

“SOCIAL JUSTICE AND SOLAR ENERGY IMPLEMENTATION”

A case study of Charanaka solar park, Gujarat, India

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ABSTRACT

In the recent years, social issues around renewable energy implementation have been gaining prominence both in developed and developing countries. Though researchers across different disciplines in developed countries have started dealing with this issue, there is a lack of theoretical or empirical research in developing countries. This research from a pluralistic perspective and using the case study of ‘Charanaka Solar Park’ qualitatively analyses the relationship between ‘justice’ and solar energy implementation in India. The justice framework used in this thesis corresponds to the theoretical knowledge on a) procedural justice and b) distributional justice principles based in social, environmental, and energy justice literatures. The application of multiple theories of justice proved to be significant and useful instrument for analysing controversies over implementation of solar (renewable) energy policies. The results of this research have provided new insights into how social justice issues, such as recognition of marginalised communities, equal and democratic participation, and just distribution of project outcomes, are strongly interconnected to implementation of ‘environmentally good’ projects. Following the findings of this research, recommendations for policy-makers and practitioners are proposed and pathways for future research are outlined.

Keywords: Charanaka solar park, social justice, distributional justice, procedural justice, solar energy.

Dedicated to
My parents, 'Sai' and 'The Supreme Soul'

DISCLAIMER

This document describes work undertaken as part of a PhD programme at the School of Geography, Earth, and Environmental Sciences, University of Birmingham. All views and opinions expressed therein remain the sole responsibility of the author, and do not necessarily represent those of the department or the University.

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LIST OF ABBREVIATIONS

ABBREVIATION	FULL FORM
ABE	Advisory Board on Energy
ADB	Asian Development Bank
APL	Above Poverty Line
BPL	Below Poverty Line
CEPT	Centre for Environmental Planning and Technology
CERs	Carbon Emission Reductions
CERC	Central Electricity Regulatory Commission
CEEW	Council of Energy, Environment and Water
CII	Confederation of Indian Industry
CM	Chief Minister
CPR	Common Property Resources
CSO	Civil Society Organisations
DCR	Domestic Content Requirement
DoEF	Department of Environment and Forests
DPR	Detailed Project Report
EA	Electricity Act
EIA	Environmental Impact Assessment
EJ	Environmental Justice
EPC	Engineering, Procurement, and Construction
EPD	Energy and Petrochemicals Department
FIT	Feed-in-Tariff
FPC	Fuel Policy Committee
FY	Financial Year
GDP	Gross Domestic Product
GEB	Gujarat Electricity Board
GEC	Gujarat Ecological Commission
GEDA	Gujarat Energy Development Agency
GERC	Gujarat Electricity Regulatory Commission.
GETCO	Gujarat Energy Transmission Corporation Limited
GHG	Green House Gas
GoG	Government of Gujarat
GoI	Government of India
GPCL	Gujarat Power Corporation Limited

ABBREVIATION	FULL FORM
GSECL	Gujarat State Electricity Corporation Limited
GSHDR	Gujarat State Human Development Report
GSPP	Gujarat Solar Power Policy
GUVNL	Gujarat Urja Vikas Nigam Limited
GW	Giga Watt
IFC	International Finance Corporation
INR	Indian Rupees
IREDA	Indian Renewable Energy Development Agency
JNNSM	Jawaharlal Nehru National Solar Mission
KREDL	Karnataka Renewable Energy Development Limited
KRIBP	Kribhco Indo-British Farming Project
LA	Land Acquisition
LUSIS	Land Use Statistics Information System
MNES	Ministry of Non-Conventional Energy Sources
MNRE	Ministry of New and Renewable Energy
MoP	Ministry of Power
MP	Master Plan
MW	Mega Watt
NAPCC	National Action Plan on Climate Change
NCDNSNT	National Commission for Denotified, Nomadic & Semi-Nomadic Tribes
NDC	National Development Council
NECAG	Northeast Community Action Group
NEERI	National Environmental Engineering Research Institute
NEF	National Energy Fund
NGO	Non-Governmental Organisation
NIMBY	Not In My Back Yard
NISE	National Institute of Solar Energy
NRDC	Natural Resources Defence Council
NSSO	National Sample Survey Organisation
NTPC	National Thermal Power Corporation
NVVN	NTPC Vidyut Vyapar Nigam
OECD	Organisation for Economic Co-operation and Development
OPEC	Organisation of the Petroleum Exporting Countries
PAF	Project Affected Families

ABBREVIATION	FULL FORM
PMO	Prime Minister Office
PMC	Project Management Consultancy
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PV	Photo Voltaic
RE	Renewable Energy
REC	Renewable Energy Certificates
RES	Renewable Energy Sources
R & D	Research and Development
R & R	Resettlement & Rehabilitation
RGGVY	Rajiv Gandhi Grameen Viduyutikaran Yojana
RPO	Renewable Purchase Obligation
SEB	State Electricity Board
SEC	Solar Energy Centre
SECI	Solar Energy Corporation of India
SEDA	State Renewable Energy Development Agency
SEIAC	Solar Energy Industry Advisory Council
SERC	State Electricity Regulatory Commission
SEZ	Special Economic Zones
SIA	Social Impact Assessment
SLDC	State Level Dispatch Centre
SPP	Solar Power Policy
SSNL	Sardar Sarovar Narmada Nigam Limited.
TDO	Taluka Development Office(r)
TERI	<i>The Energy and Resources Institute</i>
UoB	University of Birmingham
UK	United Kingdom
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
USA	United States of America
VGF	Viability Gap Funding
WCD	World Commission on Dams
WCED	World Commission on Environment and Development

GLOSSARY

LOCAL NAME	DESCRIPTION
Adivasis	Tribals
Anganwadi	a school for 0-6 yrs established and funded by govt. of India in villages to provide education and nutrition free of charge.
Baval	Prosopis juliflora – a small shrub or tree common in India and many other regions of Africa, Mexico etc where it is used for wood and animal fodder.
Charnaka	The name of the village in which the solar park was implemented
Dalal	mediators for any transactions or matters of business
Dalits	Untouchables; referred as 'harijans' in caste categorisation
Devanagari	It is the script used in many Indian languages including Hindi, Marathi, Gujarati, Sanskrit etc. It is also used in Nepal for Nepalese.
Dharo	Act (in legal reference)
Gando baval	acacia prosopis juliflora – see Baval above
Ganot	Agricultural worker
Gaon ka neta	gaon (village/local), netas (elites); so literally local elites
Gram sabha	Gram – village, sabha – meeting; a rural meeting held for discussions on any issues in the village. It comprises all adult voters of the village.
Gir	A place in Gujarat home to Asiatic lions
Gouchar	grazing
Gujarati	The vernacular language of the state of Gujarat
Hindi	One of the two official languages of India; the other is English
Hinduism	The dominant religion of India and also Charanaka
Harijan	the fifth and last strata of caste in the Indian caste system who are often called 'untouchables'
Mamlatdar	a revenue official in charge of taluka administration
Maldharis	mal – flock, dharis – bearers ; so literally bearers of flocks of animals or simply translated as herders; they are also termed Rabaris (as a caste).
Nagar panchayat	Local governance system responsible for transitional areas (areas in transition from rural to urban)
Nilgai	A large antelope which lives in the desert of Kutch
Panchayat	a village level local self-government (village council) responsible for developing and implementing village level schemes.
Panchayat raj	a system of three distinct tiers below the State government consisting local self-government at village level, sub-district and the district level.

Patan	The name of the governing district in which Charanaka solar park was implemented
Rabari	a nomadic pastoralist community majorly concentrated in Gujarat and in a small portion in other neighbouring states of Gujarat such as Rajasthan and Madhya Pradesh.
Rann	Desert
Raj	rule; hence Panchayat raj
Santalpur	The name of the governing sub-district in which Charanaka solar park was implemented
Sarpanch	leader of the Panchayat (village council)
Satyagraha	a form of non-violent protest action; literally truth force
Taluka	a revenue sub-division of an administrative district containing around 100,000 people
Tehsildar	administrative officer in charge of a taluka
Upsarpanch	deputy leader of the panchayat (village council)

1. INTRODUCTION

On 11th January 2010, while officially launching the ‘Jawaharlal Nehru National Solar Mission’¹ (hereafter referred as NSM) under the brand name ‘Solar India’, the then India’s Prime Minister Dr. Manmohan Singh stated:

“National Solar Mission has the pride of place in India’s National Action Plan on Climate Change. Its success has the potential of transforming India’s energy prospects, and also contributing to national as well as global efforts to combat climate change. We will pool our scientific, technical and managerial talents, with sufficient financial resources, to develop solar energy as a source of abundant energy to power our economy and to transform the lives of our people.”

This short statement is part of the two page statement issued by the ‘Prime Minister’s Office (PMO)’ during the launch of the NSM. According to the statement, India aspires to take advantage of this vast, under-utilised clean energy resource to power its economy. The government has already recognised that apart from providing clean energy and reducing Greenhouse Gas emissions (GHGs), solar energy has the potential to enhance energy supply, advance energy security by reducing dependence on expensive fuel imports, and help sustain India’s economy in the long run. This recognition largely comes from the global pressure on India’s increasing contribution to climate change and internal pressure on energy insecurity due to non-availability of large fossil fuel reserves. These internal and external pressures are outcomes of the post-Independence national policy based on a fossil-fuel based economic and industrialisation pathway (Balachandra, Ravindranath, & Ravindranath, 2010). The fossil-fuel powered development pathway of India has led to an

¹ JNNSM is one of the eight missions of 2009 National Action Plan on Climate Change (NAPCC). The other seven are National Mission on Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Ecosystem, National Mission for a Green India, National Mission for Sustainable Agriculture, and National Mission on Strategic Knowledge for Climate Change.

overwhelming demand for energy services, and other issues such as energy insecurity, climate change and deteriorating energy infrastructure and systems (Benecke, 2011). The energy shortages and infrastructure problems have also been contributing to frequent voltage fluctuation, blackouts and other energy-related disruptions impacting both rural and urban populace (Bhattacharya, 2010). With a view to addressing these concerns of energy insecurity and promoting sustainable economic growth by shifting from fossil fuels to alternative fuels, Indian policy makers, at the onset of the 21st century, decided to provide support for integrating renewable energy (RE) into mainstream energy policy. As an outcome of this integration, over the last decade, an array of policy mechanisms and economic incentives has been developed. Through these policy mechanisms and programs, although wind energy has seen an aggressive growth with an installed capacity of 13, 000MW by 2010, solar energy has reached only around 200MW (MNRE, 2011).

Given the huge climatic potential for solar energy in India and in order to provide a boost for the underdeveloped solar energy sector, the NSM was initiated under the ‘National Action Plan on Climate Change (NAPCC)’ in 2010. The NSM has plans to generate 20GW of grid-connected solar photo-voltaic (PV)², and 2GW of off-grid solar PV³ energy and to cover 20 million sq. meters with solar thermal collectors by 2022. Of these three different technologies – grid-connected solar PV, off-grid solar PV, and solar thermal - currently more attention is being paid to grid-connected solar projects. The NSM’s target of 20GW grid-connected solar energy by 2022 is planned to be implemented in 3 phases: Phase-I

² Grid-connected power is mainly private investment driven, with favourable tariff policy regimes established by State Electricity Regulatory Commissions (SERC).

³ Off-grid power projects are being established in the country to meet the energy requirements of isolated communities and areas.

(1000MW): 2010-12, Phase-II (7000MW): 2013-17, Phase-III (20,000MW): 2018- 2022. If achieved, this could facilitate India’s emergence as one of the leading countries in the world in solar energy (Arora *et al.*, 2012). To realise this target of 20GW by 2022 and position India as a global leader in the solar industry, the NSM focuses on choice of technology, achieving grid-parity, financial viability, policies such as Feed-in-Tariffs (FiT), Renewable Energy Certificates (REC), competitive bidding, subsidies, and on creating an enabling environment with regard to skills, land and infrastructure (see sections 5.3.3 & 5.3.5 for more discussions on solar energy policy mechanisms). With the help of these strong policy and tariff mechanisms, the nascent solar industry was able to achieve the Phase-I target of 1000MW by the end of July 2012. In fact, the cumulative achievement of grid-connected solar energy grew from less than 200MW in 2010 (MNRE, 2011) to 2600MW in March 2014 (MNRE, 2014) (figure 1.1).

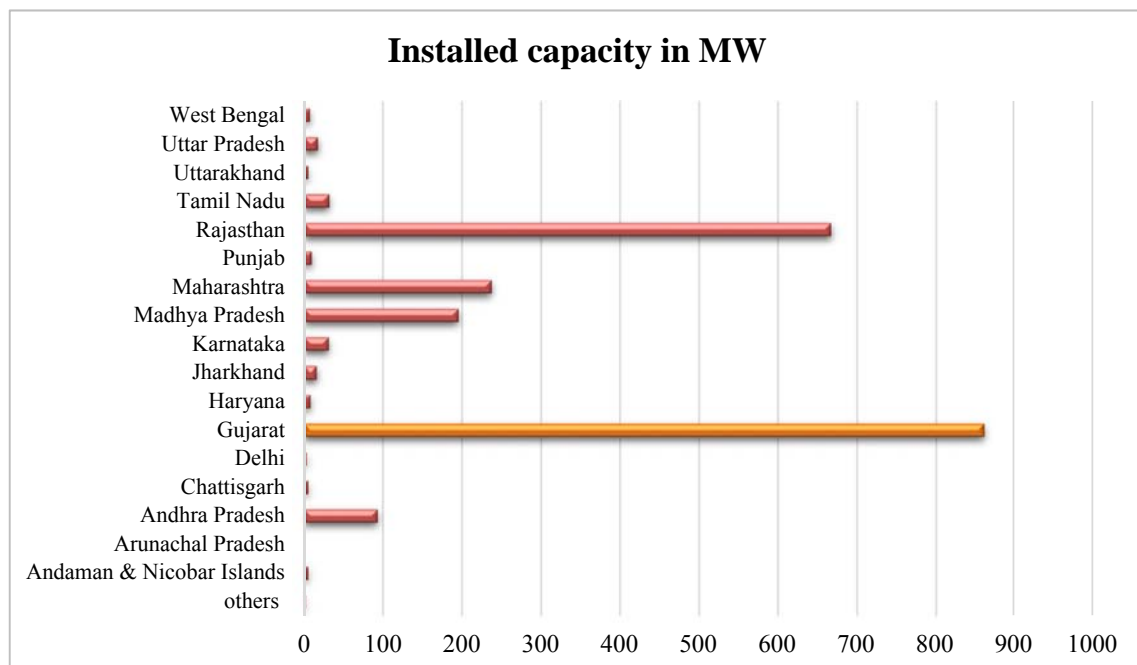


Figure 1-1 State-wise installed capacity in India (as on January, 2014) (source: compiled by the author)

However, in the course of implementing these projects, the government recognised that issues related to land acquisition, including siting and clearances, have been resulting in unpredicted delays to projects. In response to these issues, the policy report titled ‘Laying the Foundation for a Bright Future: Assessing Progress under Phase I of India’s National Solar Mission’ (Ghosh *et al.*, 2012) which was released in April 2012 by the ‘Council of Energy, Environment and Water (CEEW)’ and ‘Natural Resources Defence Council (NRDC)’ appointed by the Ministry of New and Renewable Energy (MNRE), recognises that:

Local communities, largely village-based, are critical to the success of solar projects. Developers and local officials must involve village members in all stages, from planning to operation. Villagers’ concerns and preferences need to be considered to maximise the benefits of solar power and to avoid adversely affecting communities in the scale-up of operations. Successful solar projects are integrated into the community fabric, providing local jobs and building community pride in renewable energy development. Ineffective community involvement can create contentious conditions for permitting and for solar operations (p.26).

