for its advantages that it does not harm the environment and for its abundant resource that does not get extinct is now a popular choice of energy consumption. When it comes to the production of energy, there are broadly two categories that will be discussed in the following section.

1.3.2 Centralized Energy Systems

Energy production and energy consumption are central to the process of energy transition. The choice of what energy to be produced under what type of infrastructure is key to this study. For a comprehensive understanding of the case at hand, let us begin by broadly classifying energy production infrastructure into two categories. These two categories being centralized and decentralized energy production, it will help us to understand energy transition in a better manner. Centralized energy systems generally consist of a larger infrastructure that enables the production of energy which is to be transmitted to farther areas for consumption. For example, electricity produced in a hydroelectric dam is transmitted through huge networks of transmission lines to the end-user. The end-user is dependent on this large system of production which distances the end-user from involving in any of its key operational steps. The end-user is devoid of any opportunity to participate in the important decisions in a centralized energy production system.

Bouffard and Kirschen have worked on understanding the differentiation in centralized and decentralized systems of energy. Discussions about these energy systems suggest that centralized systems are integrated well with a production plant and distribution connections. It can be subject to disturbances in the transmission while being distributed to target locations. Other factors that do not favour centralized energy systems are climate change, the potential extinction of fossil fuels and the infrastructural challenges of having a large transmission network. Investors are preferring small-scale systems that are decentralized (Bouffard and Kirschen, 2008, pp. 4504-4505). Due to these uphill challenges faced by centralized systems, a switch-over is in the process to decentralized energy systems. Centralized systems are relevant in both the cases of renewable and non-renewable energy.

Although centralized energy production has been associated with conventional sources, it may also be applicable in the case of renewable sources. It is to be noted that, this study is engaging with the energy transition which is happening from a centralized system that also consists of wind farms, which is essentially a renewable energy source.

1.3.3 Decentralized Energy Systems

Renewable energy unlike conventional sources of energy can be produced in a decentralized manner. Nina Mollers has written on energy transition processes and its historical trajectory, with particular reference to households and says that “energy transitions, particularly when it comes to private households, are often characterized by a slow fade-out of older energy forms as they are increasingly replaced by newer, supposedly more modern energy carriers” (Mollers, 2013, p. 51). As she further suggests, renewable energy offers much more opportunities than a centralized conventional energy system. For example, a modern household with a solar-powered electricity supply would also have a normal LPG cylinder used in the kitchen. The same household might be accommodating a provision to burn wood to regulate the temperature during winters. It enables a coexisting atmosphere for different types of energy resources. Transitioning to renewable energy brings the role of society into the limelight. More precisely, decentralized forms of renewable energy systems allow participation of the local households at an individual or community level.

Small-scale units of energy production that may extend to a community level project can be understood as a decentralized system. A successful operation of the project involves various factors at multiple stages of its development. In the case of a household as a unit of production, it follows the pursuit of policies introduced. The procurement of energy production devices will meet certain incentive programs like subsidies in the market. The

inclination towards a transition to renewable energy is very significant as it involves operating new technology. Users of conventional energy in their day-to-day life will be accustomed and familiar with resources like petroleum and its operation.

If you take an example of a taxi driver earning money by driving a diesel car, that person would be knowing how a diesel engine works and what potential complaints it might have. The cost of diesel, the running cost of the taxi car, the service requirements etc. would be familiar to the driver. This factor of familiarity motivates the driver to continue using a diesel car despite the rising fuel prices. The same is applicable for households where the charge per unit of electricity consumed, distributed through transmission lines of a centralized production system is significantly higher than electricity produced from a solar panel system installed on their rooftop. But the individuals or a community will feel hesitant to install, for example, a solar panel system on their premises. This hesitancy is inevitable to the introduction of anything novel and unfamiliar. Even with the multifarious downsides of conventional energy, there is a tendency for the users of energy to adhere to the use of conventional energy.

1.4 Context of Study

Energy production at its operational level can be categorized as centralized and decentralized forms of energy. Conventional energy systems that include fossil-based fuel energy, has a centralized form of energy production. Renewable energy systems like windmill farms and solar plants also consist of a centralized mode of production. The core characteristic of centralized energy production is its large-scale nature. These large-scale production facilities are not situated near the end-users. The distribution of energy is taken care of by a network of transmission lines. This form of production system has been powering our households for

years which includes hydroelectric dams, wind farms, nuclear energy etc. Contrary to centralized energy production that includes both fossil-based energy and renewable energy, decentralized energy production is associated with renewable energy.

Renewable energy production can be carried out in a decentralized manner as in the case of rooftop solar panels installed in households. It is an excellent example of how energy production can be possible in a decentralized model. It could be extended out to a larger geographical area of its neighbourhood or at a community level. It is not limited to its geographical aspect, as other factors like decision-making, local participation and implementation levels etc. also play a vital role in defining a decentralized energy production system. It tends to give more agency to the people compared to the case of a centralized project.

This elevated sense of agency comes with the increased chances of local participation in decision making regarding the project. If we take a typical case of decentralized renewable energy production, there is a much larger involvement of citizens with the project. These people are the immediate beneficiaries of the energy produced. In some cases, like that of a rooftop solar panel-based energy production system, they are both the producers and the consumers. In such a scenario, it could be well noted how centralized energy production seems to keep the opinions and participation of the end-users at bay. Centralized systems do not provide any opportunity for the end-user to influence any of its policy and implementation decisions. Adding to the insufficient participation factor, centralized energy projects also invoke some ecological challenges as well.

As renewable energy production includes both centralized and decentralized systems, the ecological concerns also vary according to which production system is in place. Centralized renewable energy systems such as solar farms, wind farms etc. cause geographical disturbances to the immediate landscape where they are installed. It also demands large areas of land for its operation. A large-scale power plant does not limit itself to its production plant alone but its expanse finds itself encroaching sensitive ecological areas, courtesy of the transmission lines. The construction of the plant and transportation of required equipment to the site demands the felling of trees to facilitate roads as well.

Centralized renewable systems often intervene in the social life of the local community as well. The large area of land occupied by the energy project might hinder the livelihood opportunities, worship practices and commuting route of the local community. There are chances that the energy plant will bring about major socio-economic changes in the lives of the community in the vicinity. Once the energy is produced, it utilizes transmission lines installed on land, possibly cutting across farmlands and residential areas.

Whereas in a decentralized energy system, it has the potential to transform the governing system into that of energy democracy. It counters the existing monopoly of fossil fuels and offers a system rooted in sustainable principles. It also brings about a change in the characteristic of the consumer. As this system enables production and ownership to reside within small groups or individuals, a category of prosumer emerges. A prosumer is someone who simultaneously produces and consumes. As explained above, social factors like public participation in renewable energy systems and the decentralized governance systems of renewable energy form the motivation for this research. This research is

undertaken in the modern context where there is an active trend of switching to renewable energy, with the people occupying a central role.

1.5 Statement of Research Problem

The renewable energy transition is understood as a characteristic of the new modern world that is trying to secure the living environment for the forthcoming generations as well. This research tries to engage with the contemporary social phenomenon of renewable energy transition and how it is negotiated by the social actors, particularly the public. It is important to look at this case from the societal perspective as the new system of renewable energy accommodates the participation of the public. It considers the larger conceptual framework of social acceptance and energy democracy as two major aspects in a renewable energy transition. To understand these concepts in the real-world scenario, this research attempts to review empirical cases, that are actualized through policy frameworks.

1.6 Research Objectives

Let us look at the specific objectives of the study, which are as follows:

1. To understand the significance of society as an influential agent in renewable energy transitions.
2. To comprehend the importance of social acceptance in the successful implementation of renewable energy projects.
3. To analyze the resultant governance system of energy democracy in a renewable energy project consisting of prosumers.

1.7 Research Questions

This research intends to address specific research questions given below:

1. What is the reason for a transition to renewable energy from conventional sources?
2. What is the significance of social acceptance in the successful implementation of renewable energy policies?
3. What is the significance of public participation in a renewable energy policy implementation?
4. What are the causal factors for the varying levels of social acceptance in a renewable energy project?
5. What are the changing patterns of energy governance in a renewable energy system corresponding to energy governance?
6. What changes are observed in the consumer characteristics in a renewable energy system pertaining to the idea of prosumer?

1.8 Research Methodology

This research is a work comprising of reviews of secondary literature. There has been no fieldwork conducted for this research work. This study depends on relevant secondary literature related to the topic for data. Conceptual understanding and theoretical orientation were made based on the available secondary literature. For data on international environmental policy and regulatory frameworks, several documents and websites of the United Nations have been accessed. Data regarding Indian environmental policies were sourced from relevant websites of the Indian government.

As this research is a review work, data from empirical examples chosen to substantiate the study has majorly been taken from scholarly works, news portals and census databases. Pictures included in this work have been cited with appropriate courtesy of their sources. Apart from written texts as a form of literature, social media websites like YouTube, Reddit, Facebook etc were part of the larger set of a data resource that aided an orientation towards the topic, along with sustaining the interest in the field of study. Online sources of information like environmental advocacy group websites, organisational portals etc. were also accessed for this research work.

As an attempt to understand the varying levels of social acceptance, three cases were purposively chosen with a profile that suggests contrasting conditions at the ground level. These empirical cases have been taken for review to understand the conceptual frameworks explained in this study. Windmill projects in the Sangnara village of Gujarat, Bhadla solar park in Rajasthan and the community solar power plant of Rampura village in Uttar Pradesh are the three cases taken for review. Sangnara village is seeing protests which point at the lack of social acceptance, Bhadla solar park has no human interference as it is a strategically located site and Rampura shows a high level of social acceptance with a community as directly affecting public nearby. All these three cases exhibit different examples of social acceptance, for which it has been selected. Rampura village and its power project is also an example of how energy democracy can potentially work by putting forth the possibility of the prosumer. Although these represent the explanations of concepts taken for study in this research, this list is not exhaustive as there are other examples from India itself, but not selected for review in this study.

1.9 Significance of Study

As we have briefly addressed earlier, the question of what runs the world, let us hop onto the more relevant question of who runs the world. It is now clear that we require energy to run the world and the significance of this study lies in the role of society in the production and consumption of energy. Considering the familiarity of human beings in terms of interaction with different forms of energy, we have come a long way from pulling carts to travelling in hyperloop. Although the cited examples are related to the mobility of humans, various other kinds of activities also require energy to get them running and to sustain the process. Irrespective of the activity that any form of energy serves, our interest is to look at how society intervenes in the process of energy production and consumption. This study contextualizes the contemporary world and is an attempt to understand the global shift towards adopting renewable energy.

As renewable energy transitions are increasingly getting popular among countries, like solar power plants, windmills etc., it also invites attention to look at the social aspects of this transition. The plethora of tools and resources to produce energy have gained the attention of scholarship in sociology as well as other disciplines. The key question of who regulates and controls the process of energy production interests this study and the contemporary transformations in this field is of interest to sociological understanding. In other words, the significance of this study is inspired by the role played by society in renewable energy transitions. This research intends to investigate the significance of the role played by society in general and the local communities and other immediate stakeholders in particular, in the process of the renewable energy transition. It also considers energy governance systems as a key social factor that influences the functioning of a society. As we

have explained the significance of this research, let us proceed on to briefly discuss the different chapters of this study.

1.10 Chapter Scheme

This research dissertation has six chapters, including the Introduction and Conclusion chapters. As this dissertation is a work of literature review, there are four main review chapters. Apart from the first Introduction chapter, the second chapter is a theoretical review chapter and the third chapter comprises of conceptual review. The fourth chapter is a review of policy frameworks and the fifth one consists of a review of empirical cases that substantiate this study. The final chapter consists of conclusions and findings from this research work. In the following sections, a detailed chapter scheme of the thesis is given.

The introduction chapter of this thesis attempts to introduce this topic of study. As this study engages with the social phenomenon of renewable energy transition and the role of society in it, it begins with a brief introduction of the important link between societies and energy with a historical context. It signifies the inevitable relationship and dependence of life on earth concerning energy sources. The following parts have a review of secondary literature to elaborate on the key conceptual definitions required for this study. It also explains the context of the study and the larger research objectives, followed by an account of the methodological design used to conduct this research. The motivation to investigate this area of interest in the sociological discipline is explained and arrived at the significance of this study, followed by the chapter scheme.

The theoretical chapter forms the second chapter of this research thesis. The chapter tries to understand the phenomenon of the renewable energy transition with theoretical

frameworks of *Risk Society* and *Ecological Modernisation*, which explains it in the context of modernity. Along with that, this chapter will have an understanding of the *Sustainable Development* framework. Renewable energy policies have been adopting the principles of sustainability for projects in India. This study finds importance in understanding those developments through the lens of sustainability.

As the phenomenon of the renewable energy transition is already discussed and understood with the relevant theoretical frameworks, it gives an impetus to proceed to the third chapter, which is the conceptual review chapter. The renewable energy transition can be seen as an environmental solution offered with the help of advanced technology for society at large. Within that solution, this work is interested to look at one of the crucial and sociologically relevant factors in the implementation of the transition, that is, *Social Acceptance*. This work is also interested to look at the potential changes in the governance systems and the citizen's consumption pattern after the transition which is wrapped around the discussion of a very new framework of *Energy Democracy*.

These concepts will be put under scrutiny in the empirical review chapter, where this study will understand the real-world manifestations of the conceptual frameworks. For these deciding factors to get actualised in the real world and for the literature-based claims to be understood in a better manner, it requires a policy intervention in a site of development. With that idea, this work proceeds on to the next chapter.

The policy review chapter, the fourth chapter, traces the renewable energy policy frameworks that have been adapted to address the crises concerning the environment and development. It looks at the key policies that have been formulated and implemented, both

globally and in India. With an added emphasis on the Indian policies, this chapter attempts to review the key policies and engages with them critically to understand the process of energy transition at large and the conceptual frameworks that are rooted in the social. As an empirical scenario can be best understood in the case of a renewable energy transition after policy implementation, this chapter is followed by a review chapter of empirical cases taken for study.

The fifth chapter of empirical review will carry the review of real-world policy implementation scenarios of renewable energy transitions, that are taken from three different states of India. All three cases present different manifestations of the social aspect in the transition process and analysis are done based on available secondary literature. *Sangnara* village and windmill plant of Gujarat is one of the three case studies. Secondly, this work looks at the *Bhadla* Solar Park of Rajasthan. A community-level solar power project in the village of *Rampura* situated in Uttar Pradesh is taken as the third empirical case for analysis. All these cases represent India's policy implementation in the journey of becoming a global leader in renewable energy production.

This work is concluded with the sixth chapter, as the study is revisited through the research objectives, research questions and methodology. The main arguments are discussed along with the findings of the study. This chapter also suggests the further scope for research in this field of study and is concluded thereafter.

1.11 Conclusion

The world is at the crossroads of a very important social change in terms of energy consumption. People across the world are in the process of realising the importance of

renewable energy and is taking steps to embrace the inevitable change in their lives. The so-called change is not an exclusive one although. It is a change that will coexist with the present system of conventional energy forms. But the time will only tell if it will be a temporary halt with a more accelerated change in the future with only renewable energy. What this research finds important is the role of society and how it influences this radical change in the energy system.

With renewable energy, with a renewed interest in sustainability, it is important to look at what agency do the people have in determining their future. With an attempt to take forward the scholarship in understanding the ever-evolving relationship between society and energy, this is a study to understand how social acceptance plays an important role in this energy transition. It also looks at how society plays an agential role with a more decentralised form of energy governance by becoming a *Prosumer* in the new energy economy, rather than continuing to be a confined consumer with less scope of participation. This research, with the analytical reviews on the policy frameworks and empirical scenarios taken for study, have tried to understand this social change through three theoretical frameworks.

In the context of reflexive modernity, the theory of Risk Society aids to comprehend the demands for a new form of an energy system in contemporary society. While the framework of Risk helps to grasp the requirement of transition, the Ecological Modernisation framework gives a sense of technological and industrial role in enabling that transition. The Sustainable Development framework is employed to understand the principles of the energy transition to renewable energy. In the following chapter, we will look at these frameworks to understand renewable energy transition.

Chapter II

Comprehension of Energy Transition through Theoretical Frameworks

2.1 Introduction

In sociological theoretical tradition, modernity is understood as the contemporary period of society. There are contentions from the post-modern theorists with an argument that a considerable change has taken place in the world after the prescribed modern era, leading to a post-modern theorization. As our topic of interest is renewable energy transition viewed as a social change, this study intends to look into two major theoretical frameworks of modernity. *Risk Society* framework touched upon by Anthony Giddens and expanded by Ulrich Beck is one of the theoretical lenses through which this study will comprehend renewable energy transition. *Ecological Modernisation Theory* is another framework employed to explain the transition. Joseph Huber, a German sociologist is credited as the founding scholar of the theory of ecological modernisation. Both of these frameworks do not stand in isolation as both are modernity theories in understanding modern society.

Sustainable Development, as the most appropriate theoretical framework to explain developmental initiatives in the modern world, is discussed in this chapter. As a suitable framework to understand environmentally focused development in contemporary India, the sustainable development paradigm will provide the appropriate tools to explain the phenomenon of renewable energy transition in the country.

The renewable energy transition is a phenomenon of the modern age with advanced technological knowledge and environmental concerns. Industries and technology have been at the forefront of development in the past decades from the period of industrialization. Before explaining the study in the framework of Risk Society, it is necessary to understand the idea of *Reflexive Modernity*. And then the chapter proceeds on to the discussion of renewable energy transition happening in a society in the background of a risk environment. Followed by that, this chapter engages with the solutions offered by the modern world. The final part of the chapter discusses the sustainable development framework, particularly in the Indian context. Nevertheless, this research finds it important to briefly discuss how sociology as a discipline has initially approached modernity. A brief introduction to the standpoints of classical thinkers on modernity is given in the following section.