While the policy report recognises the need for consideration of procedural and distributive aspects, there is little literature and empirical evidence on these issues both in solar energy and other renewable energy implementation in India or other developing countries. The underlying reason for the dearth of literature is that much of the renewable energy literature in developing countries is focussed around the issues of technology advancement, policy considerations, and socio-economic benefits of solar energy. However, as emphasised by the policy report, social justice issues, such as justice in policy making and land acquisition procedures, and fairness in distribution of project outcomes, in recent years have been emerging as barriers for acceptance of solar and other renewable energy projects. Addressing these social issues facilitates better penetration of these

‘environmentally good’ technologies, which could actually provide great solutions for addressing both energy and environmental issues in developing countries. This research aims to help fill this gap, by drawing on distributive and procedural justice principles of justice theory.

The main objective of this research is to contribute to the understanding of the relationship between renewable energy and its socio-spatial context by exploring and critiquing the dynamics of the procedural and distributive elements of social justice in solar energy implementation in India. The central research question here is: What social justice implications do the practices of India's solar policy have at the local and regional scale? This research question is particularly addressed through the case study of the Charanaka solar park in Gujarat, which is a major development of its kind both in India and in the world.

In the process of addressing this, the thesis also considers the following research questions:

- What are the main drivers, opportunities, and challenges of Gujarat solar policy?
- How well has been the implementation of the Charanaka Solar Park borne out the principles of procedural and participatory justice, including in the land acquisition practices?
- How justly have the benefits and burdens of the solar park implementation in Charanaka been distributed among different stakeholders, including with respect to socially vulnerable groups?
- What has been the reaction of different local social groups to the project and why?
- What can this development tell us about the social justice implications of projects of this kind and scale?

Charanaka Solar Park was implemented under the ‘Gujarat Solar Power Policy 2009’ (hereafter referred as GSPP 2009). With an installed capacity of 216MW in April 2012, the Charanaka Solar Park has become the world’s largest solar park, beating ‘Goldmud Solar Park’ (200MW) in China. While with a population of about 1500, the Charanaka solar park region has large tracts of farm land; it is also dominated (about 50% of the total population) by one of the country’s famous pastoral nomadic communities called ‘Rabaris’. With a lack of land rights and low literacy, the Rabaris’ life is more precarious than others. Hence, addressing justice concerns of these marginalised groups is important for their very survival.

Although with a population of about 1500 largely dominated by these nomadic communities Charanaka is relatively small, it is emblematic for the social justice implications in the implementation of ‘environmentally good’ technologies. As India initiated major programs to establish itself as a leading country in the development of solar energy, understanding and addressing social justice concerns in the development of such ‘environmentally good’ technologies is vital. Along with technological, policy and financial issues, addressing the justice issues can facilitate the sustainability of India’s solar energy and its ambitious ‘20GW by 2022’ target. The research is unique and timely because it addresses not only procedural, distributive and land acquisition concerns raised in Phase – I NSM policy implementation assessment (Ghosh *et al.*, 2012), but also the economically and socially marginalised Rabari community.

1.1 Researching ‘Justice’

As the current research aims to unpack elements of justice in implementation of the Charanaka Solar Park, it is important to understand the justice theory in which these

elements are rooted. ‘Justice’ is a contested concept with diverse meanings, theories, and principles. While justice is conceptualised in different forms such as legal justice, political justice, social justice etc. (Beever, 2004), this work on understanding the relationship between solar energy and society commence from a social justice perspective, but connects with other schools of justice scholarship including environmental justice, spatial justice and energy justice. While the concepts introduced here are discussed in depth in the following chapters, providing an introductory sketch of the concepts and arguments within the different literatures is useful at this point.

In some of the early theoretical discussions on social justice, justice refers to the qualities of fairness, equity and impartiality in the distribution of primary goods and services. One of the prominent works on social justice by Rawls (1971) argues that any unequal distribution of primary goods in a society should be arranged so that the least-advantaged members of a society receive the greatest benefits (the ‘difference principle’). However, Rawls’s (1971) distribution based justice theory was criticised as limited by some scholars. For example, Cohen’s (1997) critique identifies that the Rawlsian difference principle approach is practically impossible to achieve because what constitutes a socio-economic disadvantage is not defined neatly. While in one instance people born with ill-health or disability could be disadvantaged in their economic prospects, in other instances people from socially marginalised sections of people may end up more economically disadvantaged. These kinds of socio-economic differences may complicate justice concerns. Cohen (1993) further goes on and describes that under unequal socio-economic conditions, providing equal access to advantage or opportunity for all people could best represent justice.

In a similar critique of Rawls (1971), Sen (1992, 2009) argues that justice is not only about the distribution of primary goods but also resources, welfare, and capabilities to function (arguments on foundations of distributive justice are elaborated in section 2.2). This argument is based on the notion that people's capabilities to realise important functionings, such as being healthy and safe, being happy, having a good job and self-respect, are substantive to justice. These various arguments notwithstanding, for this research on solar energy development in a remote region in Gujarat where marginalised communities are involved, the notion of social justice as fairness in the distribution of benefits and burdens is particularly important.

For other theorists of justice, along with distribution, social justice lies in a society which recognises the interests of marginalised groups, and provides equal opportunity for everyone to participate in decision-making processes that affect them (Fraser, 1998; Fraser & Honneth, 2003; Young, 1990). In a critical challenge to the prevailing philosophical reduction of social justice to distributive justice, Young (1990) argues that a just society includes the recognition, respect and inclusion of marginalised social groups. For Young, the struggles for recognition are also in the grievances regarding inequitable distribution of goods in a society. However, Fraser (1998), through a 'bivalent' conception of justice, argues that 'neither distribution theorists nor recognition theorists have so far succeeded in adequately subsuming the concerns of the other' (p.5). The core argument of the bivalent conception is the notion of 'parity of participation', which encompasses both the theory of distributive justice and the philosophy of recognition. Here, Fraser argues that both fair distribution of resources and respect and lack of oppression are required in order for all to participate fully in society. According to these socio-political theorists, recognition emerging out of respect for difference between people, and participation, are the basis of

social justice. Drawing on these literatures, in chapter 3, I shall argue that recognition and participation, are at the core of theory of procedural justice, which in turn is a second major element (along with distributive justice) of social justice theory (see section 3.2 for more theoretical discussions on recognition and participation).

In the 1980s, in parallel to theoretical discussions on social justice among political philosophy scholars, a grassroots movement for social justice and against ‘environmental racism’ in American communities emerged. Environmental racism refers to i) the disproportionate distribution of environmental risks arising out of siting of toxic and noxious infrastructure facilities in the coloured, poor and disadvantaged communities, ii) institutional domination and oppression of marginalised non-white communities in arenas relevant to environmental policy and environmental planning, and iii) systematic exclusion of these marginalised communities from the environmental decisions that affect them (Bryant, 1995; Bullard, 1993). Many of the grassroots movements that emerged against these discriminatory practices in marginalised communities convened at the ‘First National People of Colour Environmental Leadership Summit’ in 1991 where the term ‘Environmental Justice (EJ)’⁴ was officially defined through 17 principles. These principles fundamentally argue for three aspects: first, fair distribution of benefits and burdens arising out of siting of facilities; second, meaningful participation of all people irrespective of background in all institutional processes including development and implementation of environmental laws; and finally, recognition and respect for all marginalised communities. Over the years, the EJ movement has expanded to other parts of the world including the United Kingdom (Agyeman & Evans, 2004; Mitchell &

⁴ Refer <http://www.ejnet.org/ej/principles.html> for 17 adopted principles of environmental justice. Of the 17 principles, five principles (2, 3, 7, 14 & 15) directly embraced the principles of distribution, procedures, institutional domination and oppression and recognition.

Dorling, 2003), Europe (Steger & Filcak, 2008; Varga, Kiss, & Ember, 2002), India (Kalas, 2000), South Africa (McDonald, 2004), and Mexico (Carruthers, 2008; Ojeda-Mestre, 2007).

A large amount of literature addressing the concepts of environmental racism, environmental equity, equity, and environmental law and governance evolved over the years (Bullard & Wright, 1990; Bryant, 1995; Holifield, 2001; Pulido, 1996; Schlosberg, 2007) (see section 2.4 for discussions of environmental justice and just sustainability). Some of the examples are Shrader - Frechette's (2002) 'principle of prima facie political equality' which is centred on the two components of distributive and participative justice, and Schlosberg's (1999, 2007) environmental justice rooted in political theory around the concepts of distribution, participation and recognition. These literatures extensively debate and discuss the underpinning principles of EJ. EJ principles seeks to include the wider narratives of social justice such as fair and meaningful participation in environmental decision-making, and equitable distribution of environmental risks and benefits in siting of infrastructure facilities (see section 2.4 for more theoretical debates on distributive concerns in environmental justice). As this thesis is based on unpacking social justice issues in the implementation of solar energy facility in a marginalised community located near the Indo-Pakistan border in Gujarat, it speaks very much to both environmental justice and social justice concerns.

In the discussions of social justice, the emphasis of justice is often on material well-being through distribution of goods. However, a crucial dimension of human societies that reflects social facts and influences social relations is 'space' (Lefebvre & Nicholson-Smith, 1991). The social justice perspective on spatial patterns has particularly been of interest to

geographers. Due to this interest in understanding social justice issues occurring across and through space, over recent decades various geographers came up with concepts such as ‘territorial justice’ (Davies, 1968), ‘territorial distributive justice’ (Harvey, 1973), and ‘geographical justice’ (Johnston, Gregory, & Smith, 1994). Two common examples of spatial injustice are the privatisation of public land or common property resources for infrastructure development, and the discriminatory spatial patterns regarding undesirable land use in communities of colour in the environmental justice movement. In the main, these spatial justice concepts are formulated and elaborated based on the distributive principles of social justice. Built on works such as by Rawls (1971), the concept of spatial justice’s focus has largely been on equitable geographical redistribution issues (Dikec, 2001, Harvey, 1973, Soja, 2010) (more arguments on distributive justice in geography are discussed in section 2.3).

While the above perspectives on justice (social, environmental and spatial) and their fundamental principles (distribution, procedures and recognition) are now well established in the academic literature, under the concept of ‘energy justice’ a new body of literature is growing for understanding the relationship between justice and energy. Drawing on social justice, spatial justice and environmental justice literatures, the work so far explicitly on ‘energy justice’ (Hall, 2013) has been on issues such as energy consumption (Eames, 2011), trans-border energy politics (Carruthers, 2007), fuel poverty (Walker & Day, 2012), and low carbon communities (Bulkeley & Fuller, 2012).

Within the energy research, though renewable energy research has mostly been focussed on presenting renewable energy technologies as a solution to global climate crisis, recently there is an acknowledgement of socio-cultural and environmental issues posed by the

implementation of renewable energy projects. The literature has started providing novel perspectives on the ways in which ‘environmentally good’ technologies and society interlink. These new social perspectives on renewable energy can be categorised broadly into three categories. First, research on social acceptance and public perceptions in relation to the ‘Not In My Back Yard (NIMBY)’ concept (Devine-Wright, 2005, Wüstenhagen, Wolsink, & Bürer, 2007). Second, addressing the landscape, visual and spatial impacts (Pasqualetti, 2004; Breukers & Wolsink, 2007). Third, the application of justice and fairness frameworks including the concepts of winners and losers (Gross, 2007), distribution of benefits (Cowell, Bristow, & Munday, 2011; Brady & Monani, 2012) and public engagement (Burningham, Barnett, & Thrush, 2006; Cass & Walker, 2009; Gross, 2007). Of all these social issues, the third category is particularly relevant for this thesis.

While the above energy justice literature acknowledges the social issues that arise in the implementation of renewable energy technologies, little examines both procedural and distributive issues (see sections 2.5 & 3.5 for more arguments on justice concerns in energy development). Furthermore, with the exception of works such as Walker and Day (2012) which discusses the multiple principles of social justice through the case of fuel poverty in the UK, Gross (2007) which understands community acceptance of wind energy in Australia through the procedural and distributive notions of justice in both social and environmental justice literatures, and Walter and Gutscher (2011) which comprehends public acceptance of wind energy and bioenergy projects in Germany, Austria, and Switzerland through distributive and procedural justice theories, there is little scholarship which comprehensively uses the multiple principles and dimensions of justice across different literatures in developed country contexts. In the developing country context also there is a dearth of literature and empirical evidence on understanding justice principles

either in conventional or renewable energy technologies. The academic literature on renewable energy development in developing countries still focuses on issues such as the need for renewable energy, current status and achievement, the contribution of renewable energy to socio-economic development, technical potential and future prospects. Apart from addressing gaps in the developed country literature, this thesis also addresses the literature gap with regard to developing country scholarship.

Examining and understanding the justice concerns, specifically what procedural and distributive concerns are given consideration in the development of renewable energy projects in communities, requires research which draws theoretical and analytical constructs from different disciplines (Gross, 2007). Therefore, this research explores the application of justice theory, from an inter-disciplinary perspective, to renewable energy, using Charanaka solar park as a case study. Through referring to the notions of procedural and distributive justice based in social, spatial, environmental, and energy justice literatures, this research opens up new avenues for energy justice research.

1.2 Structure of the thesis

Following this introductory chapter, the rest of the thesis follows the structure outlined below.

Chapters 2 and 3 focus on the conceptual and theoretical discussions on principles of justice.

Chapter 2: Distributive justice

This chapter begins with review of the principle of distributive justice in social justice literature. Noting the importance of distributive justice discussions in geography for this research, the chapter then examines the notion of distributive justice in geographical space

or place. Expanding on the social and spatial justice literature, the chapter then reflects on the environmental justice literature developed from the grassroots environmental justice movement. Finally, given the focus of this thesis, the chapter addresses recent arguments on concerns of distributive justice in the renewable energy literature.

Chapter 3: Procedural justice

Considering that fair access to political processes is another important principle of justice theory, this chapter critically reviews more than two decades of work on procedural justice encompassing the principles of participation and recognition. The critical review of theoretical approaches to participation and participatory literature is particularly useful for this thesis as it is largely based on work in developing countries. The chapter concludes by providing some reflections on procedural justice discussions in renewable energy.

Chapter 4: Research methodology

This chapter provides the rationale for choosing the qualitative and case-study approach. It then proceeds to discuss the data collection and data analysis methods adopted for this research. After this it presents the details of the case study village: its geographical aspects and socio-economic profile. Considering the dynamics of rural areas in India, this is phenomenally important. Finally the chapter critically reflects on the methods adopted and on doing research in India, alongside reviewing the positionality of the author.

Chapter 5: Evolution of solar energy policy framework in India

This chapter, as a policy review chapter, emphasises the increasing importance of solar energy in India's energy profile. It reviews the evolution of solar energy policy from a broader energy policy framework and other energy policy frameworks which directly or

indirectly embraced solar energy. The chapter then sets out the institutional framework of the NSM which aims to facilitate India's emergence a leader in this industry. In the process it identifies provisions for public participation in solar energy policy making processes.

Chapters 6, 7, 8 and 9 present the empirical findings of the research

Chapter 6: Evaluation of the Gujarat Solar Power Policy

As the research is based on the Charanaka Solar Park, which emerged from GSPP 2009, understanding and analysing the policy itself is important. Apart from discussing the solar energy landscape, this chapter, largely drawn from business developers and government interviews, discusses the goals of the policy development, the institutional framework, and the key strengths and weaknesses of the policy. The chapter also provides a comparative analysis of GSPP 2009 against the NSM. Finally, it identifies provisions for public participation in Gujarat's solar energy implementation.