2.2 Classical Standpoints on Modernity

There have been theoretical attempts to understand and define modernity from the classical thinkers in Sociology. This study finds it important to acknowledge those classical traditions of understanding modernity. Classical thinkers like Karl Marx, Max Weber, Emile Durkheim and Georg Simmel have attempted to analyze modernity in societies. We will very briefly look at each theoretical underlining on modern societies, traversing through each thinker.

George Ritzer, an American sociologist, outlines the theoretical pathways on modernity embarked upon by classical thinkers. Karl Marx understood modernity as the social change in a capitalistic society. Marx in his works, critiquing the political economy, talks about *alienation* as one product of modernity. He understands modernity through the

modes of production and does not look at the energy system as such in that era. Weber explains modernity as facilitating an *iron cage* where human beings are in the prison of rationality. His comprehension of modernity too, do not shed light on the impending environmental realm of society. Durkheim observed that modern societies decrease the sense of collective conscience in societies, amounting to Durkheim's concept of *anomie*. Simmel explains modernity in two interrelated realms, one of the cities and the other of the money economy. Simmel understands the city as the site where modernity is manifested (Ritzer, 2018, pp. 555-556). But the idea of modernity has radically changed in contemporary times. Staying within the theorization of modernity in contemporary times, this study aims at making sense of the renewable energy transition as a phenomenon of modernity and explains it through the following theoretical frameworks on modernity.

2.3 Understanding Reflexive Modernity

German sociologist Ulrich Beck, as the proponent of *reflexive modernity* has attempted to explain the new modernity and takes a different path from the *post-modern* framework. Beck and others offer a brief but encompassing outline of the framework of the so-called reflexive modernity and say that it is, “the modernization of modern society” (Beck et al., 2003, p. 1). They go on to say that modernity at a point undergoes an exponential shift and, “It begins to transform, for a second time, not only the key institutions but also the very principles of society. But this time the principles and institutions being transformed are those of modern society” (Beck et al., 2003, p. 1). This explanation indicates the non-linearity of social change in this newly conceived modern phase. As we look into the distinguishing characteristics of the *first modernity*, it will help to understand what Beck means by reflexive modernity.

Modernity as a social change is offering more crises and it leads to changes in the structure of society and along with it transforms the already understood perceptions of social change. If we take the modernity that arrived first, it was characterized with territorial societies with demarcations of modern nations and boundaries. Even when modern society was conceptualized as having free individuals with voluntary agency, it was restricted to theory. In reality, the freedom of individuals was subject to the institutional relations that tied the free individuals to society and its norms. The first modernity also identified the nature and environmental concerns as something outside the social (Beck et al., 2003, pp. 3-5). The problems thus risen out of environmental challenges found a place outside the societal negotiations and it carried a notion of the environment as an unending resource provider.

In reflexive modernity, the idea of boundaries remains but exists in plurality. The notion of national boundaries of states that characterized the earlier modernity is no more relevant according to Beck. Instead, the boundaries take the shape of options available to define boundaries. The essentiality of boundary creation is transformed into the step preceding it, as the rationale based on which boundaries are to be drawn become more relevant in the latest modernity. It also breaks the notion of the already attained modernity as something finite and final (Beck et al., 2003, pp. 3-5). Reflexive modernity offers problems that are nuanced and which cannot be explained in a homogenous understanding of modern society. It requires more intricate tools, as the second modernity is a heterogeneous entity with multiple levels of negotiations that are specific to the problems at hand. As Beck explains this new society as a risk society, it is to be understood with the underpinnings of reflexive modernisation. This study finds it relevant to look at renewable

energy transition as a phenomenon of risk with ecological concerns, as the next section engages with it.

2.4 What is Risk Society?

In the context of reflexive modernity, understanding society has been associated with the factor of risk. Anthony Giddens and Ulrich Beck are two important scholars who have introduced and elaborated on the framework of risk to understand modern societies. We will first look at how the English sociologist, Anthony Giddens perceives risk in the context of modernity and how it can be employed to explain environmental developments in the recent past. Giddens differentiates between risk and danger and claims that, even with the difference they are closely related factors. ‘Danger’ is explained as something that awaits in a risk environment. He says that, “A person who risks something courts danger, where danger is understood as a threat to desired outcomes” (Giddens, 1990, pp. 34-35). This interpretation of risk is in the context of action by individuals. He then goes on to explain risk outside individual premises.

2.4.1 Anthony Giddens on Risk Society

Giddens talks about larger effects of risk associated with a larger group of individuals. He mentions ecological disaster as one such risk phenomenon that has the potential to impact the lives of many. Regarding the research undertaken, the transformation of energy systems into renewable energy can be understood as a social phenomenon succeeding the events of environmental challenges. The proliferation of the fossil fuel economy has brought about foundational damages to the ecology. Change in the climate behaviours, unprecedented natural calamities over the years and similar catastrophic events underline the phenomenon

of risk as outlined in the theoretical framework. It also presents the global-level impacts of risk. Environmental challenges do not spare anyone as it has an overarching impact on the world population. He says that risk has a global appeal in terms of its impact. As an example of risk mentioned above, he opines, ecological disasters are capable of impacting every or most life on earth.

As we are discussing renewable energy transition, it is important to briefly designate the significant reasons leading to the transition which can be explained with the framework of risk society. In the context of modernity and large-scale industrial production, the ecological realm of the earth has sustained considerable losses. The challenges in the ecological realm have translated into the human world creating an environment of risk. Desperate measures are being devised to combat ecological issues that constitute the larger arc of climate change.

Risk can be understood as the manifestation of modernity and its consequences on lives. He attempts to explain the ‘new modernity’ that differentiated from the existing modernity, contrasted to the idea of ‘post-modernity’ (Giddens, 1990). He argues that the world is in an advanced stage of modernity which can be explained by the framework of risk. According to him, “Modernity is a risk culture” (Giddens, 1991, p. 3). The contemporary world can be understood in this framework. The way the world is arranged in the present era, with modern technologies intended to ease life in societies, also introduces a characteristic of risk involved with modernity. The topic of research of this study is premised with this idea of modernity that has created an ecosystem of risk. This risk is manifested, as explained in this study, in terms of environmental challenges that impact lives on earth.

2.4.2 Ulrich Beck on Risk Society

Ulrich Beck is another scholar who contributed heavily in explaining the framework of risk society in the context of the 'new modernity'. Referred to as 'reflexive modernity' by Beck, he explains risk as a phenomenon of the new reflexive modern world. It is explained through the understanding of the production system as it is stated that, "in advanced modernity the social production of wealth is systematically accompanied by the social production of risks" (Beck, 1992, p. 19). Looking at the risk phenomenon through the angle of production, Beck outlines the understanding of modern society concerning the outcomes of production. He says that, in a risk society, the outcomes of production are problems and conflict situations by the virtue of advanced science and technology.

The societal negotiations creating consequential dangers as a part of the distribution of the production system in the modern world is both characteristically tangible and expansive. Ecological exploitation is happening in front of our eyes. The repercussions of ecological exploitation have manifested as numerous hazardous occurrences in the world. The quotient of danger has accompanied these hazards as well. Climate change as a reality has been the subject of global discussions and ways to fight this danger in the environment of risk has been a prioritized matter globally.

Beck goes on to define risk as he says, "Risk may be defined as a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself" (Beck, 1992, p. 21). With this definition, the idea of risk is demarcated from that of danger that existed in non-modern times. It is pointed out that risk indeed is a product of the modern world. In the older times, the world has witnessed calamities that indicated the lack of

technology to combat certain dangerous situations. Diseases of incurable nature have had their impact on the globe but they could not be traced as the consequence of modernisation. Risk differentiates from danger in terms of the contrasting understanding of the period in which risk arises and the extent to which it can have an effect. As we conclude, the idea of danger is not sufficient to explain the modern industrial world comprising of risk.

2.5 Energy Transition as Ecological Modernisation

Reflective of the environmental challenges posed by technologically and industrially aided human actions, the world was already looking for solutions to tackle the problems. The sociological understanding of the environmental problems attributed it to the production system as being a major contributor to the issues. Global agencies like the United Nations in the late 20th century itself have led a collaborative effort with other nation-states to confront the environmental question at hand. The world required a transformation in terms of its industrial production systems and it was addressed primarily through the *1987 Brundtland Report*, putting forth the perspective of a sustainable future for the earth. The proposed framework in the report can be sociologically understood through the framework of *Ecological Modernisation*. In this section of the chapter, this study will look at how the ecological modernisation theory can be employed to comprehend the significance of industry in terms of providing solutions to the existing state of affairs without compromising on the world's progress towards modernity.

‘Ecological Modernisation Theory’ can be understood as a framework to interpret the transformational characteristics of industrial production to safeguard environmental priorities. Arthur P J Mol and David Sonnenfeld have studied the negotiations happening in

the modern highly industrialised world concerning ecology. They observe that “From the initial contributions onwards, the aim of Ecological Modernisation Theory has been to analyse how contemporary industrialised societies deal with environmental crises” (Mol and Sonnenfeld, 2000, p. 5). Although being a very new framework to understand industrial changes in terms of ecology, three stages have been identified in scholarly literature in the development of ecological modernisation as a theoretical framework.

2.5.1 Developmental Stages of Ecological Modernisation Theory

The first stage of EMT in its development as a school of thought has been largely been contributed by Joseph Huber himself. As this framework tries to understand ways to tackle the environmental crises at hand, it is explained how it initially focused on innovations in the technological aspects. It was understood, in the first stage of development of EMT, that, industry signifies the impactful player in addressing the question of environmental challenges. Environmental issues that were prevalent in the society, according to the first stage of development of EMT, were explained as being potentially solvable by the technological advancements (Mol and Sonnenfeld, 2000, pp. 4-5). It did not, initially, put much emphasis on analyzing the significance of the agential contribution of human beings and the struggles at a society level in combating the crises in the ecological realm

The second stage of the development of EMT is defined in the period of the 1980s to the middle of the 1990s. A lesser emphasis on technological aspects can be witnessed as compared to the first stage of development in terms of ecological modernisation. More importance was laid out for taking into consideration the significance of the state and the market. The third stage from the second half of the 1990s has witnessed the broadening of

EMT into other geographical regions including the currently developing countries. It has also expanded in its theoretical foundation (Mol and Sonnenfeld, 2000, p. 5). Although the industrial production system was modernized with technologically innovative techniques to aid the cause of environmental reforms initially, more importance was given to other aspects as well.

2.5.2 Transformations in Society Rooted in Ecological Modernization

‘Ecological modernization’ as a theoretical framework have analyzed the changes in the institutional negotiations, policy frameworks and societal realms which aim to fight the environmental crises. According to the theory of ecological modernization, Mol and Sonnenfeld have outlined the key lines of analysis to understand the environmental reforms, which is presented briefly in the following section.

Firstly, environmental problems historically have been attributed to the advancement in science and technology and its use in industrial production. Heavy industrialization as a catalyst of environmental hazards has been considered also as the provider of solutions for the problems risen. There is a change in the role assumed by science and technology, from that of the problem-creator to that of the solution-provider. Secondly, the group of market agents such as consumers, producers and so on have taken up the pursuit of bringing in considerable change in the environmental situation (Mol and Sonnenfeld, 2000, p. 6). Compared to the earlier composition of the state agencies and social movements leading the path of environmentalism, this change has been observed from the part of the economic domain of stakeholders.

Thirdly, there is an observable change in the attitude of the state functionalities, which has transformed from a top-down approach to a more decentralized one. The role of state administration has been referred to as traditional. With an increasingly decentralized mode of administration in the environmental reforms, it is seen as one of the considerable aspects of the new modern society. As the fourth point, social movements have moved up the ranks in terms of their decision-making prowess. With penetrable influence, both in the private and public spaces of decision making, social movements are now a decisive element in environmental reforms. Fifthly, the conventional ideology that creates a dichotomy of environment versus development is deemed to be no longer acceptable. Such ideological positions have been identified as countering the idea of sustainability. It has been encouraged to locate the legitimacy of environmental ideology to that which acknowledges the principles of sustainability (Mol and Sonnenfeld, 2000, p. 6-7). All these analytical categories give an idea of how the system of institutions and society form the major theorization in EMT.

Ecological modernization as a theoretical framework to understand the environmental reforms can be seen as the implementation of renewable energy systems that concern this study. With the idea of ‘super-industrialization’ catering to the needs of environmental reforms, as an agent of solutions, ecological concerns have been addressed by the industry itself at various levels. The approach, as mentioned earlier, acquires a sustainable mode of production that incorporates development without harming the environment. In the following section, we will look at the sustainable development framework in detail.

2.6 Viewing Through Sustainable Development Framework

In this section, we will discuss the crucial juncture where this perspective took to the floor and what salient features are embedded in the paradigm of sustainable development making it one of the most important paths forward for growth. It will be followed by an understanding of sustainability in the Indian context and why it is relevant to this study of comprehending the idea of social acceptance and energy democracy.

The world, when encountered with environmental crises as a result of the industrial production systems, was looking for a way out that would not hamper modern progress in society but at the same time conserve valuable natural resources. Natural resources are key to human sustenance and thereby it grew as an inevitable step to arrive at a solution that offered an optimum matrix for growth. The debates and discussions on the changing dynamics of environmental hazards and the need to combat them were becoming a matter of urgency. The global actors committed to a renewed action plan for the development of the modern era proposed a new paradigm of progress for the world, known as sustainable development.

As an attempt from the global community to address the problem of imbalance between social equity and environmental quality, the United Nations in 1972 convened a conference in Stockholm, to discuss plans for the future. Although it was only later in 1987 that an official document explaining the idea of sustainable development captured the imaginations of the global community. It was in *Our Common Future* or the *Brundtland Report* of 1987, where the definition of sustainable development was officially published, by the World Commission on Environment and Development (WCED).

In the Brundtland Report, WCED defines it as, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 43). As the report categorically mentioned about needs of the coming generations, it aims at a regulated use of resources to ensure equity in resource distribution and consumption. Peter P Rogers and others have written on the conceptual framework of sustainable development. They give a very brief orientation of it and say that “the concept of sustainability explores the relationship among economic development, environmental equality and social equity” (Rogers et al., 2008, p. 42). This resonates with the very popular idea of sustainability given by the UN.

2.6.1 Social, Economic and Environmental Aspects of Sustainable Development

Sustainable development, as noted earlier, is aiming for environmental protection as well as social progress along with economic mobility, at the same time. Rogers and others have elaborated on these three aspects and said that “Sustainable development has three dimensions: economic, environmental social” (Rogers et al., 2008, p. 42). Sustainable development is described as the integral development of all these components at an optimum rate. Let us look at all of the three components as explained in their work, and discuss their relevance to the sustainability framework.

Firstly, let us discuss the importance to regulate economic growth to allow the other two aspects of sustainable development to prosper. Robert C Repetto is a scholar working in the area of sustainable development, based in the United States. Repetto says that “the core idea of sustainability is that current decisions should not impair the prospects for maintaining or improving future living standards” (Repetto, 1985, p. 10). It is an indication of the need

to do away with the exploitation of the environment for economic needs. It is important to achieve a balance between the three components of development, as the framework of sustainability observes.

Secondly, the International Union for Conservation of Nature (IUCN) in 1980 stresses the importance of ecological preservation through a sustainable development framework in the World Conservation Strategy report and outlines three major objectives of conservation. IUCN enlists three objectives, which are, “to maintain essential ecological processes and life-support systems; to preserve genetic diversity; to ensure the sustainable utilization of species and ecosystems” (International Union for Conservation of Nature, 1980, p. VI). It can be understood that the dependence of human sustenance on environmental resources is an inevitable part of life on earth. The framework of sustainability identifies this crucial necessity of development that caters to the longevity of life on earth. The importance of the environment cannot be sidelined or ignored for developmental growth, but rather finds an integral role in offering the balance as suggested in the framework.

Thirdly, Edward B Barbier, an American economist, outlines the criteria for sustainable development benefitting the social aspect of the sustainable development paradigm. Its significance is rightly described by Barbier as he says, “Sustainable economic development is therefore directly concerned with increasing the material standard of living of the poor at the ‘grassroots’ level” (Barbier, 1987, p. 103). It is a suggestive indication of the priority given to the developmental growth of individuals in the society as opposed to the overall development of a country. At this point, let us focus our attention on the Indian context and how sustainability principles get played out in the country.

2.6.2 Sustainability Framework in India

The global adoption of a sustainable framework for developmental projects undoubtedly created ripples in the Indian context as well. India as a country with varied socio-economic realities among its population, sustainable development offers the promise of optimum and integral development of all three aspects of the social, the economic and the environmental.

Indian sociologist Amita Baviskar is a scholar who has worked extensively in the area of environmental sociology and development. She makes the point that Indian scholarship in the late twentieth century started acknowledging the importance of considering the ecological realm in understanding the social. The framework of sustainable development provided a critique to the advocacy of elite environmentalists who had created a dichotomy of environment versus development. It was also the revamp of Indian environmental sociology, acknowledging the potential for developmental initiatives and environmental protection to coexist (Baviskar, 1997, p. 196). The present scholarship in this area, although struggling at the periphery of mainstream sociological enterprise, is making noteworthy inroads to locate its centrality in Indian sociology.