Chapter 7: Justice in implementation procedures

Drawn from interviews with community members, business developers and government officials, and building on chapter 2, this chapter discusses issues of procedural justice that emerged in the implementation of the Charanaka Solar Park. These discussions are based around the issues of information sharing and recognition of local knowledge, inclusion and enfranchisement, political domination and oppression, and representative participation.

Chapter 8: Justice in land acquisition

Following on from the previous chapter, this chapter discusses justice issues in land acquisition procedures for the Charanaka Solar Park implementation. Drawing from

community, business developers' and government officials' interviews and building on both chapters 2 and 3 regarding concerns of spatial justice, rights and entitlements, and procedural justice, this chapter primarily discusses three issues: land, livelihoods, and the execution of land acquisition procedures.

Chapter 9: Justice in the distribution of outcomes

This final empirical chapter, also drawn from interviews with community, business developers and government officials, address the outcomes of the Charanaka solar park implementation procedures through four issues: employment opportunities, clean energy, infrastructure development, and local economic development. The discussions in this chapter make recourse to arguments on benefit and burden sharing in policy outcomes and other elements of distributive justice as identified in chapter 2.

Chapter 10: Conclusions

Along with reflecting on some of the major issues that emerged from the empirical chapters, this concluding chapter also provides some discussion on links between different facets of justice in this thesis. Additionally, it provides some policy recommendations and potential future research themes or topics arising from this research.

2. DISTRIBUTIVE JUSTICE

'Just' and 'Unjust' are central terms that can be applied to societies as a whole, and in principle, at least they can be applied to societies concretely and realistically conceived

--- Bernard Williams, *Ethics and the Limits of Philosophy* (1985)

2.1. Introduction

Concerns over distributive justice or distributive fairness are still the driving force of many social movements and environmental disputes (Gross, 2007). A number of theoretical debates concerning the issues of equity, equality and fairness in distribution have emerged in the social justice literature, particularly since Rawls' (1971) publication 'A Theory of Justice'. Central to these different arguments are calls for attention to a fair allocation or distribution of public assets such as resources, wealth, entitlements or outcomes of processes (Barry, 1973; Dobson, 1998; Sen, 1982, 2009).

From the initial scholarship based in the social justice literature, discussions on distributive justice have expanded to geography (e.g., distribution of common property resources) (Harvey, 1973, 1996; Soja, 2010), environmental justice (e.g., distribution of public burdens in hazardous waste siting) (Schlosberg, 2004; Shrader – Frechette, 2002), sustainability (e.g., intergenerational aspects of resource use) (Agyeman & Evans, 2004), and energy (e.g., community benefits from wind energy) (Gross, 2007; Cowell, Bristow, & Munday, 2011). As well as this growing theoretical scholarship, a large number of international policy documents demanding distributive justice in the allocation of natural resources, or siting of infrastructure developments, also emerged in the last few decades (WCED, 1987; World Bank, 2006). While the theoretical and policy literatures provide multiple formulations for defining distributive justice, in a simplistic sense distributive

justice focuses on a fair distribution of either public goods and bads, or public benefits and burdens (Kuehn, 2000).

The principal objective of this chapter is to uncover and critically review some of the theoretical constructions based on questions such as: What is the basis of distributive justice? What is to be distributed and to whom? and what are the principles through which just distribution is achieved? The chapter takes its cue from social, spatial, environmental, and energy justice literatures and critically reviews the application of distributive justice theory to this research.

After this introductory section, the rest of the chapter is structured as follows: first, it begins with a discussion of the notion of distributive justice, identifying the key concepts and debates in the social justice literature. Second, the chapter reviews some of the critical debates and discussions of distributive justice in geography. Third, beginning with the evolution of the grassroots environmental justice movement, it outlines and discusses the concerns of distributive justice in environmental justice and sustainability literatures. Fourth, while reviewing the principles of distributive justice in the renewable energy literature, the chapter comments on the links between renewable energy and other literatures. Finally, the chapter identifies the literature gaps and the relevance of different literatures to this research.

2.2. Foundations of distributive justice

As noted in the introductory section, since the second half of the 20th century, an extensive literature on concerns of distributive justice emerged. These philosophical inquiries and debates range from defining what fairness is, to unpacking the notions of equality and the equitable distribution of benefits and burdens. The debates on distributive justice also vary

from providing an understanding of what is to be distributed (income, wealth, opportunities, jobs, welfare, utility, etc.) to whom (individual persons, groups of persons, reference classes, etc.) and on what basis (equality, maximisation, according to individual characteristics, etc.). Some of the prominent debates that emerged based on these questions are discussed here.

While different theories of distributive justice have been formulated by different scholars in the past century, some of the most influential ideas were initiated by John Rawls. Through an extensive critical argument of the classical literature on ‘utilitarianism’ (Bentham, 1789; Mill, 1863), Rawls’ (1958) ‘Justice as fairness’ provided an initial departing point for debates on social justice. In this book, Rawls (1958) argues that the fundamental idea in the concept of social justice should be fairness in distribution of goods and benefits. This idea of justice (or notion of fairness) is what classical utilitarianism is unable to account for. Utilitarianism simply put is concerned with maximising overall utility (greatest good to the greatest number) and this can result in systematic unfairness to minorities.

Starting from this book, Rawls published a series of works expressing his ideas of distributive justice (Rawls, 1963a, 1963b, 1967, 1968). While these works provide wider discussions on theories of distributive justice, the ideas expressed in them are not coherently interwoven. In order to eliminate any inconsistencies, to take forward the discussions initiated in the previous works, and to strengthen the arguments presented in them, ‘A Theory of Justice’ (Rawls, 1971) was published. This work is based on two principles - i) every person can claim equal political rights and liberties, and ii) if there has to be an inequality in the distribution of social and economic goods in a society, the

distribution of such goods should be arranged in such a manner that the least advantaged sections of that society receive the greatest share of benefits (Rawls, 1971). According to these two principles all primary goods are to be distributed equally unless an unequal distribution of some or all of the goods favours the least advantaged. To arrive at the above two principles of justice, the primary goods (such as liberties, rights, wealth, and opportunities) should be distributed in a way that would be agreed if everyone were in a society to choose from behind the ‘veil of ignorance’:

No one knows his place in society, his class position or social status; nor does he know his fortune in the distribution of natural assets and abilities, his intelligence and strength, and the like. (p.137)

The ‘veil’ is one which blinds an individual to their social status, economic advantage or disadvantage in a society. Essentially the concept of veil of ignorance aims to ensure impartiality of judgement in the distribution of economic, social and political goods and bads among the society’s members. In a simple sense, Rawls (1971) argues that ignorance of one’s social status and economic privileges will lead to principles that are fair and just to all. This perspective in the distribution of economic goods has been subsequently explored and debated by other scholars succeeding Rawls (Arneson, 1990; Barry, 1989a, 1995; Cohen, 1997; Dworkin, 2000).

While Rawls’ approach to justice as fairness in distribution is identified as a commanding work on social justice in the 20th century, a wealth of critical literature has also been developed over the years. One significant critical work that emerged soon after Rawls’ (1971) theory of justice is ‘Anarchy, State and Utopia’ by another eminent libertarian Nozick (1974). According to Nozick (1974), the distribution is just only if everyone is entitled to ‘minimum standards’ or the fulfilment of ‘basic needs’. Nozick suggests that this provision of a minimum standard could be funded through redistribution from the

better-off. Principally, according to Nozick the satisfaction of and respect for rights is a good in itself (Kukathas & Pettit, 1990). The idea of ‘entitlement’ (or rights) to a minimum standard or fulfilment of basic needs demands the provision of a minimum standard of living or basic level of services to everyone. Different academics and institutions outline these minimum standard or basic needs differently. For example, Brown (1986) puts the list under different categories such as i) means of existence (food, clothing, shelter etc), ii) pleasure (a good life) iii) work, rest and play (well-balanced life) and iv) social relationships (family, friends, etc). Similarly, Fried (1983) addresses the question of what determines a right to minimum standard:

A person has a claim on his fellows to a standard package of basic or essential goods – housing, education, health care, food, i.e. the social (or decent) minimum – if by reasonable efforts he cannot earn enough to procure this minimum for himself. (p. 52)

Nozick also argues that Rawls is mistaken in assuming that goods come into the world unowned and await distribution (Kukathas and Pettit, 1990). In the conflict between Rawls and Nozick, it should be made clear that the divide between them emerges from the fact that while Nozick thinks that lack of rights is a fundamental constraint to justice, the former doesn’t (ibid.). There are other works developed in critique of Rawls by various other liberal theorists. For example, MacIntyre (1986) concludes that Rawls’s work simply reveals the absence of agreement about the ethical basis of societal practice without fulfilling a promise to supply the foundations of moral and political argument.

While Nozick’s work provides a comprehensive debate about entitlement (or rights) to minimum standard or fulfilment of basic needs, this view is arguably not so different from Hayek (1960) [reprint Hayek, 2011] who argues that exclusive property rights are required to maximise freedom/liberty or minimise the violation of these. For Hayek, such a social

condition achieved through private ownership, is required to treat people as ends in themselves and the violation of it results in injustice. What is different between both these libertarians is that while Nozick promotes property rights, as part of his basic needs concept, he does not provide any moral justification of exclusive property rights.

One of the other prominent critical works based on a distributive approach is by Smith (1994). In objection to Rawls, Smith (1994) argues that the theory of justice following the equal liberty rule has no clear indication of how this rule could work in real societies. Agreeing with Smith's (1994) objection to Rawls's (1971) equal liberty rule, I shall argue that in a real stratified society, where prioritising individual liberty motivates self-interest rather than orientation towards community, perfect equality would remain an ideal rather than being realistic. In a simple sense, in this world of scarcity, selfishness, and actual inequality, things are not straightforward and it might not be possible to achieve equality at all times. Smith's argument further goes on to pose questions such as, how does a society know whether it is in the path of Rawls's (1971) criteria of justice, how we can know that the worst-off became better-off, who is to be counted in the distribution of goods, and who qualifies for benefits? These questions become more complex when considering Walzer's (1983) suggestion that all goods (for distribution) may not be similarly valued in all societies.

While answers to these questions could provide some clarity on what constitutes distributive justice, this is not simple. However, to some extent, the answers lie, if not directly, in understanding the concepts of 'membership' or 'belongingness' (De Cremer & Blader, 2006) of people in a society (Smith 1994), the structure of society on which it operates, the sub-structure of social relations and the superstructure of the powerful legal and political institutions. Smith (1994), to some extent agrees with Rawls' difference

principle by stating that ‘to achieve equality in certain respects may require inequality in another’ (p. 56). However, he argues ‘the more equal, the better’ and ‘the more equal, the more just’ (p.118-9).

One seminal work which takes a somewhat different approach to Rawls, based on development concerns, is by the Nobel laureate economist Amartya Sen (1999, 2009). Sen’s notion of human ‘capabilities’ and ‘valued functionings’ replaces Rawls’ (1971) notion of needs as primary goods. For Sen (1999), these valued functionings for human beings are important for human beings to promote their well-being. In this sense, Sen (2009) through his ‘Idea of Justice’, and in contrast to Rawls (1971) argues that it is not the distribution of primary goods, but rather the capability to achieve ‘valued functionings’ (‘such as adequately nourished and being free from avoidable disease to very complex activities or [...] to take part in the life of the community’ (p.75)) which should be at the core of distributive justice.

There are many elements of distributive justice theory in social justice literature which can be applied to this current research on solar energy development in Gujarat. The application of these theoretical understandings can promote distributive justice in the implementation of solar energy. However, there are many contextual considerations and these include the political climate, economic reality, social patterns and development objectives of Gujarat. There is also a need to understand ‘what is to be distributed and how’. For example, is it the money from the profits of solar energy development which comes as primary goods (as in Rawls’s concept) that needs to be fairly distributed or is it the equal job opportunities, an essential part of achieving essential valued functioning, such as earning a living (as in Sen’s concept) that should be considered? This argument also leads us to questions such as who is to be counted in the distribution and why? While setting the theoretical contexts in

this chapter, these questions, in the context of solar park development in Gujarat, are further addressed in the subsequent empirical chapters.

2.3. Distributive justice in geography

In the social justice literature, while justice issues in distributions of primary goods and material well-being are core concerns, justice issues in socio-spatial resource allocation, and discriminatory patterns of locating unwanted land uses constitute the concerns of distributive justice in geography. Understanding the underlying aspects of justice issues in the distribution of benefits (and burdens) in ‘geographical space’ gained prominence in the initial engagement of geography with social justice (Dikec, 2001, Harvey, 1973, Soja, 2010, Smith, 1994). All the academic geographical inquiries, specifically based on urban spatial structures, explicitly highlight the interactions between distributions and geographical space, or what people in particular spaces hold to be just and unjust.

By investigating political economy, some of the scholars within the growing field of urban political ecology have contributed important insights into the relationship between the ‘social production of space’ (Lefebvre, 1991; Gottdiener, 1994) to ‘the complexities that create material inequality in urban environment’ (Heynen, Perkins & Roy, 2006, p.3). Within the context of Marxist formulations of political economy (Harvey, 1996; Marx, 1867 [reprint 1976]; Smith, 1984; Swyngedouw, 1999, 2004), the research has paid attention to the social production of urban space as a means of explaining why so few urban residents benefit and so many suffer from unjust distribution of urban space (Heynen, Perkins & Roy, 2006). These works based in the context of Marxist tradition, if not explicitly, provide extensive arguments on distributive justice in space.

In the development of work on the interactions between political economy, justice and space, different terms emerged. These include territorial justice (Davies, 1968), territorial distributive justice (Harvey, 1973), geographical justice (Johnston, Gregory, & Smith, 1994), and spatial justice (Soja, 2010; Pirie, 1983). While space is a major component in understanding the just or unjust distribution in geography, it often also takes different forms. Walker (2009) notes these different forms - ‘cartesian space; political and democratic space; institutional space; spaces of identity; place, territory and community; dynamic spaces of flows; and movement between spaces and across boundaries’ (p. 629) – at different scales – local, community, region and the ‘nation-state’. As Walker further argues that these different forms, different things, and different scales of spatiality need to be an integral part of understanding the multiplicity of justice concerns and claims, the concerns of distributive justice through these diverse, yet interrelated, geographical constructions are discussed here.

One distinguished scholar in the geographical literature on the application of social justice concepts to space is David Harvey (1973, 1996). Influenced by Lefebvre 1974 [from translated version Lefebvre, 1991], a pioneer in producing early arguments on interactions between space and societies (through the concepts of ‘right to the city’ and ‘social production of space’), and Rawls (1971), Harvey (1973) developed the principles of ‘territorial distributive justice’ in ‘Social justice and the City’. At the core of these principles are arguments about the spatial effects of distribution or allocation of resources in different territories (or regions). While expanding on these principles, Harvey (1973) argues that just distribution among territories can be justly arrived at, only if the below two principles of territorial justice are fulfilled:

- i) The distribution of income should be such that (a) the needs of the population within each territory are met, (b) resources are so allocated to maximise inter-territorial multiplier effects, and (c) extra resources are allocated to help overcome special difficulties stemming from the physical and social environment.
- ii) The mechanisms (institutional, political, organisational, and economic) should be such that the prospects of the least advantaged territory are as great as they possibly can be. (p.116-17)

These highlight what social justice mean in the context of a territory or a region. The second principle on arriving at just distribution by considering the prospects of the least disadvantaged territory clearly echoes Rawls (1971) difference principle. This indicates Harvey's (1973) strong belief on the relation between social justice and space. Apart from providing new perspectives on social justice, these principles have been a significant contribution to the area of social justice due to their application to different geographical situations and spatial organisation.