Baviskar also says that “The impoverishment of the working class and the impoverishment of the environment were seen to be inter-related” (Baviskar, 1997, p. 197). As indicated, the Indian context offered a picture of socio-economic development being driven by ecological prosperity. The question of social equity that the framework of sustainable development tries to address, proves to be a very relevant marker in India. Natural resources, their availability, access to resources and their regulation has been central

in the Indian context, which can explain the social reality of impoverishment in certain communities. It also indicates the tendency of environmental concerns to unify the various strata of Indian society into one homogenous group endangered with ecological hazards. Whereas in reality, there is an approach to erase social differences with a uniform environmental concern, which is to be critiqued. Baviskar also discusses the ‘Narmada Bachao Andolan’, started in 1985, as an example of this attempt to transcend the social differences of different stakeholders by bringing it into one umbrella of the environmental movement (Baviskar, 1997, p. 202).

2.7 Conclusion

In this chapter, this study has tried to understand the phenomenon of renewable energy transition through three theoretical frameworks. In the context of reflexive modernity and through the explanation of risk society, the crises in the environmental realm is explained. The problems attached to the environment are explained as inevitably carrying societal explanations. The turn of a second modernity is characterized by certain social changes that have attempted to address the issue of environmental concerns.

These urgent measures in the efforts for development, incorporating ecological protection, has been understood by the explanation given by the framework of ecological modernization. It explains the role of various social and institutional actors in creating new paths of preventive and sophisticated adaptations with the help of scientific technology. Industrial processes are reframed to accommodate longer sustenance and to equally take care of socio-economic developments in the world. Renewable energy systems as one such product of technological innovations can be explained through the framework of ecological

modernization, reinventing developmental processes and transforming the language of development in general.

One such developmental paradigms that have garnered attention and appreciation is that of sustainable development. As a theoretical framework to understand the global policy assertions regarding development, it explains the contemporary model of initiatives that have reflected its expertise in India as well. The next chapter discusses ‘social acceptance’ and ‘energy democracy’ as two broad conceptual frameworks to get an idea of society’s role in energy transition, following the sustainability idea of development.

Chapter III

Conceptual Understanding of Social Acceptance and Energy Democracy

3.1 Introduction

Renewable energy is deemed to be the future of the energy sector, in terms of both production and consumption. Also called green energy, it instils hope in many who understand that earth's non-renewable energy sources are rapidly depleting, thereby raising an alarming situation for the survival of the earth and consequentially for humanity. Although harnessing renewable energy appears as the solution to most challenges caused by non-renewable energy projects, it involves another set of challenges and peculiar characteristics that influence further development in the area. In other words, it can be said that the transition to renewable energy and its success is largely dependent on a few societal factors that this study tries to explore in this chapter. The role of society is integral to the renewable energy system and in this chapter, it will be discussed how society intervenes in the energy transition. This study attempts to demarcate the societal role into two broad domains, that of 'social acceptance' and 'energy democracy'.

This chapter discusses the conceptual framework of 'social acceptance' in renewable energy transitions. It is a broad framework to understand the important role played by society in accepting and adapting to a novel model of policy initiative. When it comes to renewable energy, it has a central role in the implementation of a project. Within its broader conceptual framework, there are other significant factors like *siting decisions*, *public participation*,

NIMBYism (Not in My Back Yard) etc. which are of utmost importance in understanding social acceptance with conceptual clarity.

This chapter is also an attempt to understand the domain of ‘energy democracy’ that is very much relevant to understanding renewable energy transition as a phenomenon of social change. This study is trying to look at it from two perspectives. It is understood as a social movement of the modern era, which advocates for a new energy system, replacing the fossil fuel energy system. Secondly, it is perceived as a new system bringing in a paradigm shift in the social, economic and environmental aspects of energy. Going along the lines of sustainable development, it shows a path of a fairer system of energy distribution based on a decentralized model. This chapter also discusses the changing dynamics of a consumer to that of a prosumer.

3.2 Introducing Social Acceptance

In this section of the chapter, we will have a closer look at social acceptance in the general understanding of the concept. We will then move on to discuss it in the realm of energy systems and how it is relevant along with certain demarcated forms of energy systems. To elaborate on the demarcated categorizations of centralized and decentralized energy systems, this study will explain how it is relevant within the understanding of energy systems in terms of its model of production, infrastructural size of the projects and the ownership patterns.

‘Social acceptance’ as a conceptual framework finds its roots in the social-psychological disciplinary domain. It is fundamentally related to human beings, concerning the society the individual lives in or interacts with. Mark Richard Leary is a professor of psychology and neuroscience and has talked about social acceptance from the psychological

perspective. He talks about how social acceptance is related to the attitude of others in including an individual within their social life and what ties they keep with that person. A person being socially acceptable points to the accommodation of that person in a group of individuals (Leary, 2010). Social acceptance finds its fundamental meaning in interaction among human beings in a society. It is thus a key aspect in a harmonious living of an individual in a society or a smaller community neighbourhood.

From this basic understanding of social acceptance, it is to be noted how scholars have indicated the factor of social rejection. Social rejection is associated with exclusion and expulsion from an existing framework of social relationships. Several behavioural patterns may lead up to social rejection of an individual. C Nathan De Wall and Brad J Bushman, scholars of psychology, have written on social rejection. They note that “social rejection is experienced as ‘bitter’ to motivate individuals to avoid a negative state in which they do not receive the benefits of inclusion, which ultimately decreases their survival rate” (De Wall and Bushman, 2011, p. 257). It signifies how society contributes to the growth of an individual through the constraints of acceptability.

Both conceptual factors, ‘social acceptance’ and ‘social rejection’, finding their roots in social psychology, determine the pivotal role of society at the centre of all the affairs that influence societal changes. Now we may attempt to understand why society plays a similar role in renewable energy systems. ‘Social acceptance’ becomes a key constraining factor in the development of a renewable energy production system. We may proceed by understanding how society influences certain policy decisions and infrastructural requirements of a renewable energy system.

3.2.1 Social Acceptance in the Policy Premise

Social acceptance is a hurdle that one finds in the path of implementation of new policies. In an era where rapid changes are taking place on multiple fronts, social acceptance plays the role of a ‘check and proceed’, contributed by the local stakeholders, technological firms, governments etc. The success rate of policies depends largely on the factor of social acceptance.

The authority responsible for implementation is expected to collect a report of consensus among the local stakeholders. It can be done through impact surveys, debates and discussions before the policy implementation. Apart from energy projects, social acceptance has its relevance in any kind of developmental policy initiative. In the following sections, we will look at how social acceptance is a key aspect of various energy-related policy initiatives.

3.2.2 Social Acceptance in Conventional Energy Systems

Categorizing energy systems into conventional and renewable can be a very strict demarcation. Either of the energy types can’t exist in isolation. Both these types of energy exist together in the present times, as a complete transition of energy is understood to take more time to come about. Nevertheless, it is important to understand social acceptance as an integral deciding factor in renewable energy transitions. Relying on the demarcations of conventional and non-conventional, it can be understood what role the societal factors of social acceptance play in an energy system.

Let us take the case of the conventional energy system, mainly the present reigning system of fossil fuel economy. A Fossil fuel system is a centralized model of energy

production, with large infrastructural facilities. The ownership may rest in the hands of the governments or big corporations. The chances are very less, of accommodating public opinions and evaluating their acceptance level before a policy is implemented.

3.2.3 Social Acceptance in Renewable Energy Systems

Renewable energy systems are more diverse considering the size, models of production and ownership patterns. A renewable energy plant may have a centralized system with a large infrastructural facility, like windmills and solar parks. They transmit energy with long transmission lines, similar to a conventional energy distribution system. The ownership may reside with corporations and governments, or with either entity in isolation. But at the same time, renewable energy can be decentralized, small scale units with individuals as owners of the energy system. With all these variables, the factor of social acceptance shows different characteristics with varying levels of relevance. This differing nature of social acceptance within two major types of renewable energy systems is discussed in the following section.

3.2.3.1 Social Acceptance in Centralized Renewable Energy System

Let us look at what importance social acceptance holds in the case of a centralized mode of production. With an analysis of the characteristics of centralized renewable energy, it can be inferred how relevant social acceptance as a societal factor is in such a system. Bouffard and Kirschen are engineers who have discussed the technical side of energy systems. It is understood that “primary energy is harvested remotely and maybe transformed; it is then transported before it is finally utilized” (Bouffard and Kirschen, 2008, p. 4504). As rightly pointed out, the remoteness and absence of human settlements in the near vicinity of a

centralized form of the renewable energy system are some of the reasons for a low level of public participation in the policy implementation.

3.2.3.2 Social Acceptance in Decentralized Renewable Energy System

Social acceptance is very significant in the case of renewable energy systems. Decentralized energy systems are mostly community-based or individual based mini energy plants. Especially in the case of a mini off-grid plant or a stand-alone solar plant, it is very important to gain trust and acceptance from the immediate community. The community can be a village, an urban gated community, a private company etc. For the successful implementation of a decentralized renewable energy project, it is very important to have social acceptance from the immediate stakeholders.

3.2.4 Three Dimensions of Social Acceptance

Social acceptance is a term that finds commonplace in a lot of policy literature and Wustenhagen and others, who have carried out extensive work in this area, feel the need to give it a clearer definition in scholarly literature. The authors attempt to conceptualize social acceptance and explain it in three dimensions, namely *Socio-political acceptance*, *community acceptance* and *market acceptance*. These various dimensions are explained in the coming sections.

3.2.4.1 Socio-Political Acceptance

‘Socio-political acceptance’ is explained as a phenomenon that requires conditions to be met at a broader level. The stakeholders and policy authorities are key in this dimension of social acceptance. Any renewable energy project is expected to meet the requirements of policy frameworks and technological innovations. As these are pre-requisite conditions for a project

to take off, it ensures that the other two dimensions follow suit. As a key strategic factor in a policy implementation project, ‘socio-political acceptance’ initiates further impending developments contributing to the successful completion of the same (Wustenhagen et al., 2007, pp. 2684-2685). It facilitates a ground of growth for the subsequent levels of acceptance. As we understand social acceptance as a sequential process through its three dimensions, it paves the way for ‘community acceptance’.

3.2.4.2 Community Acceptance

‘Community acceptance’ is described as the second dimension of social acceptance. To define it in terms of the social actors that become relevant in the process, it can be said that, “Community acceptance refers to the specific acceptance of siting decisions and renewable energy projects by stakeholders, particularly residents and local authorities” (Wustenhagen et al., 2007, p. 2685). It involves the participation of ground-level stakeholders in siting decisions.

It is argued that, through a phenomenon of ‘NIMBY’ attitude, local stakeholders do not encourage renewable energy projects as long as it is in their backyard. Michael Dear, a scholar of geography has had a keen interest to develop this idea in his works. He defines NIMBY as, “the protectionist attitudes of and oppositional tactics adopted by community groups facing an unwelcome development in their neighbourhood” (Dear, 1992, p. 288). One of the counterarguments relating to it states that it is an oversimplified observation. Another Geography scholar named Maarten Wolsink offers criticism and adds to its conceptual understanding. He says that there is a factor of time that influences the levels of acceptance during the phase of siting. It could be observed that acceptance level varies

before, during and after the project is implemented. Regarding social acceptance, Wustenhagen and others by borrowing Wolsink's idea, points that "a project follows a U-curve, going from high acceptance to (relatively) low acceptance during the siting phase (usually still positive on average) and back up to a higher level of acceptance once a project is up and running" (Wustenhagen et al., 2007, p. 2685). It can be understood that social acceptance does not follow a linear characteristic. Instead, it takes a path that does not outrightly rule out chances of projects being socially accepted.

Developing a renewable energy project in a specific site initially requires gaining the trust of the residents. Although the success rate of projects is understood as the rate of policy implementation at various sites of interest, the intricate factors like local dialogue and debate on the project are very significant. There are chances that the local people do not accept the possibilities of renewable energy production at a specific site due to mistrust towards the new entrants into their area. Community acceptance plays a key role in building a trustworthy relationship between the local community and the investors, enabling a hassle-free development site.

3.2.4.3 Market Acceptance

Following the acceptance dimensions discussed above, we arrive at the third dimension of social acceptance called *market acceptance*. In simple terms, it is defined as "a process of market adoption of an innovation" (Wustenhagen et al., 2007, p. 2685). It allows the resident of a household to supply renewable energy by staying insulated, from being an actual producer of energy with physical technological infrastructure. As it involves the adoption of technologies, market strategies and innovations, it results in a reduction of barriers to diffuse

with renewable energy production. Trade of renewable energy, for instance, in a country with surplus resource possibilities would produce enough renewable energy that can be exported to other countries. But it might have to face less social acceptance from the local stakeholders.

Wustenhagen and others bring in two cases, of Netherlands and Scotland, wherein the former requires green energy but lacks social acceptance in its supply infrastructure and the latter has sufficient renewable energy resources in the form of wind power but there is a low level of acceptance regarding its export (Wustenhagen et al., 2007, p. 2685). It can be noticed that the availability of resources along with the influencing factor of social acceptance is significant in carrying out a successful implementation of a renewable energy policy.

3.3 Siting Decision

One of the very important realms of the social acceptance framework is about *siting decisions*. It is one of the primary aspects of society's role in renewable energy systems. If siting decisions are taken devoid of local participation, which imparts raw knowledge about the geographical area, it could lead to catastrophic results that are harmful to nature and thereby to society. It results in taking decisions regarding the site, its feasibility and cost-effectiveness. It may go to an extent where it becomes an individual's decision-making process when it comes to renewable energy projects in households.

Social acceptance regarding a new renewable energy project encounters the problem of siting and related conflicts. Siting decision is an integral part that enables the actualization of policy framework and energy production into a renewable energy project. Arathi Menon

has reported in the web portal ‘Mongabay’ regarding siting in renewable energy projects. She has written that, “if large renewable energy projects are the way forward, experts say they could have irreparable environmental and social implications not very different from fossil fuel-based energy generation” (Menon, 2012, para. 1). It is an indication of how important siting decision aspect is when it comes to renewable energy production, which otherwise would lead to other kinds of destructive consequences.

Siting decision is an important process in all the projects. If siting decision is not an inclusive and comprehensive step, involving the local stakeholders, the local authorities and the investors, there are chances that it leads to an unwarranted situation both for nature and the residents. It may lead to a socio-ecological turmoil having unfavourable impacts. Let us briefly look at an example of a wind power project in Pune. According to the web portal ‘ETEnergyWorld’, “a wind power project in Pune partially damaged the local ecology leading to substantial soil erosion and large-scale deforestation as more than 3 lakh trees were cut down against the sanctioned 26,000” (ETEnergyWorld, 2021, para. 1). From this case, we can learn that a centralized renewable energy project that is located farther away from the end-user in a vast geographical area can potentially be cancelling out the environmental action agenda that this energy transition stands for.

It is not just about setting up production plants to produce renewable energy that tackles challenges raised by the burning of fossil fuels. It calls for a holistic revival of the earth’s environment through the sustainable production of renewable energy. Cutting down trees in large acres of land for constructing the infrastructure for a renewable energy plant results in further challenges to combat the larger cause of climate change. Although it is

sanctioned to cut down trees in a limited number with a potential promise to plant a sapling elsewhere, it does not address the immediate requirement of environmental action.

3.4 Public Participation

Social acceptance as a conceptual framework is understood by elaborating on the factor of public participation that is integral to this study. The role of participation of local people in several stages of a renewable energy project's decision making cannot be ignored as it is vital in its successful implementation. Participation of the public at an individual and also a community level is key in renewable energy projects. The role of the public ranges from analyzing the present situation of the environment and challenges faced by the maintenance of the system that is introduced as a remedy to the challenges. It can involve the participation of the public as stakeholders responsible for key decision-making, influencing a well laid out plan for the project, managing and monitoring the energy production system.

Thomas Dietz and Paul C Stern in their work define the term public participation in a very broad manner that applies to a wide array of activities of the society. Dietz and Stern gives a general definition of it and say:

In one sense of the term, all decisions in a democracy involve public participation. People participate through voting, expressing opinions on public issues and governmental actions, forming interest groups or holding public demonstrations to influence government decisions, lobbying, filing lawsuits to contest government actions, physically interfering with the execution of objectionable policy decisions, acting in partnership with government agencies, and even producing films, songs,

and artistic events to mobilize public attention to issues. Defined broadly, public participation includes all of these forms. (Dietz & Stern, 2008, p. 11)

It is clearly defined how the public and the government sit on the two sides of the table. In a way, the public in the event of public participation is engaging with the administrative groups with decision-making powers through dialogues, debates, disagreements and suggestions.

The government of a country introduces national-level policies that have an impact at the local level. The impact assessment and other requirements are better comprehended by the local stakeholders. The local stakeholders can be local authorities, interest groups or even individuals with expertise in the area that the introduced policy is related to. It is important to take in the views of the local stakeholders to avoid any outcomes that negatively impact the area that is assigned for a developmental project. The local knowledge of the specific region is proved to be important for a successful implementation of a developmental project. The same lines of argument apply to renewable energy projects as well.

3.4.1 The Public Participants

Renewable energy projects invite the attention of valuable inputs of the local stakeholders through public participation. To understand public participation in a better manner, let us enlist the main members of the public that influence the decision-making process. Dietz & Stern define the term ‘public’ through observations of John Dewey, which accounts for identifying the public as anyone and everyone who shows interest in a decision and at the same time is at the receiving end of its impact (Dietz and Stern, 2008, p. 15). According to this definition, they are explaining the term public with four main categories.

Firstly stakeholders, which is an organized entity of individuals who will be bearing the impact of the policy and register a strong interest in the result of a decision. *Secondly*, it is the public that is directly affected. This type of public group will have to bear whatever the outcome is of the policy decision, be it negative or positive. The *third* group comprises the observing public. It consists of media that reports the developments and other influential figures of society that may influence the policy decision of a government. The general public forms the *fourth* group who have no direct bearing of the policy decision in their life but still try to influence the policy decisions (Dietz and Stern, 2008, p. 15). All these groups, directly and indirectly, influence the policy decisions of a government and strive for a policy implementation that is beneficial and has a minimal negative impact in the local area.

In a renewable energy project that accommodates public participation, the government officials are expected to have a dialogue with the local stakeholders aiming for a conducive situation to carry out the proposed project. Knowledge about the region plays a key part in the successful implementation and maintenance of the energy system. The requirements of the region and potential harms are taken into consideration while planning a project. Although this procedure appears a positive step in setting up a renewable energy plant and enabling energy transition, the questions remain about the extent to which these public opinions are taken into consideration and the transparency of the final decision-making process. The level of participation and its openness influences the effectiveness of public participation.

3.4.2 A Note for Elevation of Public Participation Levels

American sociologist David Bidwell enlists four significant questions to be asked when it comes to public participation in a renewable energy transition process and decision making. These important points are beneficial for the effectiveness of the renewable energy project. Bidwell indicates the possibility of an elevated sense of social acceptance if, these questions are addressed at a public participation level. The first question is regarding the scope of the problem. Bidwell identifies three types of problems for a transition and enlists them as, “determining energy policy, planning for landscape uses and developing renewable energy facilities” (Bidwell, 2016, p. 2). These are helpful in locating the best possible outcomes from a project.

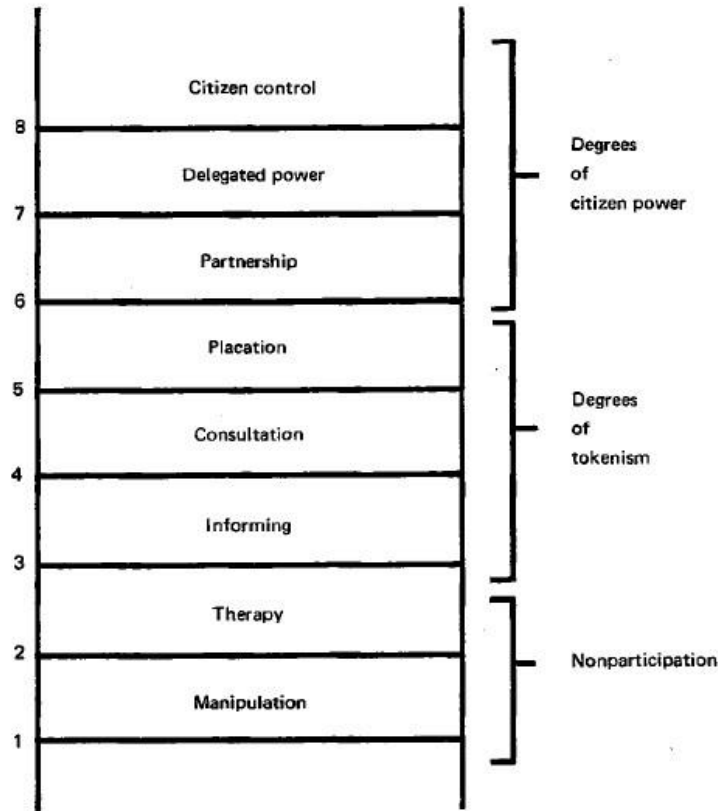
Secondly, the question asked is regarding the purpose of public participation. By referring to English sociologist Claire Haggett, three reasons are outlined as to why a policy implementation should involve public participation. *Firstly*, a project siting aspect can be successfully carried out with public participation. The chances of support from the local stakeholders are increased when they are consulted and allowed to participate in the process. *The second* reason is associated with the perspective of the right of the people to contribute their voice in a developmental project that has a direct bearing on their lives. It also allows for the restoration of trust in the public with respect to the authorities and administrative centres. *Thirdly*, local people will contribute with their knowledge about the region and region-specific details that will only aid in having a smoother progression of policy implementation (Hagget, 2011, p. 16). This conceptualization discusses the motivation for the public participants to be actively engaged in a project.

Thirdly, Bidwell presents the case of inclusion in public participation. The question is asked regarding who is to be included in the renewable energy project's decision-making process. A distinction is drawn between the organized and unorganized set of public groups. The organized group generally consist of non-governmental organizations (NGOs), government officials, trade associations, subject experts, advocacy groups and so on (Bidwell, 2016, p. 2-3). The motivational factors that consider the invitation of particular public groups, whether organized or unorganized, defines the questions raised by the author regarding inclusion in public participation.

The final question raised is regarding the role of participants in the decision-making process. In order to understand that, Bidwell opines that "One of the most-cited concepts in the public participation literature is Arnstein's ladder of citizen participation" (Bidwell, 2016, p. 3). Sherry Phyllis Arnstein is a pioneer in the scholarly work on participatory decision making. Arnstein's concept points at the hierarchical ordering of decision-making power among the public and suggests that the power increases as one goes up the ladder. According to Arnstein, the power resides only with those public groups that are at the top three positions of the 'ladder'.

The middle sections of the ladder, as suggested by Arnstein, is a form of tokenism where no real decision-making powers are granted. There is strong advocacy for renewable energy production that is community-based, which enables decision making power to reside in the hands of the public alone. It also helps in making the factor of social acceptance easier to achieve. It is highly unlikely that private firms that carry out the infrastructural requirements of a renewable energy project will listen to the public opinions and orient their decision according to the opinions of the public.

Image 1: ‘Eight Rungs on a Ladder of Citizen Participation’ (Arnstein, 1969, p. 217).



The public at the lowest two strata of this power structure serves only as subjects that acquire educational knowledge about the policy and its subsequent implementation processes. They do not have the power to influence any policy decisions. “Although these processes allow citizens and other stakeholders to express their views, there is little evidence that they influence decisions in an appreciable way” (Bidwell, 2016, p. 3). As indicated earlier, public participation is a key factor in the process of the renewable energy transition. The strong arguments by different authors in their scholarly works support the claim regarding the important role played by public participation in decision-making and thereby enabling renewable energy transition.

In earlier sections, this study had identified siting decision as one of the key factors in transition along with social acceptance. All these three deciding factors, namely ‘social acceptance’, ‘siting decision’ and ‘public participation’ are instrumental in the successful progression of the energy transition process. A society or a cluster of individuals based in a common geographical area, converge at an ideological stand to practicalize environmental action by converting their means of energy resource from conventional sources to renewable energy. From a detailed understanding of the social acceptance framework, we move on to the conceptual understanding of energy democracy.

3.5 Energy Democracy

Energy and democracy are two terms that in prima facie appearance need not necessarily have any negotiation between them and have their own unique conceptual understanding. Energy is a social necessity, an entity harnessed to essentially run the society forward in progression. Democracy at the same time is a political concept that involves a state and its citizens, agreeing to demonstrate certain values of governance epitomizing fairness, justice and equality. Democracy ensures that political power resides in common citizens through certain checks and balances. This study attempts to examine how these two enterprises converge at a common point and how it is significant in the renewable energy transition. Energy democracy is approached in this study as a new social movement and a new paradigm that address the sustainability question.

3.5.1 Energy Democracy as a Social Movement

Energy democracy can be understood as a social movement; a response to the deteriorating condition of the natural ecosystem. It aims to propel a new energy system oriented around

the principles of sustainability, with decentralized characteristics. If we look at the dominance of fossil fuel as the monopolized form of energy sources over many years, one certain characteristic that can be noticed is its centralized system of production. The decisions regarding resourcing fuel, the geographical site for extraction, the pricing decisions etc., which are vital arenas, did not have participation from the common people. The term end-user justifies the interpretation as the consumer is solely the user of fossil-based fuel, who participates in the process only at the end. Energy democracy, as a movement of sustainability, aims to gain control over these pivotal junctures in energy production and transfer it into the hands of the people.

The emergence of energy democracy can be traced to social movements in Europe that signifies a bottom-up revival of debates on climate change and environmental action. One of them comes from the 2012 *Lausitz Climate Camp in Germany*, which is quoted by Conrad Kunze and Soren Becker in their work. Kunze and Becker note:

Energy democracy means that everybody is ensured access to sufficient energy. Energy production must thereby neither pollute the environment nor harm people. More concretely, this means that fossil fuel resources must be left in the ground, the means of production need to be socialised and democratised, and that we must rethink our overall attitude towards energy consumption. (Kunze and Becker, 2014, p. 8)

Kunze and Becker further explained energy democracy as having four distinct areas of understanding. The first area revolves around participation and democratic values included in it. Energy policies can have a larger level of public participation. One example can be in

terms of the public participating in deciding the cost of a project and succeeding usage rates. As a whole, the public that is directly affected by the renewable energy project has the power to take important decisions pertaining to the project. Secondly, it concerns the ownership of the property, that is the power plant. It is suggestive that the local stakeholders become the owners of the plants themselves. It can be in the form of semi-ownership or a full-ownership but more importantly to be closely tied in terms of ownership nevertheless. Thirdly, they discuss economy-generation from the surplus of the renewable energy plant. As renewable energy is free, like sun and wind, the savings in terms of cost can be utilized in further activities for economy-generation and employment. Finally, the fourth point pertains to the ecological realm and energy sufficiency. It is said that for conservational motives, the use of energy needs regulation and such democratic attempts in energy use stand in contrast to the maximum-profit approach of conventional fuel systems (Kunze and Becker, 2014, p. 9-11). All these suggestive points orient the idea towards the three main pillars of the sustainable principle discussed earlier and hints at the possibility of energy democracy as a governance system in a decentralized energy system that is fulfilled with sustainability principles.

3.5.2 Energy Democracy as a Paradigm Shift

Fairchild and Weinrub define energy democracy as a new paradigm to understand the relationship between society and energy. We have understood the indispensability of energy in societal lives and activities. And in contemporary times with energy transitions in place, the potential of energy democracy is discussed. An important observation made by Fairchild and Weinrub is regarding the system of economy that drives the fuel industry towards a monopoly of ownership (Fairchild and Weinrub, 2017, p. 7-8). The argument is in the purview of common ownership and a more democratic way of using energy.

The underlying principle of energy democracy intends to take away the ownership of energy and energy production from a specific group of individuals or countries or a corporation. It can be inferred from the industry of fossil fuel economy that; the ownership patterns restrict the monopoly to certain powerful agents or groups. A sustainable energy system powered by renewable energy in a decentralized production mode transforms the system into that of energy democracy. Cecilia Martinez is an American political worker who bats for environmental justice. Energy democracy gives no one the monopoly over energy sources, as Martinez says, “A fundamental principle of the energy-as-commons approach is that these natural endowments should not be owned by, or belong to, any set of peoples, countries, or corporations exclusively” (Martinez, 2017, p. 28). Energy democracy as a novel way of addressing the problem of energy injustice is a necessary step towards larger democratic goals.

Fairchild and Weinrub note that “the new energy paradigm must address three major aspects of our energy system: its relationship to the environment, to social justice, and to a new economy” (Fairchild and Weinrub, 2017, p. 7). Renewable energy as the cleaner source of energy is readied to acquire a global position to address the question of larger questions pertaining to the environment, society and the economy. Energy democracy as a movement aims to address the new energy system after the transition from the conventional sources. Let us have a look into the three aspects that are conceptualized by Fairchild and Weinrub, expected to be addressed by energy democracy.

3.5.2.1 Environment and Energy Democracy

The fossil fuel economy has already established its model of monopolized ownership and expansive destruction, rooted in the Western ways of comprehending humans as the supreme creatures on earth. Starting from the initial process of extraction of fossil fuels to its burning, the level of environmental destruction caused is massive. This economic system based on the fossil fuel industry does not consider the fragility of the ecosystem responsible for the sustenance of life on earth.

Fairchild and Weinrub accurately point out the power quotient residing with the fossil energy corporations and countries. Energy democracy as a framework for a new system of energy aims to fight the existing practices of fossil fuel economy. It identifies the problem of monopolization of energy production and proposes a new paradigm of energy as a common resource. It advocates for a democratic and sustainable system of ownership rooted in social justice. The underlying motive of this paradigm shift proposed is the de-commodification of energy systems in place and to nurture a system that is oriented towards democratization of energy (Fairchild and Weinrub, 2017, pp. 7-8). Identifying natural resources and renewable energy as freely available domains of energy, the path towards a more democratic world also requires contribution from democratized energy systems.

3.5.2.2 Social Justice and Energy Democracy

The rise of fossil fuel as a prominent source of energy is considered as one reason to do away with the slave system of the west. It then led to the expansion of the economy into wider geographical areas along with vertical constructions of urban centres. The dimension of ill effects was directly impacted on the impoverished communities, both in the case of health

hazards and natural calamities. Respiratory system-related diseases, cancer, health conditions risen out of the heat of fossil fuel burning etc. are some health hazards caused by the fossil fuel economy. Fossil fuel-generated human ailments persist as an important threat to life on earth.

Apart from the health aspect, the distribution of environmental hazards also signifies the unjust pattern of fossil fuel economy on society. Looking at the western context, where energy democracy is gaining more relevance, Fairchild and Weinrub say that, “Beyond the more direct racialized impacts of the fossil fuel economy are the racial impacts of climate change itself” (Fairchild and Weinrub, 2017, p. 9). Climate change impacts are not evenly distributed across the globe. It is relevant to see the geographical locations where disadvantaged groups of society are living. The adverse effects of climate change are majorly received by the unprivileged sections. Even in India, there are regular tidal floods that destroy livelihoods and habitats of coastal settlements, that are majorly belonging to fishermen communities. It is one example where it can be seen that privileged sections of society live in the mainland of countries with relatively safer habitats that protect them from climate change implications.

Energy democracy as a new paradigm addressing the issue of social justice aims to build a sense of solidarity and resilience among the less-privileged communities. It targets building community-based renewable energy systems. As a system that will address the question of sustainable development, community energy is expected to empower vulnerable communities. Even though relevant scholarly attention has been given to cases of the west, there are Indian cases of community-based renewable energy systems that can be understood in the framework of energy democracy. Understanding energy democracy in the Indian

context can be done with the example of the Rampura village of Uttar Pradesh, which is one of the empirical cases taken for review in this research.

3.5.2.3 Economy and Energy Democracy

Fossil fuel economies have been largely centralized and undemocratic in nature. The monopolized economic system in place does not address the questions of inclusivity and transparency. Accumulation of capital by fossil fuel economies in terms of exploitation of labour and natural resources has led to the creation of wealthy energy companies. It has led to deteriorated levels of economic inequality among the people as the rich continue to be rich and the poor continues to be poor. Energy democracy as a new paradigm that addresses the pertinent issues of the economic system, puts forth a system with equity and fairness.

Fairchild and Weinrub outline the characteristics of this new economic model enabled by energy democracy and say, “This new economy model is characterized by community-based development, nonexploitive forms of production, socialized capital, ecological use of natural resources, and sustainable economic relationships” (Fairchild and Weinrub, 2017, p. 10). It can be noted that emphasis is on the relevance of community attributes of the economic model. Energy democracy is not rallying for a renewable energy production system that adopts a centralized method, which actually follows the path of fossil fuel economy. A decentralized model is a requirement that will fulfil the conditions to be met for attaining the system of energy democracy.

3.5.3 Further Research on Energy Democracy

Bregje van Veelen and Dan van der Horst after looking at existing research on energy democracy suggest three important areas for further understanding. *Firstly*, they say that

energy democracy requires much more attention in a practical sense and demands a critical approach towards it to widen the scope of studying the concept. *Secondly*, they advocate for studies to be conducted to see if energy democracy can possibly exist as an autonomous concept alongside similar concepts of *energy citizenship* and *energy justice*. The term itself has been first used by NGOs and researchers in the United States. It then later was taken up in Europe, especially Germany. Energy democracy in academic papers finds its use only in very recent times in the last decade. It is a very underdeveloped conceptual perspective and carries the scope for further research. *Thirdly*, it is required to compare and contrast with the already existing literature that is concerned with other forms of energy-related democracy, especially of political theory (Veelen and Horst, 2018, p. 19). Being recognized as something that can be explained along with the already existing idea of efforts for justice and democracy, energy democracy carries enormous potential in being studied and explained further.

Veelen and Horst arrive at a conclusion that it is indeed an idea of an ideal democratic society driven by decentralization and sustainability. They note that “Energy democracy represents a blueprint for an ideal world where energy systems are more decentralized and socially controlled, access is equitable and benefits dispersed, and energy consumption and production harms neither people or environment” (Veelen and Horst, 2018, p. 20). This observation emphasizes the significance of decentralization in the energy democracy system. Standing within the limitations of energy democracy as a corpus of study that is very little explored, we can look at further characteristics that enhance the possibility of energy democracy as an energy system.

One of the characteristics that define energy democracy is something that connects the different processes of production and consumption. In conventional energy systems, the end-users have no role in the production of energy whereas, in a system of energy democracy, it offers the consumer to take up the role of the producer as well. With that comprehension, let us engage with the idea of a prosumer in the next section.

3.6 Prosumer

Prosumer in its conceptual understanding can be indicative of an individual in a society who is both the producer and the consumer of a particular product. George Ritzer and others note that the term ‘producer’ is reflected in some of the very early works in social theory. Later McLuhan and Nevitt talked about the idea of ‘prosumer’ as a process in which the consumer becomes the producer as well. Nevertheless, the term ‘prosumer’ was termed by Alvin Toffler by 1980 (Ritzer et al., 2012, p. 379). Going through a slump for two decades, interest in this area has picked up mileage in the 21st century.