From this initial territorial construction of distributive justice, Harvey (1996) then goes on to raise issues of representation of 'Place', of territorial or other identities in social practices. In his discussions of space and time, Harvey argues that spatio-temporalities cannot be complete without the inclusion of place. Place has different meanings from space and could be described through words such as locality, location, neighbourhood, region, territory, community, village, city, town, nation etc (Harvey, 1996). Though Harvey proposes that place relates to one's identity, in social construction, these places have different underlying processes of socio-ecological interactions often occurring at quite different spatio-temporal scales. The notion of social construction of place abounds in examples of struggles for protecting place in discriminatory siting of facilities or undesirable land use or requests for reinvestment from the profits gained by private institutions in acquiring community land. These struggles of communities in the face of

inequitable distribution of geographical development highlight the relations between communities and their geographical place.

Reflecting on Harvey's (1973) construction of territory and place, the possibility of its application to space, and also from the notions of social justice and territorial social justice, Pirie (1983) developed the concept of 'spatial justice'. For Pirie (1983), 'conceptualising space as a social product rather than as a context for society may yield a substantive concept of spatial justice' (p.465). This is undoubtedly a reference to Lefebvre's notion of social production of space. Similarly, Soja (2010) concludes that adding a spatial perspective or geographical imagination (Harvey, 2005) to questions of justice can add significant insight and understanding to traditional concepts and commentaries of social justice. In providing an understanding of the relation between social justice and space, I agree with Soja (1989, 2010) that whatever is social is also inherently spatial, just as whatever is spatial is also social. Such a spatial perspective can shape social relations and societal development.

Understanding the structure on which a society operates can help understand the ways just or unjust geographies are created. To do this, one must first outline the different conditions on which a society operates. Different conditions have been suggested by different theorists. While Smith (1994) refers to scarcity (of resources), selfishness (for personal advantages) and, power (of individuals, groups and political institutions), as three basic preconditions on which the structure of a society operates, Harvey (1996) suggests that the historic concentration of power, money, wealth and privileges, often rooted in capitalism, and more specifically neoliberal capitalism (McCarthy & Prudham, 2004), leads to inequalities in a society. Similarly, McCarthy and Prudham (2004) highlights that the

issues of scarcity, justice and intertwined power relations lead to the social production of uneven urban environments. All these conditions are obviously not mutually exclusive and require more detailed interpretation and analysis. Within the geographical literature, I shall examine two of them due to their relevance to this thesis a) money – as a resource and b) power – in complex social and political institutions (Smith, 1994). While these conditions can be examined and interpreted in different contexts, here they are chosen to examine the why and how aspects of the distributive justice in geographical space.

Harvey (1996) argues that money, while expressing or conveying some kind of spatio-temporal values, also internalises a wide range of beliefs, distinctive practices, discourses, institutions, and political economic powers. On the other hand for poor people, money is a necessity to have a decent life (Rawls, 1971). Similarly, Smith (1994) defends that money, as a dominant good, provides access to power and political office. In a confrontational sentence, Harvey (1996) concludes that money ‘instead of humanity, offers us stock market value indexes, instead of dignity it offers us globalisation of misery, instead of hope it offers us emptiness, instead of life it offers us the internationalisation of terror’ (p.434). For these theorists, money is one of the dominant goods on which the structure of a society operates as well as an underlying force for creating unjust societies.

The second social condition that requires attention is power. Soja (2010), through a comprehensive argument on power politics, explores how unjust geographies are produced in three different arenas of social action: ‘exogenous or top-down, endogenous or bottom – up, and meso-geographical or regional’ (between where the macro or global and micro or local converge) (p.32). Expanding on the three different arenas, Soja (2010) explains that while unjust geographies at the exogenous level arise due to the ‘imposition of political

power, cultural domination, and social control over individuals, groups and the places they inhabit’, at the endogenous level they are obvious expressions of ‘distributive inequalities⁵ created through discriminatory decision making by individual firms, and institutions’ (p. 32-3, p.9). These unjust geographies are outcomes of unequal distributions of power in society.

Under a capitalist political economy, these unequal power relations, as a causative factor for the creation of unjust distributions in space, have also become key influencing and destabilising forces affecting human interactions with the physical environment (Walker, 2005). Vayda and Walters (1999) argue that attention to the social and discursive politics of influences on social-environmental interactions is also important. These analyses of power and influence are also a prominent part of political ecology theory (Blaikie & Brookfield, 1987; Walker & Fortmann, 2003; Vayda & Walters, 1999). Although not explicitly framed as political ecology, due to my learning towards energy justice, this thesis is entirely relevant to work on political ecology.

These discussions also emphasise that ‘money’ as an enabling and yet destabilising force, and ‘power’ as a necessarily political and yet discriminatory force constitute the foundations of the structure of a society out of which the geographies of justice evolve. As emphasised by Rawls (1971), uneven distribution of these forces in geographical space could also result in social inequality. For example, by applying Rawls’ principles to money it could be argued that while losing some money won’t prevent the rich from leading a good life, the same money would mean a lot to very poor people. Similarly, while the most

⁵ Soja (2010) gives this list of factors leading to distributive inequality; ‘budget requirements, institutional efficiency, personal greed, racial bigotry, differential wealth, and social power’ (p. 47).

powerful social and political institutions could be dangerous to society, the least advantaged and marginalised with no power are prone to domination and oppression. The balance of these forces is important to shift the societal and geographical unjust development towards a more egalitarian social and spatial development (Soja, 2010) (also see section 3.4.3). However, the challenging task of balancing these powerful economic (money) and political (power) forces requires a little more than the initial conceptual breakthroughs. Such an understanding of the interactions between space and society, through the work on distributive justice in geography, is particularly helpful for this human geography research on examining the social justice (or injustice) issues in implementation of the solar park in Charanaka village. The concepts discussed help this research in providing answers to questions on distributive justice issues in geographical space (Charanaka village community).

2.4. Distributive justice in environmental justice and sustainability

While the theoretical work on distributive justice in the social justice literature emerged in the mid-20th century, a parallel perspective on distributive justice in environmental justice and sustainability fields emerged from the grassroots environmental justice movement and just sustainability. The distributive justice arguments between these two and their relation to the social and spatial justice literatures is the focus of this section. Before expanding on these literatures and how they are applicable to this research, I must individually set the contexts of both of them.

The grassroots movement for environmental justice emerged from the ‘African-American Civil Rights Movement’ in the 1960s, a social movement advocating goals of social justice and equality (Roberts, 1998). One prominent example is the 1968 strikes of Black garbage

workers demanding equal pay and better work conditions (Bullard & Johnson, 2000). This civil rights activism for social justice and equality translated to the environmental justice movement when Black residents from a suburban middle income community in Houston formed the ‘Northeast Community Action Group (NECAG)’ to protest against the siting of a landfill site in their neighbourhood (ibid.). The Houston case occurred three years before the environmental justice movement came into the national limelight in 1982 when black communities in Warren County, North Carolina, with support from several community organisations, church leaders, and environmental rights activists, protested against the discriminatory dumping of hazardous waste in their neighbourhoods (Bryant, 1995). All the protests which started in 1982 and multiplied over the next decade convened at the 1991 First National People of Colour Environmental Leadership Summit where the 17 ‘principles of environmental justice’ were adopted (Schlosberg, 2007). One of the major focuses of these principles is addressing distributive concerns. The environmental justice movement aims to address disproportionate distribution of impacts in marginalised and coloured communities:

Combining elements of civil justice, social justice, and respect for the environment, these community-based movements for environmental justice are committed to reversing past practices that have had the effect of placing disproportionately large ecological and economic burdens on working-class families and communities of color. (Faber 1998, p.1)

From these origins of the grassroots environmental justice movement, a large amount of literature on distributive concerns emerged over the years. The protests provided impetus for various policy and empirical studies. Some of the early studies to understand the discriminatory patterns include ‘Siting of hazardous waste landfills and their correlation with racial and economic status of surrounding communities’ (U.S General Accounting Office, 1983), and ‘Toxic wastes and race in the United States’ (Chavis & Lee, 1987).

However, these studies were predominantly focussed on spatial mapping of the location of hazardous waste sites and documenting disparities in the distribution of environmentally contaminated sites.

One of the first classical studies on environmental justice, which emerged from African American environmental activism and by converging environmental racism with social justice issues, is ‘Dumping in Dixie: race, class and environmental quality’ (Bullard, 1990). In the process of mapping the historical patterns of spatial segregation of communities in southern United States, this work showed that communities of colour were apparently being selected for the location of hazardous and toxic waste. From these initial academic works highlighting the distributive justice issues in the spatial location of hazardous waste facilities (Bullard, 1990, 1994), a large amount of environmental justice literature focussing on different dimensions of distributive justice has evolved over the years (Davies, 2006; Kuehn, 2000; Mohai & Bryant, 1992; Schlosberg, 2007; Shrader-Frechette 2002) in diverse fields across different countries (De Santo, 2011; Laurent, 2011; Nancarrow & Syme, 2001).

While the distributive environmental justice literature extensively documents how injustices in the distribution of benefits and burdens are created in the siting of waste and polluting industrial facilities in communities of colour and poor communities (Bullard, 1994; Cutter, 1995; Lake, 1996), the theoretical debates on distributive environmental justice are limited. One useful work on exploring the environmental implications of liberal justice theory is by David Miller (1999). By examining the possibility of including environmental goods, such as good air quality (for good health), in the list of primary goods derived from Rawls, Miller (1999) provides some interesting and input to

distributive considerations in environmental justice. While Miller (1999) emphasises that cost-benefit analysis should be crucial in distributive justice calculations, Humphrey (2003) in some disagreement argues that *irreparable losses* should be important in any such calculus. Another important theoretical argument on the notion of distribution in environmental justice is developed by Shrader-Frechette (2002). According to Shrader-Frechette's 'principle of *prima facie* political equality and distributive justice', environmental justice requires fair distribution of environmental benefits and burdens, such as toxic waste dumps, dirty air, among a society's members. What is particularly to be noted here is, to date, there are limited theoretical debates on distributive considerations in environmental justice.

Some theoretical arguments on distributive considerations in environmental justice movements are also found in the discussions of sustainability, or future generations (Barry, 1999, de-Shalit, 1995, Dobson, 1998). In a ground breaking attempt to find a common ground between social justice and environmental sustainability, Dobson (1998) finds that the environmental justice concerns over toxic waste and pollution control and prevention relate to the wider concerns over resource production and consumption, preservation of resources for future generations, local and global sustainability, conservation of urban and non-urban environment etc. By observing a relation between distributive justice and fairness in resource use and environmental protection for future generations, Barry (1999) contends that while we are concerned about intra-generational issues, we also need to give equal considerations to inter-generational dimensions, because the negative impacts and costs of a policy or a project intervention to future generations are equally evident. Likewise, Young, (1990) says:

Evaluating patterns of distribution is often an important starting point for questions about justice. For many issues of social justice, however, what is important is not the particular pattern of distribution at a particular moment, but rather the reproduction of a regular distributive pattern over time. (p. 29)

These supporters of distributive justice in the use of environment and natural resources often demand the use of natural resources in a sustainable and equitable manner for the benefit of the present and future generations (WCED, 1987). For them the long-term sustainability of resource use can achieve fairness in the treatment of people in contemporary generations and distributive justice for future generations (Cooper & McKenna, 2008). Indeed, these arguments on distributive justice for future generations take us back to the discussion on *who gets what and when* embedded in the environmental justice concept of ‘Just Sustainability’ (Agyeman & Evans, 2004). While for all these distributive theorists the preservation of environment addresses the environmental justice concerns, for others there are major difficulties in applying the notion of justice to non-humans and future, as yet not existing, generations (Schlosberg, 2007; Shrader-Frechette, 2002).

In linking both the environmental justice and sustainability literatures, Dobson (1998) provides a concluding remark that though the critical arguments on distributive justice in these literatures cross at some point, they may not travel on the same road and may not head in the same normative direction. While both environmental justice and sustainability literatures make several arguments on distributive justice concerns through social well-being and spatial dimensions, the application of theories of social justice and spatial justice is largely ignored. Application of the social and spatial justice theories to the environmental justice literature can add new perspectives to it. I also agree with Schlosberg

(2007) that compared to the theoretical innovations in social justice scholarship, most theories of environmental justice are largely inadequate.

2.5. Distributive justice in renewable energy

The previous sections highlighted that distributive concerns are important in many domains including globalisation and poverty, natural resources and infrastructure development. The distributive concerns are particularly important when decisions are made which benefit some sections of a community at expense of the less advantaged in that community. These distributive justice concerns also apply to the implementation of any policy or technologies including mainstream energy and renewable energy. Some of the emerging debates on distributive justice in renewable energy discussed here are particularly important as one of the central research questions of this thesis is understanding the distributive concerns in implementation of the Charanaka solar park.

In early discussions on renewable energy, it is widely argued that apart from the environmental benefits, renewable energy production can also play an important role in alleviating poverty and enhancing the development of remote regions through offering opportunities of work and social advancement to underemployed and disadvantaged segments of the population (Chakrabarti & Chakrabarti, 2002; Junfeng *et al.*, 2002; Schmid, 2012). For example, the policy narratives of wind energy (and the other renewable forms) in the UK emphasise that renewable energy in general provides an opportunity for creating ‘new eco-economies’ (Munday, Bristow, & Cowell, 2011, p.2) and sustainable development for rural communities. However, the benefits to these rural communities *plugging-into* these complex technical systems and hosting them are not really established in terms of whether they really occur in practice or not.

The focus of renewable energy literature until recently has had largely been on technology development and making better use of available renewable resources through macro-economic policies (McIntyre & Gilson, 2002). There has been scant attention to distributive justice concerns such as equity and fairness in the distribution of benefits and burdens. The late 1990s witnessed the evolution of notions of energy and justice both in policy rhetoric and scientific research (Walker *et al.*, 2010a). For example, from around the start of this century the debates on benefit sharing of wind energy development have multiplied in the UK and to some extent also extended to various other European countries. There have been different examples of community benefits from different institutional arrangements from across Europe: in Denmark and Germany ‘community benefits’ have reflected cooperative ownership of facilities (Breukers & Wolsink, 2007; Toke, 2002); in Spain they may reflect company agreements to invest in development of regional economies (Zografos & Martnez-Alier, 2009); and in France, development of designated wind energy development zones and increased local tax revenues (Nadaï, 2007). This growth in interest in such issues stemmed largely from the *neo-communitarian* discourses of distributive justice in renewable energy within the mainstream energy policy. Jessop (2002) argues that neo-communitarianism emphasises ‘...the link between economic and community development, notably in empowering citizens and community groups...to regenerate trust within the community, and to promote empowerment’ (p. 463). In a renewable energy development context, it emphasises the contribution of the *third sector* towards community welfare development and reinvigorating *trust* in communities (Fyfe, 2005).