3.6.1 Prosumer in the Past

Ritzer categorically explains the historical trajectory of the concept ‘prosumer’ in three perspectives. First, he indicates that prosumption is a fundamental characteristic of humans that has always been there, beginning from the primordial days of society. It has nevertheless gained importance in contemporary discussions. He indicates that “The second perspective on prosumption is that it is an evolutionary process.” (Ritzer, 2015, p. 3). It means that it is an evolving process that follows strides from its past, with developmental progress in time contributing to finer definitions of the same. As the third perspective, it is observed that a radical change is happening in terms of the process of prosumption, as he terms it, “a new world of prosumption” (Ritzer, 2015, p. 3). In an orderly manner, the phenomenon of

prosumption can be traced to its origin, the continuous developments and its emergence as a revolutionary process.

Prosumer as a concept is not a new phenomenon as such, even in academia and in human history. Although there is recent enthusiasm regarding the phenomenon, many scholars have worked on this without giving the label 'prosumer'. Another point that Ritzer directs at is its possible primordial nature, as he says it goes to an extent of assuming prosumption to be even primordial than production and consumption. Ritzer and others cite an example of the consumer being the producer as well, from the days of the industrial revolution, as they say, "factory workers in the heyday of the Industrial Revolution could be thought of as producers, and shoppers in the United States in the 1970s as consumers" (Ritzer et al., 2012, p. 380). It could well be comprehended that at all historical junctures, the presence of prosumers can be traced, although it is theorised only in contemporary times.

3.6.2 Prosumer in the Present

The present era offers an accurate timeline to define prosumer and how it is relevant in society. As we understand that prosumer is, in simple terms, someone who both produces and consumes, it can be better understood with the example of social media and the internet. Ritzer mentions that social media and the internet cannot function without the so-called prosumers (Ritzer, 2015, p. 4). Well then, who are the prosumers of social media and what do they do? The updated statuses, uploaded pictures, comments posted on your Facebook feed are excellent examples of what prosumers do. They produce information and they themselves become the consumers of it as well. The employees only manage the back-end part of social media. It can be observed that social media is a prosumer driven enterprise.

Prosumers in a renewable energy production setup can be witnessed in the example of a mini solar energy system, where the consumer emerges as a new player in the market, one that produces energy and simultaneously consumes the same. A prosumer is self-sufficient in terms of energy needs, to a large extent. In the present context, it cannot be said that a prosumer solely depends on their own produce. Renewable energy transition, as mentioned earlier, is a mixed bag of resources. It does not strictly demarcate between resources that are used for energy harnessing. If you take a sample of a household, the residents will be self-sufficient in terms of solar energy produced on their rooftops or mini solar off-grid plants in their community. But at the same time, they might have a car that runs on diesel. In conclusion, even when prosumership is an ideal state to achieve, a prosumer is still a consumer at the same time.

3.7 Conclusion

In this chapter, we have carried out a review of the conceptual factors that prove to be significant in renewable energy transitions. We have introduced and explained the broad conceptual frameworks of social acceptance and energy democracy. The study has focused on certain concepts like public participation, siting decisions, NIMBYism that comes under the larger framework of social acceptance. It has also attempted to define and analyze energy democracy, the idea of prosumer and the potential social change a renewable energy transition paves the path for. All these concepts become relevant in the social context, in the real-life scenario of a policy implementation process.

Social acceptance proves to be a very important factor that decides the smooth running of the proposed renewable energy plant. Although it can be verified with an empirical case that substantiates the claim, it can nevertheless be said that social acceptance

in its broad understanding is indeed an integral concept to engage with, to understand the contemporary phenomenon of the renewable energy transition. Energy democracy at the same time is a resultant state of affairs that pertain to the governance realm. Both as a social movement and a new paradigm to understand the post-transition period, it is important to understand energy democracy. Even when these conceptual frameworks offer much clarity over the energy transitions, they will give more clarity when we look at the policy interventions that are devised for implementation. The next chapter discusses the various policy initiatives, both at the global and national levels, that are relevant to understanding the conceptual frameworks taken for study in this research.

Chapter IV

Reviewing Key Environmental Policy Frameworks

4.1 Introduction

This study has already reviewed the theoretical and conceptual frameworks associated with the renewable energy transition, in the previous chapters. Although the current chapter is an attempt to achieve a robust understanding of renewable energy transition by reviewing the related policy initiatives that emerged firstly at the international level and later adopted in India. Attempts to review and analyse these policy frameworks is the primary concern of this chapter. It is important to note that these policies have real-world manifestations in certain empirical cases which emerges as the substantiating evidence to conduct this study.

India as a country with its own peculiar affairs relating to environmental concerns, has also been a binding member of the United Nations (UN) guidelines. To understand renewable energy transition in India, it is imperative to look at policy frameworks that have been adapted in the country. For that purpose, two key policy initiatives have been focused upon in this chapter. In an attempt to analyse the Indian policy context, this chapter is outlining the ‘National Environment Policy of 2006’ and ‘National Action Plan on Climate Change launched in 2008’. It is without a doubt that one cannot look at national level policies by ignoring the contributions of the UN. Through its various bodies that engage with environmental concerns have pioneered the policy frameworks that are being implemented all over the world. In this chapter, we are looking at those key policies that have initiated an acknowledgement to environmental challenges and started the pursuit of its solutions. We

will begin by tracing the steps taken at the global level with regard to environmental action and proceed to India's policy frameworks that aim at sustainable growth.

4.2 Environmental Policy Milestones of the United Nations

Following a heavily industrialized period in the west in the mid-20th century, considerable attention was garnered towards the degradation of the earth and its resources. Concerns were raised about the impending hazards that could well arrive if industrial processes were carried out at the same pace and rigour. The United Nations (UN), as one of the pioneering bodies to intervene in the matter, initiated the discussion on environmental action and presently serves as a decisive body that regulates matters of environmental concern. Half a century down the lane, the United Nations have come a long way in understanding and mitigating its way through environmental action. Let us look at the important milestones that the UN have achieved, attempting to regulate environmental degradation, in search of a greener pasture for life on earth.

The groundwork for UNEP in 1968

The United Nations Economic and Social Council (ECOSOC) in its 45th session, held in July 1968, presented a report titled 'Activities of United Nations Organizations Programmes Relevant to the Human Environment'. It has been accessed from the UN digital library. It carried forward the proposal by Sweden, the country which asked for this particular issue to be discussed in the international forum of the UN. The UN's ECOSOC report says, "However, in the Swedish memorandum stress is also laid on another important aspect of the problem of human environment, that is the impact on man himself of the process of change by technological advances" (Economic and Social Council, 1968, p. 3). It invites

attention towards societal issues risen out of developmental plans without sufficient planning. The report elaborates on the various noteworthy steps taken by different UN agencies like the UNESCO, FAO, WMO etc. which have intervened at significant junctures to understand and analyse the situation of the human environment.

Stockholm Convention in 1972

Stanley Johnson offers an account of forty years of existence of the United Nations Environment Programme. The United Nations Environmental Programme (UNEP) was founded and established in 1972 after the first United Nations Conference on the Human Environment was held in Stockholm, Sweden. The recommendations thus referred to as ‘Stockholm recommendations’ were taken seriously by the UN General Assembly and the process for its implementation had originally begun in its first session. (Johnson, 2012, p. 40). It was a pioneering effort from a global body that tried to ensure recommendations on environmental concerns were addressed.

Following a series of important findings that pertain to the environment and taking due action on coastal areas, endangered species on earth, air pollution, water crises etc, UNEP first introduced the concept of ‘sustainable development’ in partnership with ‘International Union for the Conservation of Nature’ (IUCN) and the ‘World Wildlife Fund’ (WWF). Sustainable development was first introduced in the ‘World Conservation Strategy’ in 1980, shaping the forthcoming international policy on sustainability (International Union for Conservation of Nature, 1980). Sustainability went on to become an integral part of environmental discussions and still continues to be one of the most sought-after paths to tackle man-made environmental hazards.

Montevideo Environmental Law Programme in 1982

In 1982, UNEP's Governing Council adopted the first Montevideo Programme. Environmental law-making at a global level was prioritised in this programme. It aims to resolve environmental issues through environmental legislation. It will also monitor the implementation of environmental legal frameworks at national levels, along with supporting member nations in developing their own environmental laws (United Nations Environment Programme, n.d.). It is an attempt to promote the significance of law-making in environmental governance.

Brundtland Report in 1987

In 1987, the *Brundtland Report* was delivered by the World Commission on Environment and Development (WCED) to the UN General Assembly. The report emphasized an environmental action based on sustainability principles. It also introduced the framework of 'sustainable development'. The framework of sustainable development was defined by WCED (1987) as, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 43).

Another landmark decision was taken regarding ozone layer depletion and the causing agents. This agreement protocol was called the 'Montreal Protocol on Substance that Deplete the Ozone Layer' (Johnson, 2012, p. 165). Ozone layer depletion was caused by chemical agents that were human-made. All the member countries unanimously agreed to regulate the production and consumption of nearly a hundred such chemicals that were harmful to the ozone layer.

Earth Summit in 1992

1992 was a year that witnessed the ‘Earth Summit’, formally called ‘The United Nations Conference on Environment and Development’ held at Rio de Janeiro (United Nations, n.d.-a). It shed light on the importance of the integral development of the three important markers of the sustainable development framework, namely the economic, the social and the environmental. It also concluded that sustainable initiatives will have a global appeal and will be successful in the overall growth of the world irrespective of all the social indicators.

Kyoto Protocol in 1997

1997 December witnessed the adoption of the Kyoto Protocol, which later came into force in February 2005. 192 countries were in agreement with the Kyoto Protocol. It aimed at reducing the emission of greenhouse gases like carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in its first commitment period. The mechanism involves a ‘registry system’ that keeps a track of the activities of the member countries and keep a check on compliance with the protocol (United Nations Framework Convention on Climate Change, n.d.-c). This was agreed upon by individual countries carrying individual targets, most of them being industrialized countries and countries in transition

World Summit on Sustainable Development in 2002

In 2002, Johannesburg hosted the World Summit on Sustainable Development. It adopted a ‘Political Declaration and Implementation Plan’. It included a template of developmental steps to be taken by giving due consideration to the environment (United Nations, n.d.-b). It emphasized the importance of improving the lives of people and conserving our natural resources in the face of challenges raised by the growing population.

Copenhagen Climate Change Conference in 2009

Hosted in Denmark, the conference witnessed high number of participation of political leaders from around 115 countries. ‘The Copenhagen Accord’ consisted of viewpoints from several member countries (United Nations Framework Convention on Climate Change, n.d.-a). It set a bar in terms of consensus on the contribution of developed countries to reduce emission levels in developing countries.

The Paris Agreement in 2015

The Paris Agreement, the landmark legally bounding deal with a global appeal was adopted by 195 countries in 2015. It consisted of seventeen sustainable development goals. Affordable and clean energy being an important aspect of the goals listed, the agreement focused on other aspects as well, such as clean water, sanitation etc. One of the key agreements of the Paris Agreement was to restrict temperature rise to only 1.5 degrees Celsius. It also aimed at reducing greenhouse gas emissions to a level which the likes of trees, oceans etc. can absorb. It also hands over more responsibility for the developed countries to financially help the developing countries in achieving their sustainable development goals, also known as ‘climate finance’ (United Nations Framework Convention on Climate Change, n.d. -b). Paris Agreement as one of the most recent proactive steps to curb climate change has captured the global imaginations towards a safer and sustainable future.

4.2.1 Analysing UN Policies

Policy frameworks initiated at a global level see the collaborative effort from nation countries incorporating them in their countries. As we have traced the milestones traversed by international bodies regarding climate change and environmental action, it can be

observed that these had repercussions at various national levels too. With several directives and regulations that are adhered to by the nation countries, there is a factor of a global push towards implementing renewable energy initiatives. Targets of reducing carbon footprint levels, boosting up renewable energy power, managing environmental action plans etc. are some of the steps that nation-states inspire from the global leadership.

United Nations in their report in 2007, 'The United Nations Development Agenda: Development for All', discusses this instance. The report says that, even though developed countries have contributed to much of the environmental destruction so far, the currently developing countries should be committed to growth within the framework of sustainable development (UN, 2007, p. 50). Looking at the stages of development each country has achieved over the years, the countries which are party to global environmentalism do not share the same plain of development. There is an asymmetry in terms of the progress achieved by countries with the use of fossil fuel resources. From the point of view of global social justice, the international bodies trying to articulate sustainable development is problematic to the progress of developing nations.

4.2.2 Critical Approach

As an analysis of the global policies, this study approaches it critically to point out the irregularities in the global narrative of sustainable development. United Nations, getting a late call from the developed countries regarding environmental protection, has been putting pressure on its member countries to implement sustainable development frameworks in further growth initiatives. We have seen how the USA during the Donald Trump administration has withdrawn from the Paris Agreement, stating that it places the country in a 'disadvantaged position'. Although United Nations acknowledges and puts forth several

measures to bring in equity in sustainability and development, the leading countries like the USA with their global political power influence the UN directives.

Sustainable Development Goals are considered to uplift the socio-economic conditions along with environmental protection. The policies of the UN have been criticised for their inconsistency of application with each member nation. Each member nation has been given the autonomy to frame their own sustainable development regulation and it creates an escape route for the developed countries to stay away from their responsibilities.

Even in terms of climate finance and emission targets, each country has been given autonomy to decide on each prospect. Ranjula Bali Swain is an economist who has written critically on global sustainable developmental goals. Pointing out the inconsistencies, Swain says, “The goals are non-binding, with each country being expected to create their own national or regional plans” (Swain, 2018, p. 341). The regulatory framework of the UN, which recognizes all member nations at the same plain, is subject to criticism.

From the point of view of a developing country, it is unfair to see the developed nations having no stricter norms to follow in terms of sustainability. Even though the responsibility of environmental destruction is historically attributed to developed countries, legal responsibility given to countries like the United States does not justify their past actions. In other words, each country is legally bound with the same legal framework, demarcating no difference between the developed and the developing countries. The USA, although having returned to the Paris Agreement during the Biden regime, the developed countries still enjoy an unfair share of autonomy in terms of sustainable development goals.

In the further parts, this research proceeds to discuss how these global policy frameworks have created ripples in India in the form of sustainable development and

environmental policies. India's 'National Environment Policy' of 2006 will be briefly traced and this study will move on to a detailed analysis of the 'National Action Plan on Climate Change' adopted by India in 2008.

4.3 India's National Environment Policy in 2006

National Environment Policy (NEP) 2006 has been formulated as an extension to the scope of already existing policy frameworks that help environmental concerns in India. It takes note of the importance of social life, livelihood requirements and environmental conservation. NEP puts forth the idea of resolving socio-economic challenges in India by addressing them in the environmental realm.

4.3.1 Objectives of NEP 2006

As a measure to address key environmental concerns in India, NEP introduces certain objectives through which it intends to operate. The National Environment Policy of 2006 introduced by the Ministry of Environment and Forests; Government of India enlists the following objectives:

Conserving Important Natural Resources

It aims at a broad objective of human sustenance. Livelihood and economic growth are considered to be primary for supporting life on earth. For that reason, environmental resources are expected to be conserved and protected, with a larger intention of human sustenance.

Ensuring Equity and Livelihood Security

It strives for equity with respect to the availability of natural resources among the beneficiaries. It tries to ensure that impoverished sections of societies are having equal

access to resource distribution, as their dependence on natural resources is crucial for their livelihood needs.

Equity Between Generations

As a primary aim of sustainable development, it tries to make sure that resources are used judiciously to ensure availability for the present and future generations to come.

Environmental Action for Socio-Economic Growth

Socio-economic growth cannot be ignored when environmental conservation takes the front seat in a policy. This objective ensures the deployment of the basic principle of sustainability, i.e., the growth of socio-economic sectors along with environmental growth.

Efficient Use of Natural Resource

One way devised to reduce environmental degradation is to regulate the use of natural resources and thereby reducing the chances of environmental challenges.

Governance of Environmental Resources

Several parameters are considered to manage and regulate the utilisation of natural resources. This objective aims to achieve transparency, reduce the cost incurred and time required, increase accountability etc. in terms of governance of environmental resources.

Multistakeholder Partnership for Conservation

A partnership between multiple stakeholders like local communities, implementation agencies, private investors, developmental authorities and research groups is expected to help the cause of environmental conservation. It will aim to ensure that traditional knowledge along with analytical contribution, technological and managerial skills will amount to environmental conservation. (Ministry of Environment and Forests, 2006, pp. 8-9). All these above mentioned are the objective of the NEP.

It is interesting to note that the preparation of the NEP involved consultations with experts and government agencies. As the process of policy formulation implies, it tried to gather opinions and suggestions through several agencies and routes before coming up with the final draft (Ministry of Environment and Forests, 2006, p. 52). It was open to scrutiny, which is a remarkable step before implementing a policy, especially with a sustainability approach.

4.4 India's National Action Plan on Climate Change in 2008

India is a country with an abundance of natural resources and the country is progressing towards technological advancements in the effective harnessing of renewable energy. In India, renewable energy projects are being sanctioned at a rapid pace, as a part of India's ambition to become a global leader in the renewable energy sector. The country has witnessed several environmental action plans for more than three decades. In the following section of this chapter, we will be focussing on India's action plan on climate change, the projected targets and proposed ideas focusing on renewable energy production. We will begin the analysis by tracing India's action plan on climate change.

National Action Plan on Climate Change (NAPCC) was launched by India on 30th June 2008. It has core objectives that address the cause of environmental action along with promoting developmental plans. NAPCC focuses on eight national missions that are core to NAPCC (Prime Minister's Council on Climate Change, n.d.).

According to the online website of United Nations Sustainable Development Goals, the Indian government is aiming to install 175 Giga Watt (GW) of total renewable energy capacity by 2022. It will comprise solar energy (100 GW), wind energy (60 GW), bio-power (10 GW) and small hydro-power (5 GW) (United Nations Sustainable Development Goals,

n.d., para. 1). This study will be discussing each mission individually, detailing out the objectives and looking at its effectiveness through its implementation and criticisms faced. All of the eight missions are explained below.