The distributive concerns in renewable energy also expand to the outcomes of projects. These discussions range from contributing to economic benefits (compensatory benefits),

social benefits (creation of jobs, education etc) and essential value functionings such as access to energy and development of the communities to burdens such as losing livelihoods, farmlands (Cass, Walker & Devine-Wright, 2010; Gross, 2007; Munday, Bristow, & Cowell, 2011). As renewable energy projects contribute to achieving economic and climate change targets, and add clean energy to a country's energy profile, it is often argued that the environmental and energy benefits of renewable energy (and low-carbon technologies) largely accrue at national and international level (Cass & Walker, 2009; Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007; Poortinga, Pidgeon, & Lorenzoni, 2006). On the other hand, it is largely perceived that environmental and social impacts, such as noise, visual impacts, and land and habitat loss, occur mostly at local level where renewable energy projects are hosted (Devine-Wright, 2005; Mallon, 2006; Tsoutsos, Frantzeskaki, & Gekas, 2005). However, to some extent, the discussions on energy price implications in the UK and in European context relate to issues on burden sharing at national level (Frondelet *et al.*, 2010). Such potentially inequitable distribution of benefits and burdens in outcomes of projects are at the centre of distributive justice concerns in renewable energy.

The literature also identifies that the distribution of benefits and burdens that renewable energy brings within the local communities may exacerbate existing inequalities in those communities. Such cases can bring conflicts in a community with the potential *losers* often protesting and stalling projects that may have a benefit and bring net welfare to wider society (Gross, 2007; Brady & Monani, 2012). For example, for a wind energy project, a simple analysis would identify the *gainers* as the landowners where the project is hosted, who would receive an annual income; and the *losers* would be neighboring landowners and residents who would have effects of the turbines close to their properties but no revenue

(Gross, 2007). Due to such uneven distribution of benefits, the larger perception among rural communities is that renewable energy technologies don't bring major benefits to the project hosting communities. Thus, though renewable energy technologies being environmentally benign might be expected to receive less opposition compared to conventional energy technologies (Devine-Wright, 2005; Nadaï & van der Horst, 2010), the inequitable distribution of benefits and burdens from outcomes of the projects are increasingly becoming obstacles. Therefore, providing 'some form of additional, positive provisions for the people affected' is considered as an option by private developers for managing distributive arguments and other social and environmental impacts that accrue locally (Cowell, Bristow, & Munday, 2011, p.539; Wolsink, 2007). Various empirical studies in the UK (Munday, Bristow, & Cowell, 2011; Warren & McFadyen, 2010) demonstrate that providing some form of community benefits (such as jobs) are considered as ways to implement projects amicably.

Private developers during the course of development often claim that renewable energy projects, apart from general benefits of clean air, also bring 'community benefit packages' (e.g. commitment to improve services) to the communities hosting those technologies (Brady & Monani, 2012). Through an empirical study of wind farm implementation in Wales, Munday, Bristow, and Cowell (2011) argue that community benefit packages are 'a means of adding to the material benefits and altering opinion, particularly in rural areas where the more conventional economic multiplier consequences of wind schemes are very limited' (p.4). Cowell, Bristow, and Munday (2011) and Myerson and Rydin (1996) also consider the provision of community benefits by the developers as a means of conflict resolution:

In an instrumental sense, policy makers see ‘improving’ the provision of community benefits from wind farm developers as one way of resolving social conflicts around the siting of facilities, and thereby expediting expansion. In a discursive sense, the concept of ‘community benefits’ may be holding together a loose coalition of interests, each of which may have very different interpretations and expectations of what community benefits are for... (p.545)

All these arguments note that the strategy of benefit provision, often couched in a discourse of sustainable development adopted by the market developers and policy-makers, is for meeting economic and political targets, which disregard the equity and social justice issues (Luke, 2005; Warren & McFadyen, 2010). In a simple sense, the literature emphasises that community benefits, to date, have largely been economic solutions to close the *gap* between high societal *support* for wind energy in general and strong local *opposition* to specific schemes (Cowell, Bristow, & Munday, 2011). Walker and Cass (2007) add that even ‘compensation’ in terms of monetary value has been a form of community package to address the burden issue and configure public relations. Compensation, rooted in spatial and temporal perspectives at the crux of social justice arguments, is often considered as a form of redistribution (also in Fraser, 1998), a corrective measure for injustices created by the outcomes of an intervention (Cooper & McKenna, 2008). According to Goodin (1989) for a compensatory payment there has to be a loss of something that people have *legitimate expectation* to hold. For example, in a renewable energy project, at a local level, the tangible losers - the farmers losing land or those individuals who need to be relocated and rehabilitated - are entitled to compensatory payment. Such an argument on distributive fairness in outcomes of renewable energy projects is crucial to this research.

Whilst for many of these researchers, fairness in distribution of benefits is important for community acceptance, for others community ownership of these projects could facilitate acceptance. Legitimacy in decision-making processes (in chapter 3) and keeping

entitlement of a development with communities could potentially increase trust between developers and communities (Bell, Gray, & Haggett, 2005; Cass, Walker, & Devine-Wright, 2010). Through the case of *Gigha* community owned wind farm project in the Scottish Islands, Warren & McFadyen (2010) argue that through bottom-up projects the economic and social benefits can flow directly to a community. Kellett's (2007) similar conclusion that bottom-up approaches to carbon mitigation instead of a top-down demand-supply approach can result in a flow of benefits directly to the community supports the case of *Gigha*. According to these scholars, instead of private sector led development, community ownership of renewable energy production results in equity and fair outcomes. However, given the uncertainty of renewable energy sources and high investment costs, renewable energy to date has largely been led by large businesses and private developers with very little community ownership of facilities (Warren & McFayden, 2009). This form of private investor and market-oriented development can make the channelling of benefits to local communities difficult and can eventually create conflicts in the communities (Munday, Bristow, & Cowell, 2011).

Though most of the studies on this topic argue that community ownership brings positive benefits to the communities, some potential drawbacks of community ownership are also identified by a few. Walker and Devine-Wright (2008) in one of their community wind farm case studies from the UK found that inequitable benefits accruing to only three farmers in a community led to internal protests. This case study also emphasised the issue of power relations within communities (see section 3.4.3 for more arguments on power relations).

Reflecting on the above discussions on distributive justice in renewable energy, I contend that there are often weak explicit connections with relevant social justice theory, or with the spatial or environmental justice literature. Among the few exceptions are Gross (2007) and Walter and Gutscher (2011). These empirical studies on wind energy implementation explicitly links the arguments on distribution of community benefits and burdens in renewable energy implementation to theoretical distributive justice discussions. Gross (2007) refers to some of the important distributive justice discussions in social justice (Dobson 1998; Hart, 1961; Rawls, 1971) and environmental justice (Kuehn, 2000; Schlosberg, 2004) literatures. To some extent Gross's study also discusses the community perceptions of the distribution of costs and benefits in wind energy project implementation. Similarly, in the process of understanding public acceptance to wind energy projects in Europe, Walter and Gutscher (2011) also refers to principles of distributive justice in social justice literature. However, there is generally little literature empirically examining questions such as to whom and at what scale the costs and benefits of renewable energy development projects accrue. Addressing these questions warrants further empirical research. This research to some extent tries to address them.

2.6. Conclusions

This chapter, while reviewing some of the key concepts on distributive justice in interdisciplinary social justice, spatial justice, environmental justice and sustainability, and renewable energy literatures, has opened up new areas for investigation. Four important concluding points emerge from this review. The first is that while the concept of distributive justice is central to many disciplines and the basic principles are common across them (Gross, 2007), a strong connection between research areas is missing. A closer association of these literatures and the application of them to renewable energy discussions

can contribute to the existing gaps in the renewable energy literature. The second is there are many areas of distributive justice, within the discussed disciplines, which can be applied to this thesis' research on Charanaka solar park implementation. For example, the notion of distributive fairness in benefit and burden sharing from different interdisciplinary perspectives (Rawls, 1971; Schlosberg, 2003, 2007; Harvey, 1996) and its application to renewable energy siting can be a potential area for future research. The subsequent empirical chapters provide an understanding of how the theoretical concepts discussed here are applicable to this research. The third key point is while there are several empirical studies on the application of distributive justice concepts across different disciplines, most of them have been concentrated in developed countries. There is a dearth of literature in the context of developing countries. Finally, but an important point for this research, is that the literature on renewable energy development often does not sufficiently address questions of where the benefits and burdens accrue in communities hosting renewable projects, and this warrants further research.

3. PROCEDURAL JUSTICE

[T]here is a correct or fair procedure such that the outcome is likewise correct or fair, whatever it is, provided that the procedure has been properly followed.

— John Rawls, *Theory of Justice* (1971)

3.1. Introduction

Through reviewing the underpinning principles and concepts of distributive justice, the previous chapter indicated that attention to distributions of benefits and burdens in outcomes of policies and projects is crucial for arriving at social justice. However, some of the prominent distributive justice theorists also argue that the procedures through which the outcomes are arrived at are equally important for arriving at social justice. Similar arguments are also found in environmental and energy literatures. Emerging from the social, environmental justice, and also development literatures, the notion of procedural justice has been applied to a wide variety of fields. These include renewable energy (Breukers & Wolsink, 2007; Gross, 2007; Walker & Cass, 2007), waste management (Renn, Webler, & Kastenholz, 1996), management policy studies and economics (Dolan, Layard, & Metcalfe, 2011; Tyler & Lind, 1992; Tyler, 2000), carbon mitigation and climate change (Few, Brown, & Tompkins, 2007; Ockwell, Whitmarsh, & O'Neill, 2009), fuel poverty and energy use (McComas, Stedman, & Hart, 2011; Walker & Day, 2012). Along with theoretical discussions and empirical literature, various international policy studies also emerged from grassroots movements (United Church of Christ's Commission for Racial Justice, 1987; UNCED, 1992; WCED, 1987). All these policy, advocacy and empirical studies, while recognising distributive justice, also suggest that procedural justice is equally important in the pursuit of justice.

Procedural justice can have a number of constituting elements. In international environmental policy, procedural justice was given due attention in the UN's 1998 'Aarhus Convention'. The convention has become guidance for its 47 signatory member countries regarding procedural justice. The convention, drafted by governments with the strong participation of NGOs, is a multilateral environmental agreement which secures opportunities for access to environmental information and transparent procedures to all citizens of the signatory countries (Gupta, 2008). It gives significant impetus to three pillars of procedural justice which are 'access to information', 'access to and meaningful participation' during decision making and legislative process of all relevant projects, and 'access to justice' in the case of claims for redress with regard to the first two pillars. (UNECE, 1998, 2006). Though globally the three pillars ratified at the Aarhus Convention are widely recognised as the constituting elements of procedural justice, procedural justice is also closely related to the recognition of culturally and socially marginalised groups (Walker & Day, 2012).

In this chapter, I shall argue that meaningful participation, along with the recognition and representation of socially excluded and culturally marginalised groups, are the key interacting elements of procedural justice. The primary objective here is to understand and critically review these constituting elements of procedural justice. In the process of discussion, I contend that all the interacting elements of procedural justice necessarily relate to participation and thus in the literature, procedural justice is also sometimes termed as participatory justice (Shrader-Frechette, 2002; Walker & Day, 2012). Therefore, this chapter, while outlining the different elements of procedural justice and how the concerns of procedural justice are related to distributive justice, extensively reviews literature on participation and participatory processes relevant to environmental and energy policy.

This review is informed by the body of academic literature that has been interested in understanding the procedural or participatory justice concerns in decision-making procedures (Cooke & Kothari, 2001; Schlosberg, 2007; Shrader-Frechette, 2002; Fraser, 2009; Young, 1990). As understanding the procedural issues in the different real world contexts requires an approach from more than one discipline, this review takes its cue from inter-disciplinary social justice, environmental justice, development, and energy justice literatures. An increased understanding of the complex literature on procedural justice is also useful in forming the basis for the subsequent empirical chapters.

The remainder of the chapter is organised as follows: first, it begins with theoretical underpinnings of procedural justice, reviewing the key concepts and arguments in social and environmental justice literatures. In the process I identify that a large amount of literature in procedural justice discourses focuses on participation. Second therefore, the chapter then turns to key debates on approaches to participation and the relevance to this thesis. Third, seeing the increasing emergence of critical literature on participation in the recent decades, the chapter provides some reflections on the critical literature. Fourth, considering the relevance of renewable energy debates for this thesis, it turns to provide some reflections on procedural justice research in renewable energy literature. The chapter concludes by drawing out key points from this review, in particular implications and consideration points for this thesis.

3.2. Theoretical underpinnings

Whilst distributive justice is concerned with fairness in the distribution of material outcomes, procedural justice is concerned with fairness in procedures, or processes through which just or unjust outcomes are produced (Walker & Day, 2012). Procedural justice

requires both participation and recognition; the question that lies ahead is how to combine both of them. I contend that developing an interrelationship between both the paradigms is fundamentally important and after discussing both separately, I shall develop an argument on how the two paradigms relate to each other and also how they are related to distributive justice.

3.2.1 Procedural justice and participation

Though some of the prominent scholars' works on social justice are largely concentrated around distributive concerns, to some extent, they recognise the importance of procedural justice. For example, Rawls (1978) and Barry (1989) emphasise that the social and political institutions upon which the basic structure of the society is built shape the distribution of advantages or disadvantages among members of the society. Similarly, through his discussions on human freedom and capabilities, Sen (1999) argues that the opportunities and prospects of individuals depend crucially on the functioning of institutions, in that the failure to acknowledge individuals' concerns in procedures by political institutions may lead to biases in the outcomes of policies. In essence, according to these arguments the claims of social justice are incomplete if they focus only on the argument that goods and burdens of society should be fairly distributed. While I agree with Walzer (1983) that it is important to recognise the procedures and structures through which just or unjust distribution of goods are arrived at, considering the political climate, economic reality and the power relations in a society, the task of implementing just procedures in all instances may not be successful. Although the above authors highlight the importance of procedures in distributions of outcomes, they also lack clear and explicit arguments on how procedural justice is arrived at and how it is related to distributive

justice. This gap is partially filled by Fraser (1998) who identifies the imperative for providing equal opportunities for full participation in society. Apart from this work a critically engaging epistemology on participation, to date, has been disappointing (Collins & Ison, 2006).

An alternate literature on environmental matters with focus on procedural concerns of justice emerged in the late 19th century. In-depth arguments on procedural concerns in environmental justice developed since the adoption of 17 ‘principles of environmental justice’⁶ at the ‘1991 First National People of Colour Environmental Leadership Summit’. Along with giving recognition to distributive concerns, some of the 17 principles also emphasise procedural concerns such as the demand for citizen’s right to participation, and for public policy design based on moral respect and justice for all people (see also section 2.4 for foundations of environmental justice movement).

From this recognition of procedural justice concerns that emerged from the environmental justice grassroots movement, a large amount of academic literature concerning environmental matters has been developed over the years (Bullard, 1990, 1994; Davies, 2005; Schlosberg, 2004, 2007; Shrader-Frechette, 2002). The environmental justice literature that emerged from the environmental justice movement demand the right to participation of affected individuals ‘at every level of decision-making including needs assessment, planning, implementation, enforcement and evaluation’ (Hampton, 2004, 1999; Renn, Webler, & Wiedemann, 1995; Schlosberg, 2003, p.94). Such an argument emerges from the normative rationale of participative theory which understands participation as a public good, or as ‘the right thing to do’ (Tsouvalis & Waterton, 2012).

⁶ See <http://www.ejnet.org/ej/principles.html> for 17 principles of environmental justice.

Arguments on the benefits that participatory decision making procedures bring and the methods to adopt to arrive at such participatory procedures are reviewed extensively elsewhere (Illsley, 2002; Petts, 2004), and reiterating those discussions is not the focus of this chapter. However, generally the debates consider that just procedures will lead to just outcomes (Greenberg & Folger, 1983; Hunold & Young, 1998), engage people in policies (Ockwell, Whitmarsh, & O’Neill, 2009), contribute to strengthening collective thinking, build social capital, and enhance the capability of communities to solve problems and pursue common concerns (Capek, 1993; Gundersen, 1995; Santos *et al.*, 2006); and that just procedures are those which are open, inclusive and participatory (Davies, 2005). Inclusive and meaningful participatory procedures emphasise the principles of sharing of accurate information by decision makers (Portman, 2009; Leach, Scoones & Wynne, 2005), having two-way communication (Habermas, 1984) between affected communities and decision-makers, recognising local knowledge (Chilvers, 2007; Petts & Brooks, 2006), and listening to the voice of affected groups (Alston & Brown, 1993; Bass, Reid, & Satterthwaite, 2005). While the literature extensively emphasises the benefits of participation, in-depth consideration is required on questions such as who should legitimately take part in participation? On whose behalf? Whose values and interests matter?

Along with attempting to link environmental justice literature with more established theories of social justice, some of the prominent academics, through their pluralistic approaches, clearly relate the distributive realm of environmental justice to inclusive participatory decision-making procedures (Davies, 2005). For example, according to Bullard (2000), environmental justice, is concerned with ‘the *fair treatment and meaningful involvement of all people* regardless of race, colour, national origin or income with respect

to the development, implementation and enforcement of environmental laws, regulations and policies’ (p.7, emphasis added). While fair treatment advocates that no social groups should bear a disproportionate share of environmental burdens arising out of development activities, meaningful involvement requires that all affected individuals should have equal opportunities for meaningful participation in decision-making procedures, in that their participation will be considered seriously and have some influence over decisions (Davies, 2005). In a similar vein, Shrader-Frechette (2002) argues that the principle of prima facie political equality ‘includes components of both distributive justice and participative justice’ (p.24), and ignorance of decision-making power and procedures, and institutional contexts is closely related to inequitable distributive allocations (see section 2.4 for discussions on distributive justice). Shrader-Frechette (2002) contends that the component of participative justice requires ‘equality of treatment under the law’ (p. 25) and ‘institutional and procedural norms that guarantee all people equal opportunity for consideration in decision-making’ (p.28). Though participatory procedures may not be always possible and successful, making sure that such procedures are as participatory as possible may address the issues unsolved by the distributive realm.

3.2.2 Procedural justice and recognition

Along with focus on meaningful participation, in some of the social justice literature, procedural justice is also linked to recognition, in that lack of cultural respect and social exclusion of some groups can lead to misrecognition and thus to misrepresentation and ignoring of those groups in institutional procedures. A small group of theorists critical of the distributive paradigm (Fraser, 1995, 1998; Honneth, 1996; Taylor, 1994, 1997; Young, 1990) have been increasingly interested in developing new paradigms of social justice that

put recognition at the centre. Whilst not agreeing with each other completely on recognition theory, these social justice theorists, by adopting a relational emphasis, argue that social justice should focus on equal respect and equal participatory rights to all social groups. For example, for Honneth (1996) and Taylor (1997) recognition is related to equal rights to social esteem, in that they identify a link between recognition and human dignity. For both of them, misrecognition of certain groups inflicts psychological harm by demeaning their human dignity. Through the denigration of their identity the marginalised community groups face disrespect, structural exclusion, and are also denied their right to participate in the institutional processes, leading to misrepresentation (Honneth, 1996).

In a critique of Honneth and Taylor, Fraser (1998) argues that they put too much emphasis on personal psychology and interpersonal relations and not enough on the structural and institutional aspects of recognition. These structural and institutional aspects are crucial in considerations of procedural justice. Fraser (1998) also identifies one major advantage for the justice account of recognition: ‘it avoids the view that everyone has an equal right to self-esteem’ (p.4). Similarly, challenging the prevailing reduction of social justice to distributive justice, Young (1990) argues that misrecognition, through institutional domination, oppression⁷ of social groups, and exclusion of culturally marginalised groups, fails to provide equal opportunities for such groups to participate fully in decision-making procedures. Conversely, Young suggests that acknowledging, attending and recognising the oppressed groups’ interests in decision-making procedures can not only facilitate arriving at social justice conditions but also address institutionalised domination and

⁷ While the concept of *domination* refers to the ‘structural or systematic phenomena which exclude people from participating in determining their action or the conditions of their action’, the concept of *oppression* refers to the ‘structural phenomena that immobilise or diminish a group’ (Young 1990, p. 31 and 42).

oppression, and political exclusion. Institutional lack of recognition of socially and economically marginalised communities in decisions that impact them could potentially exacerbate their existing vulnerability (Peña, 1999).

Though the focus of recognition theory in social justice arguments is essentially on identity politics and social processes, it is not completely disconnected from the concerns of distributive justice: indeed, Fraser (1998) argues that redistribution and recognition are two complementary claims for social justice, and lack of recognition is the basis for inequitable material distribution. In a similar vein, Young (1990) emphasises that the theory of recognition makes the theory of procedural justice inclusive and also addresses the issues of the distributive model. While all of the above arguments on recognition are in some way useful for this chapter and research, those of Fraser and Young are particularly useful as they integrate the idea of recognition with the other aspects of social justice.

In environmental justice matters, arguments on recognition theory have been addressed by academic scholars who criticise the narrow conception of environmental justice as participatory or distributive, or both (Day, 2010; Schlosberg, 2004, 2007). These scholars have been flexible in their approach to environmental justice, particularly by connecting environmental justice with recognition (Davies, 2005). By relating recognition to providing opportunities for social, economic, and political enfranchisement, though Bullard (1993) has set some initial discussions on recognition theory, an extended discussion in this sphere has been made by Schlosberg (2004, 2007). Indeed, by elaborating on the theoretical discussions of recognition based on Fraser and Young, Schlosberg (2004) contends that ‘the reason for unjust distribution, is a lack of recognition of group difference’ (p. 519). Influenced by Young, Schlosberg (2003) also argues that where recognition is denied and

cultures devalued, a threat is posed to the already vulnerable groups' survival. The injustice whereby cultures and ways of life are ignored, dismissed, and misrecognised are perhaps the precursors of ultimate destruction of local communities (Schlosberg, 2007). The recognition approach highlights that when there is lack of recognition, groups may be overlooked or stigmatised (Walker & Day, 2012) and thus puts an emphasis on accommodating the needs of certain groups, such as nomadic communities in India, which may be unacknowledged and unattended to even at the policy making level. Recognition of such groups and respect for their culture, if justified, could help in providing opportunities for equal participation in spheres of societal activities. To conclude, I argue that recognising and accommodating the needs of marginalised groups in participatory processes can lead to meaningful participation, in that recognition and participation are closely related to each other. One without another cannot achieve the goals of procedural justice.

3.3. Approaches to participation

Along with the theoretical discussions on procedural justice, participation has also become a key consideration in development and environmental policy-making from local to international levels (Collins & Ison, 2006). Some of the important international conventions where participation has been given due attention include the 1992 Earth Summit, and the 1998 Aarhus convention (Luyet *et al.*, 2012). Apart from these international conventions, various international non-governmental organisations, and policy institutions recognise the imperative for participation (Asian Development Bank 2001; Public Citizen's Global Trade Watch 1999; UNCED, 1992; WCED, 1987; World Bank, 1996). The outcome of this recognition includes the addition of participation as an important component in all policy matters of these institutions (table 3.1). Within these

institutional calls for participation, different discussions for describing participation have also emerged. For example, World Bank (1996) describes participation as a contested subject and ‘...a rich concept that means different things to different people in different settings. For some, it is a matter of principle; for others, a practice and for still others, an end in itself’ (p. 1). Similarly, UNEP (1992) and WCD (2000) include community participation in the policy-making procedures that affect them, in rights and entitlements.

Table 3-1 Major global institutional frameworks for participation (source: compiled by the author)

INSTITUTION	STATEMENTS	ARGUMENTS
World Commission on Environment and Development's 'Our Common Future' 1987	WCED (1987) asserts social equity would help in fulfilling those needs required for sustainable development and that 'such equity would be aided by political systems that secure effective citizen participation in decision-making and by greater democracy in international decision-making' (p.15).	'Effective participation in decision-making processes by local communities can help them articulate and effectively enforce their common interests' (WCED, 1987, p.39).
United Nations Conference on Environment and Development at Rio, 1992	The principle 10 addresses participation as 'environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities...in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective judicial and administrative proceedings, including redress and remedy, shall be provided' (UNEP, 1992).	'Experience has shown that sustainable development requires a commitment to sound economic policies and management, an effective and predictable public administration, the integration of environmental concerns into decision-making and progress towards democratic government, in the light of country-specific conditions, which allows for full participation of all parties concerned.' (Agenda 21, ¶ 2.6)
World Bank 1996 social policy on participation through 'participatory source book'	The World Bank (1998) defines participation as 'a process which is more inclusive, involving key stakeholders and including the traditionally marginalised' (p.5).	'This a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them.' (World Bank, 1994). The World Bank also proposes the poor people's concerns relating to exclusion, vulnerability and institutional power as key elements in the participatory process.
The Aarhus Convention, 1998	Adopted 3 pillars with regard to environment. These 3 pillars include access to information, public participation, and access to legal justice. Specifically to public participation, Aarhus convention argues that arrangements are to be made by public authorities for affected public and environmental non-governmental organisations to participate in decisions	'public participation in decision-making enhance the quality and the implementation of decisions, contribute to public awareness of environmental issues, give the public the opportunity to express its concerns and enable public authorities to take due account of such concerns...thereby to further the accountability of and transparency in decision-making and to strengthen public support for decisions on the environment' (UNECE 1998, p.2)
European commission general consultative forum on the environment and sustainable development, 1997	'Decisions affecting sustainable development should be open and based on informed participation by affected and interested parties. A personal sense of responsibility and involvement should be promoted amongst all sectors of society. This requires a knowledgeable public, a free flow of information and fair and equitable opportunities for review and redress' (Principle 9 of '12 principles of sustainable development', European commission, 1997, p.120)	
Engaging citizens in policy making, OECD 2001	10 guiding principles summarises that 'governments must invest adequate time, resources and commitment in building robust legal, policy and institutional frameworks, developing appropriate tools and evaluating their own performance in engaging citizens in policy-making.' (OECD, 2001, p.1). 10 guiding principles including of which 2 address direct participation: principle 2 identifies rights 'citizens' rights access to information, provide feedback, be consulted and actively participate in policy-making must be firmly grounded in law or policy. Government obligations to respond to citizens when exercising their rights must also be clearly stated.' (OECD, 2001, p.5).	'Poorly designed and inadequate measures for information, consultation and active participation in policy-making can undermine government-citizen relations. Governments may seek to inform, consult and engage citizens in order to enhance quality, credibility and legitimacy of their policy decisions...only to produce the opposite effect if citizens discover that their efforts to stay informed, provide feedback and actively participate are ignored, have no impact at all on the decisions reached or remain unaccounted for.' (OECD, 2001, p.1) 'Participatory development stands for partnership which is built upon the basis of dialogue among the various actors, during which the agenda is jointly set, and local views and indigenous knowledge are deliberately sought and respected.' (OECD,1994)

The call for participatory procedures in global policy-making has come to the fore after the WCED (1987); until then the dominant perception was that the public has no role in techno-scientific domains (Felt *et al.*, 2009). In other words, the general view was that policy-making procedures are largely the business of scientists, technocrats and policy-makers (Tsouvalis & Waterton, 2012). From qualitative research on the ‘Chernobyl disaster’ after the 1980s, it was argued that the loss of trust in science and expert institutions was not due to ignorance but largely due to the public distrust in the procedures of the institutions and the ways in which people’s concerns are addressed in policy making (Tsouvalis & Waterton, 2012; Wynne 1992). It was in the period following this that the previously technology-driven top-down, expert-led and bureaucratic policy-making agendas gradually accepted the imperative for focusing on public participation in the environmental decisions that affect them. In policy making arenas, it is now also largely accepted that participatory methods could promote public acceptance of policies (Kothari, 2001; Santos *et al.*, 2006).

Since the early 1990s, a repertoire of tools, techniques, and methods, such as participatory action research and participatory rural appraisal, have been suggested and developed for conducting participatory procedures specifically in developing countries. The different technical tools and methods to conduct participation in policy and decision making are discussed extensively elsewhere (Brock & Pettit, 2007; Henkel & Stirrat, 2001; Kindon, Pain & Kesby, 2007; Reason & Bradbury, 2008; Whyte, 1991), and it is not the objective of this chapter to discuss those methods. What is important for discussion here is that despite the plethora of tools and mechanisms that have been evolving, Arnstein’s (1969, see also Collins & Ison, 2006; Bruns, 2003) ‘ladder of participation’ which was published

some 40 years ago still remains, implicitly and explicitly, at the core of many approaches to participation.

3.3.1. Arnstein's 'Ladder of participation'

Sherry Arnstein (1969), in an influential and widely cited paper, describes an eight stepped 'ladder of participation'. The ladder is an outcome of her work in urban planning in the USA in 1960s (Collins & Ison, 2006). Each step in the ladder metaphor corresponds to a type of participation depending on the degree of involvement of citizens. The degree of involvement is important because it influences all the processes by indicating who should participate and at what level, who are marginalised or discriminated against and whether the participation is for instrumental or non-instrumental purposes in the decision-making (Luyet *et al.*, 2012). The eight steps of the ladder are i) manipulation ii) therapy iii) informing iv) consultation v) placation vi) partnerships vii) delegated power and viii) citizen control (figure 3.1). The eight steps of the ladder are grouped into three categories ranging from non-participation to citizen power. The group of steps reflects Arnstein's (1969) argument that 'low levels of participation were inadequate and unsatisfactory, as indicated by the use of the terms manipulation, therapy, placation, and tokenism, all carrying strong negative connotations' (Bruns, 2003, p.3), and the change in scale of group 'corresponds to changes in degrees of citizen engagement' (Collins and Ison, 2006, p.4). The central argument of Arnstein's ladder emphasises that high levels of participation lead to citizen empowerment. Such an argument can also be seen in Choguill's (1996) 'A ladder of community participation for developing countries'. According to the terminologies, and steps of both Arnstein, and Choguill, high levels of participation, leading to citizen empowerment are necessary. However, one of the major critiques of Arnstein's model is

that ‘it is top-down oriented because it is modelled on the view of those who have power to delegate to others’ (Soneryd, 2004, p.60).