National Solar Mission

The ‘Jawaharlal Nehru National Solar Mission’ or ‘National Solar Mission’ was officially launched as one of the eight missions of the Indian government as part of the NAPCC. It strives to strengthen the solar energy potential of the country and aims to establish India as a leading nation at the global level in the solar energy sector. As an international organisation situated in Paris that was founded after the oil crisis in 1973, in their website, the International Energy Agency traces the mission with an intention to be implemented at three different phases, in three time periods. We will look at each phase and the estimated targets.

The International Energy Agency (IEA) notes that phase one of the policy is between 2010 to 2013. Consisting of a target of 1000 Mega Watt (MW) production of solar energy consisting of utility grids and solar rooftop capacity. In addition to that, there is a 200 MW target of off-grid solar applications. Thereafter, the targets have been assigned in a cumulative fashion. In the second phase from 2014 to 2017, the cumulative target was 10,000 MW (on-grid) and 1000 MW of off-grid solar energy. The third phase is in the period of 2017 to 2022, aiming for a cumulative target of 20,000 MW of on-grid and 2000 MW of off-grid solar energy capacity (International Energy Agency, n.d., para. 3). These targets, if achieved, will enable renewable energy to compete with the existing market share of fossil-based fuels. It is quite interesting to see the potential speed at which these targets are aimed

to be achieved. It is clear by looking at the pace that India wants to race to the position of a global leader in renewable energy production.

National Mission for Enhanced Energy Efficiency

National Mission for Enhanced Energy Efficiency is aimed at, as the name itself suggests, efficient consumption of energy. Bureau of Energy Efficiency (BEE) as an assisting body of the Government of India in the implementation of policies related to development, has discussed this mission. It says that large industrial infrastructures that utilise huge amounts of energy for their production purposes are targeted to bring down energy consumption. It aims to create a framework through which the saved energy is certified and enables mechanisms to invest the savings in market trade. It brings about a change in the market by developing new products that are energy efficient and more affordable. It also attracts tax benefits through certification of products in accordance with its energy efficiency (Bureau of Energy Efficiency, n.d.). For example, in a home appliances market, there are refrigerators given ‘star’ certification suggesting how much electricity it consumes. More the number of ‘stars’, the more energy-efficient the product is. It is a mission that relies on the innovative advancements in the market, that in turn help the cause of environmental action.

National Mission on Sustainable Habitat

National Mission on Sustainable Habitat is aiming to nurture a living environment that is conducive and habitat friendly. Central Public Health & Environmental Engineering Organisation (CPHEEO) is a Government of India body that assists the policies pertaining to the environment and health. Central Public Health & Environmental Engineering Organisation talks about it as the mission that aims at improved and efficient energy. It

concentrates on the new commercial buildings to come up with a sustainable design that protects the interest of the mission. It calls for an optimized urban plan with more utilisation of public transport. It aims at building energy-efficient and convenient public transportation facilities that help in the growth of small cities and townships consequentially. Another key objective of this mission is to develop technology to produce power from waste.

Waste management in urban settings, both liquid and solid waste, is a gruesome task for the local authorities. This mission is aiming to equip the urban system to manage waste through recycling and other means of waste management. The mission also is taking into consideration the possibilities of natural calamities that urban areas are prone to. Starting from the overall design of urban infrastructure that is cleverly built to tackle disasters such as floods, cyclones etc. the mission is looking at possible techniques that can be inculcated to improve the disaster mitigating ability of the urban region. Another aspect of this mission is to conserve environmentally sensitive areas in an urban area through legal frameworks (Central Public Health & Environmental Engineering Organisation, n.d., para. 2). A coastal city like Kochi has considerable mangrove forests that are ecologically sensitive and requires protection from advanced modern infrastructural developments. Legal frameworks that aim to protect ecological entities such as mangrove forests is one of the main objectives of this mission.

National Water Mission

National Water Mission under the Ministry of Jal Shakti as the governing body, has discussed the mission on their website. India's National Water Mission is concerned about conserving water primarily. It capitalises on minimal wastage of water resources and well-

managed water distribution systems that ensure equity among the society. Maintenance of groundwater levels, rainwater harvesting at households and irrigation methods that focus on efficient usage of water are the significant targets of the mission. The mission has a target of increasing water use efficiency by twenty per cent (National Water Mission, n.d., para. 1).

The NAPCC has identified important objectives of the National Water Mission and has enlisted them into concerned areas. One, surface-water management through studies in the area. Two, groundwater management and regulation. Three, storage systems freshwater harvesting and drainage systems for wastewater management. Four, the need to conserve wetlands as a reservoir of water resources. Five, desalination of water as part of increasing water resource capacity that fulfils edible conditions for human beings (National Water Mission, n.d., para. 4). Water is one of the most essential natural resources for survival on earth. All the living beings on earth require water to survive. In fact, when expeditions were carried out to outer space, one of the key tasks was to find water in other celestial bodies. Thus, water is an inevitable factor to survive life on earth.

National Mission for Sustaining the Himalayan Ecosystem

The press release of the Cabinet of Government of India, concerning the approval for the mission, is taken as relevant data to describe the mission. The release of the Press Information Bureau says that National Mission for Sustaining the Himalayan Ecosystem (NMSHE) is in place to bring in development in a sustainable manner by coordinating with the Himalayan states and policy implementation bodies. There are particular issues in the Himalayan states that will be addressed with this mission. Glaciers in the Himalayas are under the threat of melting due to climate change and it can cause environmental

consequences leading to natural calamities. It requires periodical assessments and management to prevent predictable natural calamities. There is a wide variety of flora and fauna that requires protection and management, which NMSHE aims to accomplish. There are people living in the Himalayan region in specific tribes. These tribes are very ancient and their knowledge of this geographically sensitive region needs to be protected and preserved (Press Information Bureau, 2014, para. 3). The Himalayas are one of the most fragile ecosystems which need periodical assessment and protection measures to sustain themselves. This mission will also serve as a measure to preserve the beautiful landscapes that people all over the world admire.

National Mission for a Green India

National Mission for a Green India (NMGI) is one of the eight missions in NAPCC. A Government of India web portal India Science, Technology & Innovation elaborates on what NMGI seeks to achieve, as it describes the objective is to “safeguard the biological resources of our nation and associated livelihoods against the peril of adverse climate change and to recognise the vital impact of forestry on ecological sustainability, biodiversity conservation and food-, water- and livelihood-security” (India Science, Technology & Innovation, n.d., para. 1). As the geographical area of forests and greenery is decreasing as a result of climate change, this mission strives to combat the given situation through several measures of adaptation. It does not aim to restrict the mission to only planting of saplings but also considers other natural entities such as water resources, animals, regional wetlands and other natural habitats that are crucial to preserving nature.

National Mission for Sustainable Agriculture

Soil and water are two of the most integral factors in agriculture. To sustain productivity in agriculture, the Government of India has introduced National Mission for Sustainable Agriculture (NMSA) that will encourage environment-friendly technologies in agricultural practices. The website of the National Mission for Sustainable Agriculture indicates at its objective is for, “enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation” (National Mission for Sustainable Agriculture, n.d., para. 1). Water-use efficiency is expected to be increased along with the careful use of chemical ingredients in agriculture. This mission also intends to include local-level knowledge that will be valuable for the success of the mission. With an approach that focuses on the communities, it tries to inculcate a culture of careful and regulated use of common resources within them.

National Mission on Strategic Knowledge for Climate Change

National Mission on Strategic Knowledge for Climate Change (NMSKCC) gives importance to planning based on the data available on climate change, the variables that adversely affect life on earth. It measures the impending threat based on quantifying certain data variables that contribute to climate change. Department of Science and Technology as a body of the Indian government carrying out the research management on it has enlisted objectives that will be broadly discussed here.

There needs to be an integration of research bodies that are engaging with climate-related policies and an organised platform to share various data will be beneficial for the developmental projects. Along with international research agencies and collaborative

efforts, there is a requirement for developing national-level knowledge production mechanisms to combat climate change effects in different parts of the country. Another major objective that is raised is regarding the awareness of climate change effects and risks associated with it. It also finds importance in recruiting young minds that will serve as significant assets for the country's future development plans concerning the issue of climate change (Department of Science and Technology, 2010, p. 12). This mission, as a part of the NAPCC, emphasizes the need to produce knowledge on the issue the action plan aims to address. Without sufficient and grounded research on the matters, it will be difficult to succeed in the environmental policy implementations and it is duly noted by the administering bodies.

4.5 Analysing Indian Environmental Policies

India as a country adhering to the global policy framework in fighting climate change, has been under the process of achieving its own sustainable development targets. Although we have discussed the factor of a global push for developing countries to emulate certain sustainable models for development, it is imperative to understand the Indian scenario in the same aspect. We have taken two major environmental policy frameworks introduced in the Indian context. NEP of 2006 and NAPCC of 2008 serves as two major policy frameworks to study, analyse and understand the direction and motivation of India in terms of environmental action.

Environmental policies in India have been sustainable development initiatives. Sustainable development, when understood as a policy framework underlines the overall growth of all the aspects like the social, environmental and economic. This study intends to

analyse Indian policy initiatives like NEP and NAPCC through the sustainable development framework. In the following sections, this chapter will critically analyse these Indian policy initiatives like NEP and NAPCC.

4.5.1 NEP Analysis

NEP outlines certain objectives that give importance to conservation of the environment, livelihood aspects and intergenerational equity. It can be noted there is a special emphasis given to the disadvantaged groups and the sustenance of their livelihood. Although these are trickled down initiatives from the global policy frameworks of the UN, it lacks the impetus to foreground the importance and peculiarity of the Indian society in the pursuit of environmental action. It does not categorically mention the potential challenges faced by the communities that have historically been closely associated with the environment.

In India, the tribal population have lived their entire lives in close affinity with the natural environment. Similarly, the agricultural caste groups of India have a long history of interaction with nature. These communities still continue to be deprived sections, both socially and economically. As the sustainable development framework aims for a comprehensive growth of all three important aspects, namely social, economic and environmental, NEP have not categorically mentioned and acknowledged these communities in the framework adopted. Even though the global framework of sustainability proposes the empowerment of the poor and identifies environmental action contributing to the overall development of the poor, these values will have a restricted application in the Indian context.

Environment and natural resources are not merely economically bound entities pertaining to its access but it also has socio-cultural underpinnings as well. Equitable access to natural resources in India can have caste dimensions apart from a class dimension in India. Environmental scientist Madhav Gadgil and Statistician K. C. Malhotra have studied the caste aspect of environmental resources distribution and equity. They suggest that natural resources were divided among caste groups to prevent competition for access and goes on to say caste has actually enabled traditional resource distribution (Gadgil and Malhotra, 1983, p. 469-470). Although this functionalist approach of this argument is extensively criticised, it cannot be ignored how India as a society is still in the chains of the caste system. It can prove to be a challenge for equitable distribution of natural resources.

4.5.2 NAPCC Analysis

NAPCC on the other hand is more focused on attaining ambitious targets of renewable energy, along with protection, conservation and sustainability of the environment and knowledge production on climate change implications. As one of the initial steps from India for combating climate change, it tries to touch upon a larger scale of variables that may bring in substantive damage to the ecosystem, if not properly looked after.

To bring in a practical problem of NAPCC, this study would like to highlight the ambitious pace at which India is aspiring to reach the top of the table as a leading renewable energy player in the global arena. It leads to bypassing of certain sustainable development goals that consider the social realm. One of the core social factors of a renewable energy project, as this study argues, is social acceptance and more often than not, developmental plans tend to ignore its importance. This ignorance is rooted in the urgency to conquer the

crown of being the leader in renewable energy production. As discussed in the earlier sections, the huge targets of renewable energy to be achieved may compromise on social acceptance and can lead to conflicting situations and ultimately an unsuccessful development project.

Another significant step in this action plan is regarding the integration of research agencies, both globally and locally and their collaborations. It is also commendable to put forth the agenda to protect certain ecologically vulnerable regions like that of the Himalayas. As an overall step to ensure human health, environmental protection and fight against climate change implications, NAPCC strives to achieve greater heights in terms of sustainability.

4.6 Conclusion

As discussed above, policies of sustainable nature intend to address certain urgent environmental challenges by incorporating socio-economic growth. There is no dichotomy of environment versus development in the sustainability language. Although there are certain limitations in the overall formulation of environmental policies in India, it is an encouraging step forward as a set pioneering policy framework. India has a promising future in renewable energy but it requires further enquiry into empirical scenarios to have a better understanding of policies implemented, to read between the lines of sustainability principle. In the next chapter, with an analytical review of three case studies, this study tries to comprehend the real-world manifestations of sustainable development policies.

Chapter V

Analysing Empirical Scenarios of Transition

5.1 Introduction

After reviewing the policy frameworks, both at the global and national level, this study is moving on to the real-life scenarios where these policies are actualised. The larger aim of this chapter is to comprehend how these policies rooted in sustainability is manifested in the case studies taken for review. By analysing the implementation of policies, we will be able to have a better understanding of how society negotiates with the policy frameworks and how social acceptance and energy democracy becomes relevant in a renewable energy transition. In the coming sections, the study reviews three empirical cases and tries to understand how society plays a key role in the renewable energy transition. The cases taken are from three different states of India, namely Gujarat, Rajasthan and Uttar Pradesh. All these three cases present three different scenarios to give a comprehensive understanding of the real-life manifestations of the conceptual frameworks that this study has already reviewed.

It is an attempt to investigate the role of social acceptance, siting decision conflicts and public participation as determining factors at the policy implementation level. It also aims to look at the framework of energy democracy and its potential in the Indian scenario. State-driven policies for renewable energy projects involve the possibility of inviting opinions from the local region where the energy plant is planned to be constructed. By principle, it is observed that the public plays a significant role at the implementation level of

a project. By taking the empirical scenarios of rural regions in India, this study attempts to reflect on the ground realities in accordance with policy and public opinion. The reason for opting for examples from rural regions in India is specifically because it offers an apt ground to understand the application of sustainability principles, which are rooted in addressing problems of socially and economically disadvantaged groups in developing countries. In the following sections, a detailed analysis of the cases at hand will be carried out by linking it with the conceptual frameworks and policy interventions that have already been discussed. We will start with the village of Sangnara in Gujarat, then move on to the Bhadla solar park of Rajasthan and finally come to Rampura in Uttar Pradesh.

5.2 Sangnara Village and Windmills in Gujarat

Beginning with a brief introduction to the empirical case, the following sections will discuss the regional, demographic and policy-related events of Sangnara. This study is undertaking an analytical review of the case of the Sangnara village of Gujarat. Sangnara was identified as an infrastructural site for the installation of windmill plants. The government had allotted land to a renewable energy company for infrastructural requirements. The conflict erupted when residents of the village realised that this renewable energy project will eventually destroy tree cover in the area. It was observed that it will lead to mass deforestation and the destruction of biodiversity in the area.

Another threat that the villagers faced at the community level was the encroachment into the grazing land of their cattle, also known as ‘gauchar’. As we have provided the highlighting aspects of this empirical scenario, let us have a more detailed look into the historical context of the case at hand, the role of both the public and the state in it and how

social acceptance or rather the lack of it can influence the implementation of a renewable energy project. An intriguing question that we will try to address is that of the peculiar social situation of India and the role of society in contributing to environmental action. From the discussions on the Indian perspective on environmental action, it is to be analysed to what extent public opinion matters to the government and private companies.

5.2.1 Introducing Sangnara

We will begin by introducing the Sangnara village. The regional and demographic profile of the Sangnara is stated briefly here. According to the Census of 2011, Directorate of Census Operations Gujarat describes the region and its demographic attributes. The village is situated in the Nakhatrana Taluka of the district Kachchh in Gujarat. The geographical area of Sangnara village is 1203.90 hectares. The total population of the village is 1303 persons. The main livelihood activities of this population are associated with agriculture and animal husbandry (Directorate of Census Operations Gujarat, 2011, p. 176-181). It is a remote village with adjacent forest covers and windmill power projects have been introduced in the area.

There have been news reports on the situation in the village and according to the web portal News Click, the reliance of the village residents on the forest cover consisting of tropical thorn trees is also for worshipping purposes. This forest land is considered as a sacred grove by five villages in that region for worship. Their relationship with the forest land goes back many years, dating back to their ancestors (News Click, 2021, August 10, para. 3). The introduction of a renewable energy project in the region faced backlash from the village community as it posed a threat to their livelihood and worship practices. This

conflict of interests by two parties can be understood in the broader conceptual framework of social acceptance. Deriving from this empirical premise, the study aims to understand the dynamics of society, societal actors and environmental policy implementation. As we have introduced the site of investigation, let us look at the empirical accounts and attempt to analyse the phenomenon.

5.2.2 Policy Intervention

Forest land in Sangnara village was allotted by the government to a private company to install eleven windmills during the period of 2015-2016. After the villagers raised a dispute in the developments, they filed a complaint at the National Green Tribunal (NGT). A report was sought by the NGT and according to the inspection report submitted to the NGT by Gujarat's Principal Chief Conservator of Forest. It states that four Wind Power companies have been allocated land at 40 different locations in the village of Sangnara. The document suggests that the land is declared as government wasteland. The allocation of this particular land has been authorised by the District Collector of Kachchh for infrastructural development of windmills, on a twenty years lease period (Principal Chief Conservator of Forest, 2020, p. 333). The reason for the dispute is the reason for issues in Sangnara as the villagers allege land encroachment.