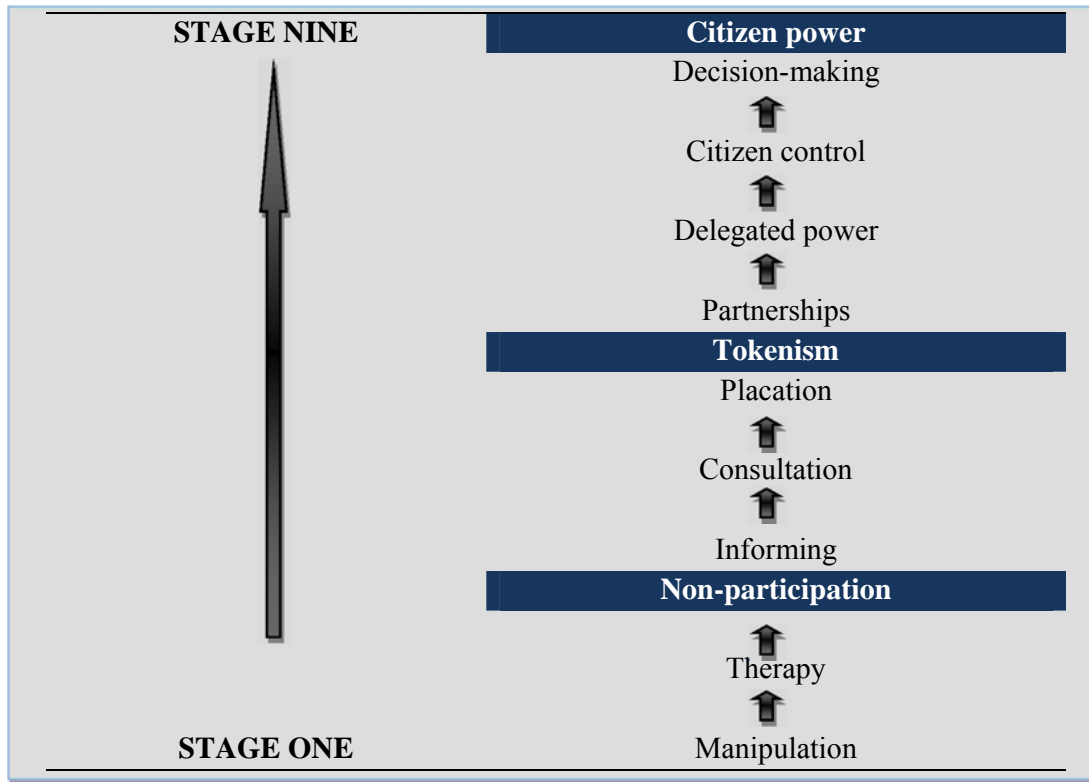


Figure 3-1 A ladder of participation (source: Adapted from Arnstein 1969)

In response to Arnstein (1969), and to provide a better ‘logical progression’ (Bruns, 2003, p.4) from one level to another, various models on participation have been evolving over the decades (Bruns, 2003; Choguill, 1996; Connor, 1988; Davidson, 1998; Lawrence, 2006; Vroom, 2003; Weidemann and Femers, 1993). Some of these ladders have been used in empirical studies such as environmental projects (Luyet *et al.*, 2012), and water tenure reforms (Bruns, 2003). While it is out of the scope of this chapter to discuss all the models, some of the influential ones are discussed.

3.3.2. Connor's 'New ladder of participation'

Another model proposed with the intention of addressing the top-down controversy of Arnstein is Connor's (1988) 'New ladder of participation' (figure 3.2). While Arnstein's method emphasises citizen empowerment, Connor's method focuses on situations where government, by holding authority, engages with the public to prevent a dispute or reach a resolution over some public controversy without actually giving power to them (Bruns, 2003). According to the method, the first step is conducting educational activities to educate the public about a decision or plan that might affect them. After this, information feedback activities such as surveys are undertaken. If these levels of participation did not lead to resolution, then the next levels of participation – consultation, joint planning, mediation, or litigation - are employed to reach a resolution. The method suggests that education, and information feedback might be conducted with the general public, joint planning with government and jurisdictions, and consultation with leaders of key interest groups (Bruns, 2003). The eight steps are designed on the assumption that their cumulative sequence increases levels of participation and reaches a resolution at the end. However, it does not always follow that the steps of participation, from consultation to mediation and litigation, are the right methods of meaningful participation, in that such participatory methods may or may not reach an end of resolution. Furthermore, it brings a narrow perspective by categorising certain groups of people in society to certain levels of participation. Such a perspective cannot provide a participatory method that is inclusive, influential and open. It also contradicts Arnstein's model which argues that a ladder of participation should eventually lead to citizen empowerment. This model was rejected by a few scholars (Bruns, 2003).

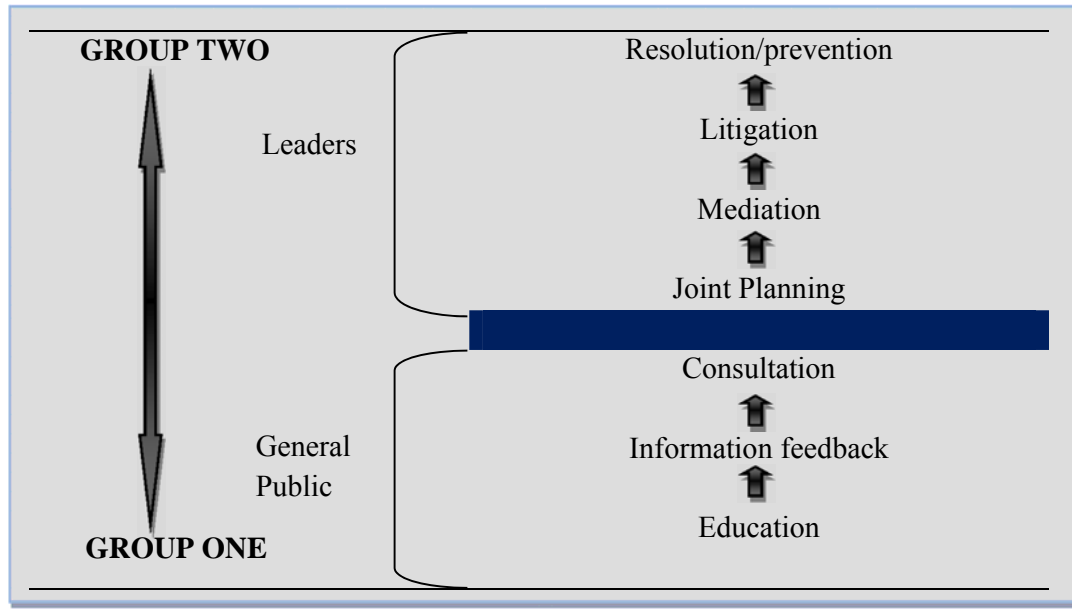


Figure 3-2 A New ladder of participation (source: Adapted from Connor 1988)

3.3.3. Burns, Hambleton, R. & Hoggett's *Ladder of citizen empowerment*

Another influential and extended model, based on Arnstein's argument for citizen empowerment, was proposed by Burns, Hambleton, & Hoggett (1994). The 'ladder of citizen empowerment' addresses some of the issues identified in Arnstein's model. This modified ladder is based on a more elaborate and qualitative breakdown of different levels from citizen non-participation to citizen control (figure 3.3). For example, a clear distinction is made between poor information and high quality information. The 'civic hype', which treats community participation as a marketing exercise where the outcome is just 'sold' to the community, is incorporated at the bottom rung of the ladder. Along with emphasising citizen empowerment, it recognises the importance of different knowledge forms available at different levels in the society.

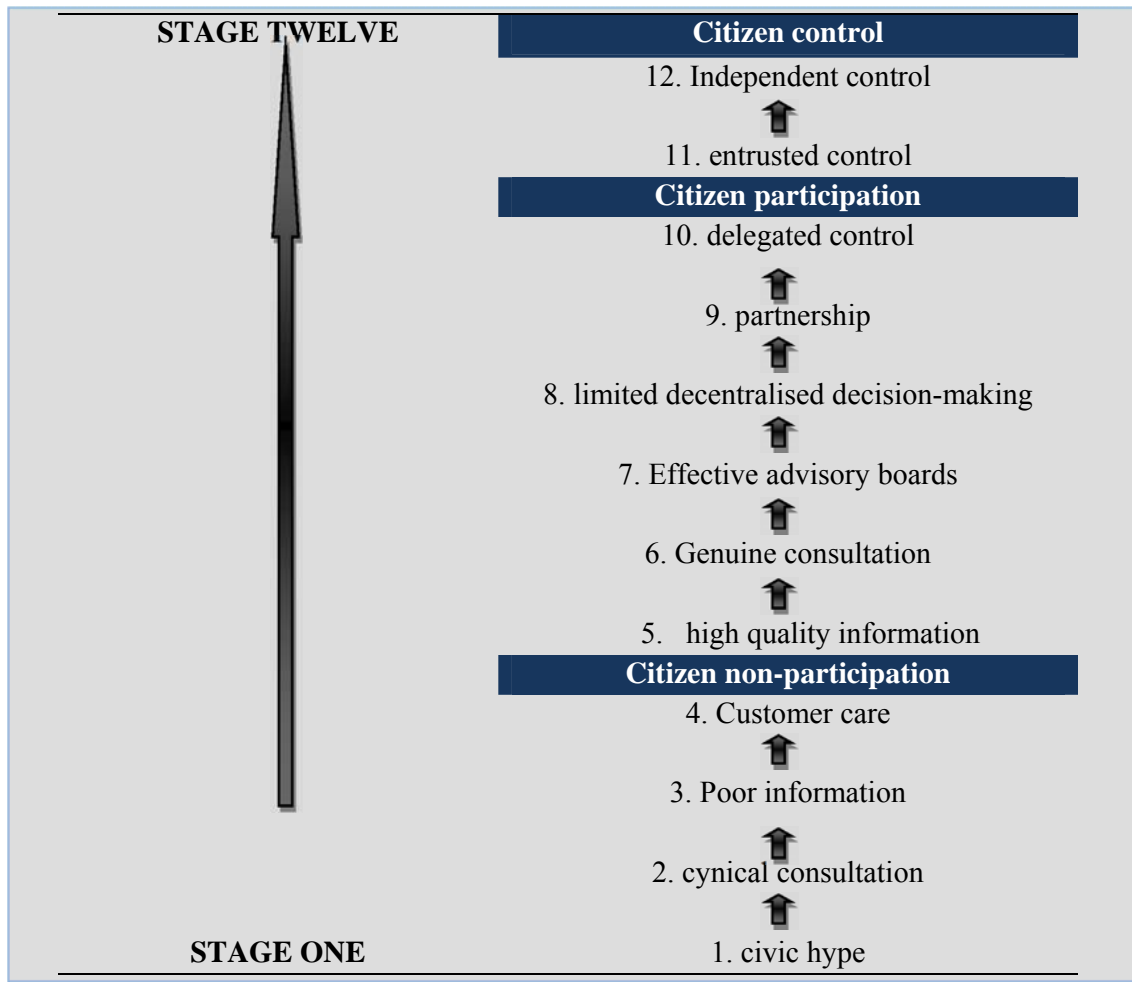


Figure 3-3 A ladder of citizen empowerment (Source: adapted from Burns, Hambleton, & Hoggett, 1994)

3.3.4. Soneryd's continuum of participation

While all of the models, with different meanings in different contexts and settings, might be relevant, I agree with Petts (1999) and Soneryd (2004) that instead of a ladder, it might be useful if the steps of a ladder are seen as a continuum, as 'public participation covers a wide range of procedures and practices which do not have to be seen as facilitating

communication or empowering citizens, but which nevertheless can entail such elements' (p.60). Soneryd (2004) describes the following principles as important against which to assess the degree of involvement in decision-making.

- **Information:** explanation of the project to the stakeholders, providing updates, routine monitoring
- **Consultation:** presentation of the project to stakeholders, collection of their suggestions, and then decision making with or without taking into stakeholders input.
- **Collaboration:** presentation of the project to stakeholders, collection of their suggestions, giving voice (or opportunity to contribute to decision making), and then decision-making, taking into account stakeholders input.
- **Co-decision:** cooperation with stakeholders towards an agreement of solution and implementation.
- **Empowerment:** delegation of decision-making over project development and implementation of stakeholders.

Viewing these principles as positions may be useful in analysing and assessing the extent to which meaningful participation is considered in various institutions and decisions for both development and energy governance literatures. I contend that this perspective and this model of Soneryd (2004) is particularly useful for this thesis. While influenced by different ladders of participation (discussed in this section), this thesis is based on an argument that any participatory model should consider the principles of participation integrated instead as steps.

3.4. Critiques of participation

As highlighted in section 3.2, public participation has become an ‘act of faith’ within social science, democracy and political theories (Petts & Brooks, 2006; Schlosberg, 2007). The literature argues that public participation in decision-making processes is crucial for effective outcomes and that the success of participation lies in the right methods (Chilvers, 2007; Cleaver, 2001). While most of the scholars find right procedures, through recognition and participation, are the only way for public acceptance of policies/programs, others have suggested that such assumptions may be flawed in several ways (Holifield, 2001; Owens, 2004).

Although the critiques of participatory methods go back earlier (Chambers, 1997; Cornwall, 1998; Gujit & Shah, 1998), Cooke and Kothari’s (2001) book ‘Participation – A new tyranny?’, which focuses explicitly on participatory development, is perhaps the best known. Hickey and Mohan (2004), through their work on ‘Participation – from tyranny to transformation’ argue that Cooke and Kothari’s (2001) argument was developed against the backdrop of ‘a growing backlash against the ways in which participation managed to *tyrannise* development debates without sufficient evidence that participatory approaches were living up to the promise of empowerment and transformative development for marginal peoples’ (p.3). Since then, a considerable amount of critical literature has been evolving (Chilvers, 2008; Papadopoulos & Warin, 2007). For example, while some argue that participation is often viewed as a problem-solving solution or presented as evidence of democratic inclusion and a strategy for social inclusion (Hayward, Simpson & Wood 2004), others emphasise that participatory processes often leave behind socio-economically marginalised groups such as tribes, peasants, nomads, pastoralists, and poor farmers (Leach, Scoones & Wynne, 2005). In this section, I intend to examine and integrate some

of the critical arguments on ‘tyrannical’ participatory approaches and make some constructive arguments.

3.4.1 Conflict resolution strategy

In environmental policy and development literature, there is an assumption that participation is pursued for counteracting exclusion from decision-making (Hayward, Simpson & Wood, 2004). However, in the critical literature it is argued that participation is more about ticking the environmental justice box or a public dispute resolution strategy against policy decisions which entail geographical costs (Papadopoulos & Warin, 2007; Renn, Webler, & Wiedemann, 1995; Shilling *et al.*, 2009). Ticking the box means participatory methods are often implemented for meeting the organisational procedures and systems, institutional (formal and informal) time-frames, bureaucratic goals, and budgets (Mosse, 2001), and to cope with ‘political conflicts surrounding development projects, siting-decisions, new technology, risk, environmental impacts, and the distribution of the associated burdens and benefits’ (Holzinger, 2001, p.71).

All the literature highlights that externally imposed, expert-oriented problem-solving exercises based on *toolboxes* of processes and procedures, rather than problem-deliberation and critical engagement processes, pose a problem for participatory development (Clever, 2001; Mosse, 2001). Through such uncritical participatory procedures, communities are in a potential danger of becoming the ‘human software’ through which the issue of local protest can be addressed (Mosse, 2001). The case studies of an externally funded rural development project in India (Taylor 2001), and hydropower project development in China’s Mekong river basin (Mirumachi & Torriti, 2012) indicate that in developing countries like India and China, where development is a priority, participation is often an

attempt to get things done amicably by the influential and powerful institutional authorities. These case studies also highlight that the decisions were arrived at without involvement of the less powerful and marginalised. Such arguments on participatory procedures which omit serious consideration of who participates in final decisions are the essence of critiques of participation (Ezrahi, 1990; Mosse 2001). However, this literature doesn't provide clarity on what makes participation difficult for socially and economically marginalised groups (Hickey & Mohan, 2004). What is required is arguments which emphasise inclusive process with equitable involvement, and structures that secure/protect the interests of the marginalised (Cleaver, 2001).