5.2.3 Allocation of Land

The Indian Express news report says that the government conducted a resurvey of the grazing land without the consultation of the villagers. A new official map of the region was released by the authority in which the grazing land had decreased in the geographical area (The Indian Express, 2021, August 6, para. 4). To understand the resurvey claim in a

better manner, we have to also consider the orders for land allocation and the newly released map of Sangnara.

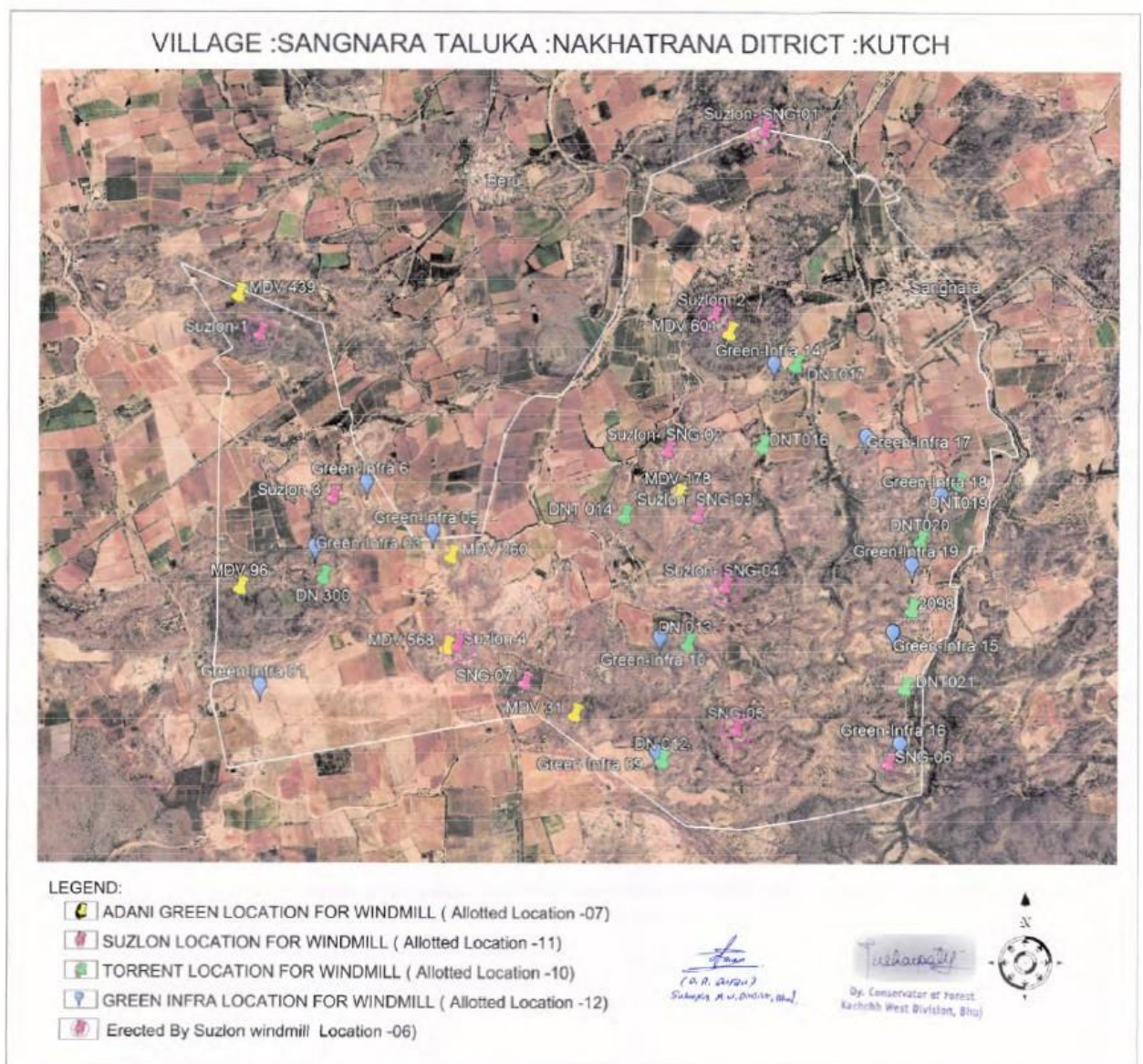
There are two orders by the District Collector of Kachchh in 2015 in the months of August and October, allocating seven and four locations respectively to a company called Suzlon Gujarat Wind Park Limited, Rajkot. According to the newly released map of the region, it can be observed that a resurvey of land had taken place before the next order by the District Collector in 2018, allocating land to a company called Adani Green Energy (MP) Limited, Ahmedabad (Principal Chief Conservator of Forest, 2020, p. 333). To understand and substantiate this claim, we can refer to the NGT report and the new map of Sangnara after the allocation of land to windmill projects. Based on the report submitted to NGT in 2020, we can understand that four companies have been allocated land and each allocation has been made in the years 2015, 2018 and 2019 (see Image 2).

Image 2: ‘Land Allocation in Sangnara’ (Principal Chief Conservator of Forest, 2020).

S. No.	Name of the Company	Collector, Kachchh Order No.	No. of locations
1	Suzlon Gujarat Wind Park Limited, Rajkot	JMN/2/VS/3314/2015, Dated 01/08/2015	07
		JMN/2/VS/4640/2015, Dated 26/10/2015	04
2	Adani Green Energy (MP) Limited, Ahmedabad	JMN/4/Wind Mill/VS/1168/2018, Dated 20/12/2018	07
3	Green Infra Wind Energy Limited, New Delhi	JMN/4/Wind Mill/VS/2637/2019, Dated 05/07/2019	12
4	Torrent Power Limited, Ahmedabad	JMN/4/Wind Mill/VS/2777/2019, Dated 08/08/2019	10

It indicates some discrepancies in the allocation of land because the resurvey was done just before the next set of land allocations. It can be observed from the new map that, windmill companies have been allocated land where there is forest cover (see Image 3).

Image 3: ‘The Map showing Allocated Land in Sangnara’ (Principal Chief Conservator of Forest, 2020).



To conclude the investigation, the newly released map of the Sangnara region shows that the new companies have been allocated land for windmills where there is considerable forest cover. By depending on the available secondary sources like news reports and the report submitted to NGT, it can be inferred that the protest from villagers is indeed opposing unfair land encroachment for companies. In the name of developmental projects, the disadvantaged groups of people and opinions are silenced, in a renewable energy project. It is to be noted that it is a centralized model of energy where the chances for public participation is near to nothing. Sangnara is an appropriate example of a centralized model of a renewable energy project that follows the trajectories of the fossil fuel economy.

5.2.4 Intervention of Public

At this eventful juncture, the Sangnara village residents started protesting against the development projects and steps taken by the government authority. Following the resurvey, the village land was further allocated to two more companies with an aggregate of twenty-two locations. A total of forty locations were thus allocated for windmill plant infrastructure. The reason for the protest from the villagers is that they sensed a threat to their livelihood practices, worship sites and biodiversity of the forest cover.

Environmental concern can be seen as a prominent issue that had invited conflict of interest from the side of the Sangnara residents. They have inhabited that region for many years and it can be observed that renewable energy projects and related policy implementations will have to endure opposition if it is unable to gain the trust of the local community. The factor of public participation in renewable energy projects is key to its successful implementation.

Image 4: ‘Sangnara Protest in 2021’ (Indiatimes, 2021, August 07)



Protests are a sign of disagreement and dissent, a way of articulating anguish and disappointment (see Image 3). In this village, it showcases an example of the authority ignoring the major factor of social acceptance and public participation in siting decisions. Eruptions of protests due to lack of trust will be a challenge ahead to attain a successful renewable energy plant.

5.2.5 Observations from Sangnara

Based on the review of this empirical case, we will record some observations made in the following section in accordance with the conceptual frameworks introduced in this study as key deciding factors. Kachchh in the recent past has become an important site for renewable energy production by government policies. Solar and wind energy availability is found to be significantly high in this region and hence Kachchh has become the ‘exploitation zones’ for

renewable energy production. The government identifies land such as grazing land as unused land and wasteland, which in turn facilitates the construction of renewable energy projects. But in the case of Sangnara, consultation with the residents of the region did not take place. It takes away the positive side of the renewable energy transition, which is taking public opinion and accommodating public participation in key decision-making processes. Sangnara villagers being the inhabitants of the present 'waste land', it is a part of their daily life. The failure to conduct public meetings, discussions and impact surveys have paved the way to a conflicting situation at the project site presently.

From this empirical scenario, the study finds the role of public participation, siting decisions and social acceptance as key to the success of a renewable energy project. Failure to carry out public dialogue has resulted in a protesting situation on the part of the villagers. The villagers were not taken into confidence by the government agencies and the companies. This, as already suggested by the literature, contributes immensely in building an idea of mistrust and doubt from the side of the public on the authorities and private agencies.

5.3 Bhadla Solar Park in Rajasthan

On a large spread of fuming sand lies sparkling diamonds of hope, the Bhadla Solar Park would offer this image to anyone fortunate to look at it from an aerial distance. On the world's largest solar park, The Indian Express news report by Amitabh Sinha describes it as extending to a massive 45 square kilometres of land, there are rows of solar panels offering limitless opportunities to harness solar energy. Bhadla Solar Park is situated in the Jodhpur district of Rajasthan, 200 kilometres from the city of Jodhpur. It plans to produce an ambitious amount of 1 lakh MW solar energy by 2022. A description of the site of Bhadla

is that the solar park is located in a land unfit for sustaining life. The temperature in that area is significantly higher, in the range of 46 to 48 degrees. Hot winds in the area make it even more unbearable for longer stays. The nearest signs of human settlement are at Bap, which is 50 kilometres away from the solar park. An urban settlement of Phalodi, a Tehsil town, is located 80 kilometres away from Bhadla (Sinha, 2018, June 26). This news report offers a comprehensive idea of the region and demographic aspects in and around Bhadla. It will be interesting to see what role the society and its public plays in policy implementation, without any neighbourhood nearby.

5.3.1 Intervention of Society

There has been no reported conflicts and protests against the Bhadla Solar Park since its policy level inception to the contemporary operational period. The very fact that the plant is situated in a deserted land itself is a significant factor in not facing any objection. The idea of social acceptance and public participation becomes almost redundant as there is no presence of human settlements in the vicinity of the plant. Contrary to the windmill project scenario of Sangnara, Bhadla Solar Park has no local stakeholders at the community level.

5.3.2 Policy Intervention

The Environment Due Diligence Report submitted by the Indian Renewable Energy Development Agency (IREDA), on the Bhadla Solar Park, to the Asian Development Bank (ADB) is available for public access. In relation to the ecological and social ground reality of the project site, it seeks an answer regarding the Environmental and Social Impact Assessment (ESIA) at Bhadla. In the report, it is stated that ESIA is not required in the Bhadla site of the solar park. The reason cited is that there will not be any disturbance to the

livelihood due to the construction and maintenance of this plant (Indian Renewable Energy Development Agency, n.d., p. 35). Confirming the important points stated in the report, it can be understood that there are no households in the direct vision of this site (see Image 4).

Image 5: ‘Bhadla Solar Park, Rajasthan’ (NS Energy, n.d.)



Note. Aerial view of Bhadla Solar Plant in a vast geographical area in Rajasthan

It also emphasized the point that the plant will not endanger the existence of flora and fauna. There is no spotting of animal herding on the site, as mentioned in the report. Coming to the livelihood aspect of the concerned land area, it is clearly mentioned that the land is not in use for any farming activities and other livelihood prospects. Although the felling of trees is said to be a requirement, the report says that it will not raise any alarm and

also mentions the government plan to grow trees surrounding the solar park as a green belt. The site is also devoid of any religious and ancestral significance, hence raising no such conflicts (Indian Renewable Energy Development Agency, n.d., pp. 35-36). All these factors enlisted here enables the smooth functioning of the solar park. Although this is a case without any nearby human habitats, it cannot be summarised as an ideal example as it does not provide a premise to evaluate the influence of the public.

5.3.3 Observations from Bhadla

In the case of Bhadla Solar Park, it can be observed from the referred secondary literature that social acceptance, public participation, siting decision conflicts and NIMBYism have not been relevant at any point. Not solely based on the government data, but for the very fact that no journalistic reports also have not come forth with claims of conflicts and protests. We cannot conclude that these significant factors are not relevant for setting up a renewable energy plant.

But, in this particular case, the absence of a community settlement in the geographical vicinity has enabled the steady progress of the plant along with improving the success probability as well. In the next section, we will try to understand an empirical scenario where there has been a successful implementation of a renewable energy policy along with the presence of social factors like a neighbourhood community or individuals.

5.4 Rampura Village of Uttar Pradesh

Rampura village offers a different perspective regarding the reception of renewable energy in terms of social acceptance and public participation, compared to Sangnara and Bhadla. In the case of Sangnara, we have explored the possibilities of lack of social acceptance leading

to protests and disruptions in the successful implementation of the windmill project. When it comes to Bhadla, there was no community as such that would bear the potential repercussions and fruits of the renewable energy system, hence the Bhadla solar park had a smooth implementation process.

But in the case of Rampura, we have a typical case at hand. Rampura village did not have electricity till 2008, until the project of electrification was initiated. Electrification of Rampura was made possible by a Community Solar Power Plant (CSPP), which was established in 2009 January. We will first mention the geographical peculiarities, social composition and other significant factors before getting into the core significant factors influencing the functioning of this renewable energy system.

5.4.1 Introducing Rampura

Rampura is a village situated in the Jhansi district of Uttar Pradesh. It is a semi-arid region within the Pahalgawan panchayat. According to Census 2011, Directorate of Census Operations Uttar Pradesh says that Rampura is situated in the rural region of Babina in Jhansi. There are 337 individuals in total in the village in 78 households. There are nearly as many females as there are males. It has an overwhelming percentage of around 95% members from the Scheduled Caste community. The village is spread in an area of 378.91 hectares of land (Directorate of Census Operations Uttar Pradesh, 2011, p. 207). It can be understood that Rampura is a community of Dalits with an ambition to attain social and economic mobility in the society, with renewable energy transition as one way to do it.

The PhD thesis of Karina Standal in 2018, submitted to the University of Oslo in Norway, has engaged with Rampura and its CSPP, although using an alias name of ‘Jyotipur’ in place

of Rampura. With much rigorous matching of the referred work and Census 2011 data, this study concludes that Standal's 'Jyotipur' reference is indeed about Rampura. This research will be referring to Standal's work and will refer to it as Rampura thereby. Standal says that there are forty-four households in total that are the beneficiaries of the decentralized renewable energy system. Solar panels are installed on land within the village boundaries and not on rooftops (Standal, 2018).

5.4.2 Before CSPP

Previous to the solar energy initiative, households used kerosene lamps at night due to a lack of electricity supply (Standal, 2018, p. 100). Children in Rampura were forced to engage with their academic activities in the daytime as it was difficult to proceed with it at night. In order to reduce the use of kerosene lamps, children preferred to study during day time. Due to lack of electricity, no one in the village had access to computer systems and to learn its basic operations.

When it comes to gendered roles in India, it is still perceived that cooking and related kitchen works are only the concern of women. Standal further says, Rampura village being no different from the rest of India, women found it difficult to do their kitchen work with kerosene lamps. Apart from the kitchen, the households did not have any electrical appliance that would make their lives easier and save their valuable time. The likes of televisions, fans, mixer grinders etc were not part of village life in Rampura (Standal, 2018, p. 255). Another point to note is the capacity of kerosene to contribute to environmental problems along with causing health issues for the residents. All these problems at the ground level demanded a

solution and one could say, the community level solar power project offered solutions to a great extent.

Apart from the use of kerosene that also contributed to environmental pollution and harmed the health condition of the villagers, the time preceding the inception of CSPP was also much painstaking for the children and their development. Time for studying had to be managed in the daytime as at night it was difficult to read under the light of a kerosene lamp.

5.4.3 After CSPP

According to a field survey done after the implementation of the CSPP project in Rampura, by the research and implementation agency called Development Alternatives, it was found that there were forty-four households as beneficiaries of solar power. Apart from providing electricity, it is observed that CSPP brought about socio-economic and environmental changes in the Rampura village.

According to the survey, fourteen households state that electricity has brought about a positive impact on the lives of children. They are now free to engage in leisure activities in the daytime as they can study at night as well. Computer training has also been made accessible to children of the village, opening new avenues in their lives. Improvements in quality of life are not restricted to children alone, but to women as well. Women are now able to shift their cooking schedule to night-time and engage in other livelihood activities like sewing, sweater weaving, stitching etc. There is an improved chance for them to earn from these activities that help in generating income. The living standards of the residents, in general, has improved as recorded data shows the purchase of electrical gadgets like fans, coolers, televisions and refrigerator in the village. Similarly, the presence of street lights has

discouraged the villagers to do away with their habit of open defecation. There are new toilets built in the village, which are signs of mobility in terms of living standards (Development Alternatives, n.d.). These are remarkable changes that have been brought about in the lives of the villagers, for which they themselves have taken part with considerable enthusiasm.

Another environmental solution by this project is that kerosene is no longer burned as much as compared to earlier times. Kerosene being a petroleum product contributes to pollution and solar-powered electrification in the village has enabled environmental action. But our interest area of study remains that of the role played by the society in renewable energy transition and its significance as a social change. In the following sections, we will be trying to understand the role of the village community, their response in terms of social acceptance and their participation in the solar power project.

5.4.4 Public Participation

Implementation of this community based solar power project in the village of Rampura was initiated with awareness workshops. There were hesitations and apprehensions from the side of the villagers regarding the use and scope of solar energy. According to Standal, there were workshops conducted to spread awareness regarding the benefits of solar energy and regarding the responsibilities of the villagers towards the plant. Even the operational side of the technicalities was acquainted with the villagers, who would turn as the operators of the plant (Standal, 2018, p. 86-87). This is an important step in the implementation of a renewable energy project in any site identified. It is important to take the local community into confidence, to earn their trust and in turn convince them about the upcoming project. If

these steps are not effectively implemented, there will be a scenario of conflict similar to that of Sangnara village.

The case of Rampura village is a genuine demonstration of social acceptance as a significant social factor that aids the developmental path of a renewable energy project. If the local community was kept in darkness and not allowed to participate in the discussions regarding the project, Rampura village would not have had a successful implementation of the solar power project.

5.4.5 Importance of Society

Another important aspect of renewable energy projects that connects the policy implementation and the local community is that of the ownership of the project. As we have discussed earlier, renewable energy transition brings about the potential of the customer becoming the producer as well. By introducing the idea of prosumer and intending to conduct further research on it, it can be observed that villagers of Rampura have become prosumers of renewable energy.

The community based renewable energy plant is owned by the community itself. Development Alternatives says that the power plant was set up with the approach of ‘Build-Own-Operate-Transfer’ (BOOT), in which it allows the village community to enjoy the ownership of the power plant. They were trained in the technical aspects, accounting and management to make them self-reliant in the operation of the power plant (Development Alternatives, n.d., p. 2). It makes the operation and management more transparent as it involves the participation of the local stakeholders.

One such activity and involvement of the villagers in the operation of the CSPP can be seen as a male villager is cleaning the solar panel which is covered in dust (see Image 5).

Image 6: ‘Innovative Solar Power Model’ (Development Alternatives, n.d.)



Note. Solar Panels of CSPP being cleaned manually by the villager in Rampura

Another important aspect of CSPP with respect to the public is the establishment of the Village Energy Committee or the ‘VEC’. The VEC is envisioned as a governing institution that oversees the management of the solar plant. It is expected to operate the financial dealings of the electricity bills and appoint operators for the plant. All operators were from the village itself and it ensured the aspect of participation (Standal, 2018, p. 88). What stands out in this type of community project is the decentralised form of governance system through the VEC. This resonates with the idea of energy democracy where administrative powers rest in the hands of the local stakeholders.

5.4.6 Observations from Rampura

Rampura village is an excellent model of successful implementation of a renewable energy project with social acceptance, proper siting decisions and public participation. The local community was consulted regarding the project, they were made aware of the benefits and it, in turn, resulted in a successfully running solar energy plant. Adding to that, making the community itself the owners has enabled the transition of the villagers from being consumers to prosumers of energy. It can be observed that the governance system has also undergone a change in terms of energy use, as the community has come become self-determinant of their fortunes. Energy democracy as an imaginable idea of governance is coming to life here in the village of Rampura.

5.5 Analysis

Three cases were taken for review to understand the empirical scenario in relation to the conceptual frameworks analysed earlier in the study. This analytical section of the chapter will consider all three empirical cases and try to make meaning out of the renewable energy transition process consisting of societal factors such as social acceptance, public participation, decisional importance and look at how the communities as a societal group administer a novel paradigm of democratic energy governance and changed reading of what a consumer is.

The case of Sangnara depicts the conflicting basis of social acceptance and renders out the potential failure of a renewable energy plant being run without a due consensus among the local stakeholders. The protests that erupted in the area with the leadership of villagers, pointing out the unjust manner in which their land was taken from them for

developmental purposes show that it delineates from the principles of the sustainable development framework. It also shows that social acceptance as a step towards a just and democratic developmental initiative is integral to the smooth functioning of a power plant. It is also important to gain the trust of the local stakeholders to ensure the longevity of the energy project.

Bhadla showcases a totally different scenario as the power plant does not have a social life in its vicinity. It also has witnessed a successful implementation of the power plant and it has not encountered any form of social conflict. This empirical case underlines the importance of society as the significant factor which influences developmental growth. Although Bhadla does not have a tense situation like that in Sangnara, it cannot be said that Bhadla solar plant would have run smoothly with community presence. Bhadla represents a contrasting case as compared to the one in Sangnara, in terms of social acceptance. The siting decision also becomes a relevant analytical angle in which Bhadla could be contrasted to Sangnara. As there are no human settlements near Bhadla, it becomes relatively easier to carry out a renewable energy power project. The geographical understanding of where the energy plant is going to be built is of utmost importance as Bhadla do not encounter any social acceptance issues.

Rampura on the other hand is a mix of both the cases discussed above. It is the case of a CSPP being implemented as a part of a rural electrification programme. It witnessed a high level of social acceptance and has proved to be a successful model of renewable energy projects with a decentralised governance system. The VEC that oversees the complete operation and management of CSPP in Rampura was recruited and appointed from the very beginning stage of the planning level itself. The implementing organisation had already

taken the local stakeholders into confidence and ensured a smooth transition into a decentralised renewable energy system in the village. They were trained for technical know-how, financial management, operational methods and so on. Ensuring the participation of the local stakeholders in the energy project shows how it influences the social acceptance levels. Even the siting decision has been undertaken by consultations with the villagers and the optimum area required had been decided with a consensus.

Another major form of transformation that accompanies this process of the energy transition is that of governance systems and consumer behaviour. The idea of energy democracy very rightly makes a case for itself in the scenario of Rampura. A decentralised system of renewable energy governance and its implementation right from the initial stages is a promising sign of giving more power to the people. As decentralisation itself promises a localised form of power distribution in terms of decision making and participation, the case of Rampura indicates a possible model of energy democracy.

Along with that, it also needs to be focused on how there is a changing dynamic in the pattern of consumption and the transition to that of a prosumer. In the case of Rampura, the village energy committee, ensure a quality supply of electricity to the users and charges for the power consumed. As the power plant is operated and managed by the village community itself, they are both the producer and the consumer of this solar energy. Both frameworks of energy democracy and prosumer are emerging as strong contenders for sociological understanding and require further attention.

5.6 Conclusion

Ground realities of policy implementation, especially of the nature of sustainable development goals, can be best understood by looking at empirical examples. Even though this research undertakes a review of the field from secondary literature, without an actual visit to the field, this analytical review will help in understanding the real-life manifestation of policy implementations. This chapter has explained and discussed the resultant outcomes in terms of societal interventions and the successful functioning of energy plants. It has shown the relevance of societal players as integral to energy transitions.

What emerges as novel ideas to explore further are that of energy democracy and the idea of prosumership. Although carrying a western heritage, these ideas can be very much relevant in India and it requires a further interest in scholarship to understand its immense possibilities in Indian society. As we conclude this chapter, it can be said that the renewable energy transition in India follows a peculiar pattern with its unique societal composition. The global narrative of the poor versus the rich, grounded in sustainable development goals, will prove to be insufficient in framing renewable energy policies in India. It requires a more holistic approach rooted in inclusivity, interaction and trust.

Chapter VI

Conclusion

6.1 Introduction

This study focuses on renewable energy transition in the context of modernity and tries to locate the centrality of society's role in the process. To understand how society and societal actors intervene and negotiate renewable energy transition, this study is looking at two domains of influential factors that constitute the transition, namely the conceptual frameworks of social acceptance and energy democracy. The historical context, placing it in the times of modernity, has been understood through the theoretical frameworks of risk and ecological modernisation. Indian scenario with sustainable development goals has been explained through the sustainable development framework. These initiatives are realised with policy interventions in different nations which are globally-driven phenomena and this study explains the relevant policy frameworks that explain the empirical scenarios taken for review. Three empirical cases in India with varying societal intervention is reviewed and the conceptual factors are explained and understood through these field studies.

6.2 Recapitulating the Study

With a brief recall of the intention of this study through listing the main objectives, specific research questions, theoretical frameworks used and the research methodology employed, this section of the chapter will try to discuss the importance of this research. By going in the order mentioned, each will be discussed and then we will proceed on to the main arguments of this research work in the next section.

Research Objectives

This study has tried to engage with three major research objectives. The central theme of this research has been to understand the significance of society and societal actors as an integral component in a renewable energy project. By identifying social acceptance and energy democracy as two broader conceptual frameworks, this research has attempted to analytically evaluate certain real-world manifestations of renewable energy policy implementations. Considering social acceptance as a factor that plays an important role from the initiation of a project and as something that influences its smooth functioning, it has been attempted to comprehend this idea through empirical cases taken for review. Energy democracy as a phenomenon of energy governance system has been understood both as a social movement and a new paradigm of governance.

Research Questions

As specific research questions of this research, it has tried to engage with the motivational perspective of the renewable energy transition. By largely looking at the role of the public, as an agent of society we live in, it has been attempted to discuss the significance of social acceptance, public participation and how these factors vary according to certain variables. This study has tried to engage with the emerging theorisation of energy democracy and the changing characteristics of the consumer in such an energy governance system. By discussing the possibilities of Prosumership, this research intends to indicate the possibilities for exploration in the area.

Theoretical Frameworks

To understand renewable energy transition, this study has tried to explain it through the theoretical frameworks of risk, ecological modernisation and sustainability. In the context of reflexive modernity, the idea of a risk-filled environment has driven the environmental sustainability measure through ecological modernisation. With this robust idea of describing the phenomenon of the renewable energy transition, these theoretical frameworks are appropriate to reflect the contemporary world and the desperate measures for survival.

Research Design and Methodology

As it was impossible to carry out fieldwork in households due to unforeseen circumstances of COVID-19, as was planned earlier for this study, it has been restricted to review work. This research would have gained much more fruitful and concise results, had it been conducted in a field like households. Social acceptance and energy democracy as something that readily reflects in the society could have been grasped in a better manner in the field. Nevertheless, this work of review tries to encapsulate these ideas with empirical reviews as a substitute for substantiating evidence from the field.

Secondary literature has mainly been sourced from seminal works, articles, online journals, government archival data, census reports, research theses, project reports, inquiry reports, online news portals, video streaming platforms etc. It is to be noted that no paper has been used for reading as each secondary literature has been sourced online and read as softcopies. As a work that focuses on environmentalism in a broad sense, this research finds its moral responsibility in not printing the source materials, although it is subject to preferences.

6.3 Main Arguments and Findings of the Study

This study has tried to look at the role of society at large when it comes to renewable energy transitions. After the analytical reviews in the previous chapters, this study arrives at certain arguments that articulates this research, in the pursuit of addressing the research questions posed in the initial stages of this work.

Renewable Energy in Contemporary World

Renewable energy is a product of the modern world that replaces conventional energy systems. The theoretical frameworks of Risk Society and Ecological Modernization explain the energy transition into renewables in the western developed world. It can also be applied to comprehend the developing world including India. These modernity frameworks attempt to explain the national boundaries as blurred in the new modernity. It proposes a view that encompasses the world as having a common threat of climate change. Although there is a unified sense of world society through these theoretical explanations, the variable effects of climate change among different social groups are to be acknowledged. This acknowledgement is explained through the framework of sustainable development.

Sustainable development proposes solutions that attempt to sustain natural resources and endorse social justice. This study has selected cases from India to be reviewed, in order to understand the conceptual frameworks of social acceptance and energy democracy. The Indian scenario of renewable energy transition and related developments can be appropriately understood with the idea of sustainable development. The effects of climate change are experienced differently by different groups of society in the developing world, such as in India. Also, their prerogatives may not always be to protect the environment. The

aspirations for development and progress of the disadvantaged sections, although globally addressed through sustainable development goals, is relevant at a local level as well.

Importance of Policy Intervention

Contrary to conventional models of energy, renewable energy systems offer participation of the people in its implementation at various levels. Policies of the modern age that pertain to the environment are largely sustainable in nature. These policies have an urgent nature as it tries to address the danger of climate change that is looming over in the modern world. By identifying sustainable ways of development as the way forward for growth, international bodies have pioneered action plans that are keen to address the problems risen out of climate change. India too has geared up for the challenges ahead after identifying the risk of climate change. As a developing nation, India has envisaged localised policy implementations by taking cues from the global policy frameworks.

Policy frameworks serve as plans for development that are actualised in real-life scenarios. As most renewable energy policies are focused on groups of people like neighbourhoods, village communities, gated communities etc., it becomes important to look at their role in the implementation and success of energy plants. As the core objective of the study and as the specific conceptual factor that is studied in this research, social acceptance is a relevant aspect that influences these policy implementations.

Comprehension of Concepts through Cases

This study has explained the importance of social acceptance through three empirical cases of renewable energy projects. Social acceptance involves public participation and siting decision making as encompassing aspects in the conceptual framework of social

acceptance. The analytical review of the three cases has enabled this study to understand that successful implementation and hassle-free functioning of a renewable energy plant ultimately relies upon the local stakeholders' trust and acceptance.

When the Sangnara power project received flak from the public in the vicinity, it can be seen how it has proceeded on to become a protest. The reason for this protest can be attributed to the ignorance of the implementing authorities in conducting a dialogue with the villagers. It points at the lack of public participation at a major juncture of the policy implementation like siting-decision. As the available data and journalistic reports from Sangnara suggest and by looking at the case through the conceptual lens of social acceptance framework, observations of mistrust can be inferred. With very low levels of social acceptance in Sangnara, it provides a situation to understand the conflicts involved in the implementation of the windmill project.

Bhadla, on the contrary, is running successfully. To an extent, it can be said that the absence of any human settlements nearby is one reason for it. But the key observation made with regard to Bhadla is its siting decision. It was very well planned to be located in a remote location as it is a centralised renewable energy system. It does not intervene in the human world and hence shows a smooth renewable energy transition.

Rampura, on the other hand, has showcased an example of a relatively successful case of policy implementation after consultation with local stakeholders. They were taken into confidence through meetings, participation and listening to their opinions regarding the siting of the power plant. As a result, it showcases an example of high levels of social acceptance which was made possible through allowing participation of the public in various

stages of policy implementation. It also shows the potential of providing a model to devise policy frameworks that would suit decentralised power solutions for remote regions in India.

Rampura's CSPP, as a result of the process, invites our attention to the emerging possibilities of prosumers in India. It can be seen emerging through the decentralised system of energy democracy. Although energy democracy is a western concept as explained earlier, the Indian scenario of small-scale power plants has the potential to fulfil the various conditions of energy democracy. Rampura shows promising signs of energy democracy with its CSPP.

6.4 Discussions for Further Research

Community-based renewable energy projects are getting increasingly popular in the remote regions of India, where electricity has not reached yet. With the policy framework of sustainable development, there is still potential to probe its effectiveness when it comes to caste-based settlements in India. Although the insufficiency of sustainable development framework lies in its restrictive approach of acknowledging only class-based hierarchies, this research finds scope in understanding renewable energy projects, the participation of stakeholders and its effectiveness when it comes to lower caste groups in India.

This study acknowledges the contribution in sociology regarding the participation of women in such projects. But it lacks an intersectional lens as it homogenises the category of women into one single entity taken for study. Regional focus with an intersectional approach of extensive field study can give a clearer picture of the situation in India regarding public participation in renewable energy projects. It can also look for answers as to why there are

still non-electrified regions in India despite government declarations referring to complete electrification in the country.

As mentioned earlier, with the increasing popularity of community-based projects, studies that pertain to policy can find scope in this area of interest. India is still in the pursuit of finding an appropriate model for replication when it comes to decentralised community energy plants. A research study undertaken in that direction can give insightful suggestions that can be incorporated in further policy studies.

Another perspective to understand and acknowledge is how environmentalism in India largely and sustainable policies, in particular, have not incorporated the views of Dalit intellectuals on the environment. Mukul Sharma is an Indian social scientist who has pointed at the negligence of Dalit perspectives pertaining to environmentalism. He talks mainly about *Mahatma Jotiba Phule* and *Babasaheb Ambedkar*, whose intellectual traditions on the environmental question have been not given due importance. He also indicates the multifarious potential for social sciences to understand the relationship between ecology and Dalit lives in the context of modernity (Sharma, 2012, p. 50). Social science research requires more focused studies that incorporate such views on the environment and society.

6.5 Conclusion

This chapter that concludes the undertaken study has summarised the directions at which the larger objectives of this study has been addressed. It also acknowledges the drawback of this study as it has not been carried out in a field of research. It outlines the prospective research opportunities as a take-off point from this study. It offers to shift focus on the impoverished groups of societies and their relationship with the environment, so as to realise a more just

environmental action in India. To end with a note of hope, climate change has been acknowledged and addressed as a real issue all over the world and further research in this area will contribute to the pace of efforts to save the world.

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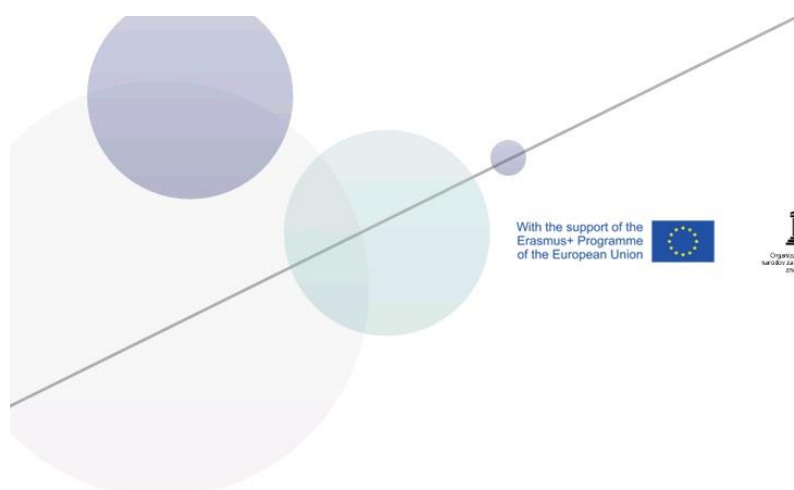
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