3.4.2 Recognition of local knowledge

Another important critique that emerged from the critical participatory literature is around the recognition of 'local/indigenous knowledge'. Globally there is an increasing acknowledgement of the value that local knowledge adds to issues of environmental conservation and sustainable development, particularly in developing countries (Briggs, 2005; Mukopadhyay, 2009; Pareek & Trivedi, 2011). Hare, Letcher, & Jakeman (2003), for instance, through their comparison of four case studies drawn from across the world in natural resource management, found that case studies which adopted local knowledge resulted in generating effective participatory procedures. However, it is also argued that despite its value, there are challenges for translating the theory into practice (Mosse, 1994, 2001), in that the participatory planning processes do not always recognise the indigenous wealth of knowledge. Others contend that even if some local knowledge is identified and gathered through some participatory events, it is either concealed or manipulated by the outsider development planning agendas (Mosse, 2001) or it is not seriously considered in

the final decisions (Tsouvallis & Waterton, 2012). Mosse (2001) puts such argument neatly:

..the project staff ‘own’ the research tools, choose the topics, record the information, and abstract, and summarise according to project criteria of relevance. (p.19)

Mosse (2001) terms this manipulated people’s knowledge by the project planning agents as ‘planning knowledge’. Such a process where local knowledge is manipulated is sometimes viewed as a process that ‘cleans up’ the local knowledge and marginalises the communities (Kothari, 2001). Marris and Rose (2010) considers the potential reason for this could be that ‘the knowledge gained from these initiatives often seems directed towards anticipating controversy in order to ward it off rather than to giving the public any actual role in decisions about research trajectories’ (p.2). Mosse (2001) also asserts this view from the case of Kribhco Indo-British Farming Project (KRIBP) implemented in Western India where the assessed villager needs were actually shaped by the implementation authority’s pre-constructed perceptions of what they could deliver. Such a failure of recognition of local knowledge can also provide challenges to the relationship between communities and governmental organisations.

The literature also argues that knowledge is a form of representation of identities and the failure to recognise local knowledge can pose a challenge to the recognition of identities of individuals (Cleaver, 2001). For example, Cleaver and Elson (1995), in the context of water resource management policy in Zimbabwe, identify the continued marginalisation of women in the decision-making processes, despite their knowledge on water resources and

how to make effective use of them⁸. Recognition of women's knowledge, in this case could help develop a sustainable water resource management model. The case identifies how local knowledge, if recognised, may sometimes help in developing an alternative development model that may or may not be in line with the traditional economic model but could protect the integrity of the communities and provide sustainable solutions. Here, I would like to emphasise Visvanathan's (2007) concept of 'cognitive justice' which argues that 'recognising constitutionally the body of knowledge within which an individual is embedded' (p.93) is important in a participatory process. Put simply, the concept argues that recognition of local knowledge should be seen as a right in the participatory processes. While provision of such a right may result in respect to the affected local communities, what is required is an extensive study of how entitlement to recognition of local knowledge can be applied in participatory development practice.

3.4.3 Empowerment

Globally there is an agreement that empowerment, in the context of development and environmental policy, could enable the poor and marginalised communities to improve or change their lives and enable them to meaningfully participate in decisions that shape their future (Alsop, Bertelsen, & Holland, 2006; Eyben, Kabeer, & Cornwall, 2008; Pettit, 2012). The dominant discourse in defining the success of participation has been 'empowerment' of communities (improving or changing their own lives). According to Karl (1995), empowerment is 'a process of awareness and capacity building leading to greater participation, to greater decision-making power and control, and to transformative action

⁸ For more discussions on politics of knowledge and 'whose knowledge counts' refer Chambers (1995), Leach and Mearns (1996) and Stott and Sullivan (2000).

(p.14). Similarly Cornwall and Brock (2005) argue that meaningful participation and genuine empowerment are mutually interrelated, in that one cannot exist without the other.

One of the most notable critical arguments is that for meaningful participation that results in empowerment, there is a need for recognition of ‘power relations’ (Cornwall, 2004). Hickey and Mohan (2004) emphasise that the focus of participation ‘must go beyond the individual and local and involve multi-scaled strategies that encompass the institutional and structural’ (p.12). For example, without the regulation of monopolies, or strengthening the collective political voice of small farmers, efforts to strengthen poor farmers’ access to markets might not succeed (Pettit, 2012). However, it is argued that in development practice, participatory processes are often conducted by involving a few individuals who wouldn’t question the projects and without any structural change (Cleaver, 2001; Hickey & Mohan, 2004).

There are also critiques about the power relations within participatory procedures (Cooke & Kothari 2001; Gujit & Shah, 1998; Taylor, 2005). These critical arguments emphasise that even if all community groups are included, the procedures may operate to favour those with most power in the community, because they are most articulate, most confident and most respected, and side-line the voices of the marginalised and powerless sections. Participatory procedures can actually act to legitimise unfair decisions and perpetuate inequalities, if they are not sensitive to pre-existing power relations within communities. It is important to understand communities’ concerns and needs based on differences such as age, class, caste, religion, ethnicity, and gender (Cornwall, 1998; Gujit & Shah 1998). Gujit and Shah (1998) argue that procedures not sensitive to power relations within communities and procedures which see communities as homogenous, harmonious, and

static units, cannot also achieve the ostensible aim of participatory procedures, i.e., ‘to increase involvement of socially and economically marginalised peoples in decision-making’ (p.1). These critical arguments which have been developed on an ostensible assumption that participatory procedures operate outside of power relations and hierarchies, is particularly important to the case of Charanaka with different castes, occupations, and social and economic levels.

Participatory processes are further criticised for missing the links between empowerment of the marginalised (women, poor, farmers, pastoralists) and decision-making (Cleaver, 2001). The loss of livelihoods of the cattle herders and the poor from the case of ‘participatory forest management in India’ identifies that the participatory processes could also sometimes result in the systematic disempowerment of the already marginalised and resource poor (Hildyard *et al.*, 2001). Drawing heavily on feminist scholarship, Cleaver (1998, 2001) also emphasises a number of problems that arise in the analysis of empowerment. Most of the time it becomes difficult to identify ‘who is to be empowered’ – whether the individual participants, communities, marginalised groups, vulnerable people such as women, children or the old (Cleaver, 2001). The answer to this important question is fuzzy, unclear and is often side-lined in the participatory processes. There is also little literature on the scope and limitations of empowering effects of development projects; this is an area which warrants further research.

3.5. Procedural justice in renewable energy

The previous sections highlighted that whether it is the area of forestry management, or water allocation, or infrastructure development projects, justice in decision-making is an important ingredient to achieve justice in outcomes. Similarly previous work has also

illustrated that procedural justice concerns are at the heart of social acceptance of renewable energy projects (Devine-Wright, 2007; Walker *et al.*, 2010a; Gross, 2007). Cowell, Bristow, & Munday (2011) state that it's not only the economic benefits provided to the affected communities that make the difference, but also procedures which put local communities at the centre of the development. This last section investigates the questions of procedural justice in the renewable energy literature.

One good empirical study which is explicitly based on the principles of procedural justice is of Gross (2007). Drawing on social justice (Rawls, 1971; Sen 1999), environmental justice (Schlosberg, 2004) and social psychology (Lind & Tyler, 1988) literatures, the paper provides an understanding of the extent to which justice in decision-making procedures relates to social acceptance of renewable energy projects. Through the case of a wind energy project in Australia, it concludes that the principles of procedural justice such as the ability to participate, the ability to be heard, adequate information provision, being treated with respect, and unbiased decision-making processes have a strong effect on building trust in public institutions, on the empowerment of communities, and on social acceptance of renewable energy projects. The case study also emphasises that disparity of voices in procedures created tensions, and winners and losers in the local community. Other renewable energy scholars such as Jobert, Laborgne, & Mimler (2007), Swofford & Slattery (2010), and Toke, Breukers, & Wolsink (2008) agree with Gross (2007) that issues of procedural justice are important for the distribution of outcomes and local acceptance of renewable energy projects. However, apart from Gross (2007) and Walter & Gutscher (2011), not many of these works explicitly consider the application of theories of procedural justice.

I also argue that while there is extensive literature on distributive considerations in renewable energy implementation (Brady & Monani, 2011; Cowell, Bristow, & Munday, 2011; Gross, 2007; Walker & Cass, 2007; Warren & McFayden 2010) (see section 2.5) there is little literature on energy matters (though see Walker & Day, 2012) or renewable energy (except Gross, 2007; Walter & Gutscher, 2011), either in developing or developed countries, that explicitly applies procedural justice theories or provides extensive discussion through the application of procedural justice concepts. The current research thus aims to fill this gap. As a concluding note, the literature on justice issues in renewable energy illustrates that the arguments on procedural and distributive justice are closely tied to each other; hence though the two literature review chapters tried to address the concepts separately there are often overlaps between the discussions.

3.6. Conclusions

This chapter, while reviewing a multi-disciplinary body of literature on procedural justice, has opened up new avenues for this research. Several concluding points can be drawn from this review on procedural justice. First, through the social justice, environmental justice, development and renewable energy literatures, the chapter unpacked the theoretical underpinnings of procedural justice. In the process, it demonstrated that along with the wealth of literature on procedural justice issues such as the imperative for participation (Davies, 2005; Petts, 2004; Schlosberg, 1999), finding effective approaches to participation (Arnstein, 1969; Connor, 1988; Bruns, 2003), and defining the right questions and identifying methods that can result in acceptance of policies (Brock & Pettit, 2007; Henkel & Stirrat, 2001; Kindon, Pain & Kesby, 2007; Reason & Bradbury 2008; Whyte, 1991), there is a growing critical literature on the dynamics of participation (Cooke & Kothari, 2001; Hayward, Simpson, & Wood, 2004; Hickey & Mohan 2004). Second, in both the

theoretical and policy literatures, the emphasis of procedural justice arguments is on participation and participatory principles such as recognition of local knowledge, sharing of information, and giving voice (Dolan *et al.*, 2007; Leach, Scoones & Wynne, 2005, Petts & Brookes, 2006, Portman, 2009). The procedural justice literature has not engaged as much as it could with the concept of recognition (Fraser, 1998, 2007; Young, 1990).

Third, there are many areas of the procedural justice theoretical discussions which are applicable to this research on solar energy in India. For example, the critical participatory literature on recognition of local knowledge (Cleaver, 2001; Mosse, 1994, 2001) and power relations within communities (Cooke & Kothari 2001; Gujit & Shah, 1998) is particularly useful for this thesis. Adding such critical literature to procedural justice arguments can stimulate further research in socially and culturally diverse countries like India and also add weight to the increasing demand for recognition and meaningful public participation in the development of ‘environmentally good’ projects. Fourth, the review has identified that there is not enough literature on explicit procedural justice issues, either theoretically or empirically, in literature on renewable energy development. That which does exist is mostly in developed country contexts (Gross, 2007; Mirumachi & Torriti, 2012; Visschers & Siegrist, 2012; Walker & Devine-wright, 2008; Walter & Gutscher, 2011), with little emphasis on developing countries, or more specifically the Indian context.

To conclude, as mentioned in chapter 1, the NSM’s mid-assessment policy report by the ‘Council of Energy, Environment and Water (CEEW)’ and ‘Natural Resources Defence Council (NRDC)’ (Ghosh *et al.*, 2012) identifies that issues in the distribution of project benefits (such as jobs, and solar power), and community participation have been creating contentious conditions for solar energy development in India. Due to these procedural and

distributive issues, solar energy is witnessing a slow growth in the country. Indeed, while the Charanaka solar park was initially planned for 500MW, only 216MW has been installed by 2013. This is due to conflicts in land acquisition procedures between the government and local communities. Even emerging literature, which is largely based on understanding policy, technical, and socio-economic advantages of solar energy implementation in India, has identified that social issues are increasingly becoming obstacles for acceptance of these ‘environmentally good’ technologies (Sant, Rao, & Rajan, 2009; Reddy & Dixit, 2010, Bhattacharya, 2010, Benecke, 2011). In this way, solar energy implementation in India, has become a matter of justice. Through the analysis (in chapters 2 and 3) of multiple approaches to justice in social justice (Fraser, 1998, Young, 1990), environmental justice (Schlosberg, 2004, 2007; Shrader-Frechette, 2002), and energy justice literatures (Gross, 2007; Walker & Day, 2012; Walter & Gutscher, 2011) and while adopting multiple approach to justice, I argue that the notions of procedural and distributive justice in this thesis are closely related. A fair policy decision-making procedure, with equal opportunity for recognition of diversities in communities and concerns of socially excluded and culturally marginalised groups, and participation of all those who are affected by a policy decision reflect fairness in outcomes of decisions. My position in this thesis is that whilst the distributive concerns over ‘who gets what’ (Walker & Day, 2012) are always crucial to achieving justice, the procedures through which outcomes are produced are also important to achieve justice.

4. RESEARCH METHODOLOGY

*Only you can provide the philosophical answers that will have meaning
and lasting value in your future work as a geographer*

-- Hill, Michael R., Themes in Geographical Thought (1981: 38)

4.1. Introduction

Research methodology is ‘the means by which social scientists gain access to the world’ (Murdoch & Pratt, 1994, p.85). This research methodology chapter discusses the methods used for information gathering and the techniques devised for subsequent analysis and interpretation of the collected information. The chapter is divided into three major parts: i) the research design developed for this thesis; ii) the data collection procedures, and the methods employed for analysis, and iii) the researcher’s role and reflections from the field work.

Within these broad steps the rest of the chapter follows the below structure: first, the chapter describes the geographical context of the research. Second, it discusses the research design developed for achieving the research objectives. Third, the chapter explains the fieldwork process and the different methods adopted in the field. Fourth, to discuss positionality, the chapter considers the researcher’s multiple accounts, a south Indian born (from the state of Andhra Pradesh) urban Indian, living in Gujarat as a ‘non-native’ and studying in a foreign university. Here, the power relations encountered during the fieldwork are also discussed. Fifth, it sets out the methods and processes adopted for data interpretation and analysis. Sixth, the chapter identifies and reflects on issues encountered in research design, data collection and analysis. Finally, the chapter concludes with a few remarks.

4.2. Research context: ‘Charanaka’ Solar Park, Gujarat

As one of the respondents stated, ‘because of this solar park we became famous, otherwise no one knew who is dying in this village’ (Respondent #9, Male, Rabari), the village of Charanaka became famous due to the world’s largest ‘Solar Park’. The field work for this study was carried out during implementation of this project in Charanaka.

Before discussing Charanaka, it is important to provide some context about Gujarat. While a longer discussion on the economic system of Gujarat is provided in Chapter 6, a note about the environment is given here. Gujarat is a western state of India with Gandhinagar as its capital and Ahmedabad as the financial capital. Being the birth place of *Gandhi*, the father of the nation and a prominent leader of the independence movement, and the only home to the Asiatic Lions, the state is also called ‘the land of Gandhi and *Gir* Lions’. Due to its climatic extremes, geomorphic characteristics and maritime influences, it is a geoclimatically sensitive state of India. It is surrounded by the Arabian Sea to the south and the harsh dry salt desert (called *Rann*) to the north and east.

Charanaka lies in the district of *Patan* (district headquarters at Mehsana) and sub-district (called *taluka*) of *Santalpur*. The village is located at a distance of 230 kms from the state capital (see plate 4.1 and 4.2 more details about location of the village) in the north-westernmost part of the state, bordering Pakistan, the unique ecosystem of Great *Rann* of *Kutch*, and the Little *Rann* of *Kutch*. The Great Rann is the world’s largest dry saline desert. Apart from large and dense mangrove cover, these ecosystems are home to a wide variety of animals and birds including endangered species such as the Indian Wild Ass, the Greater Flamingo, and the largest Asian antelope *Nilgai*.

The climatic conditions in Patan and Charanaka village are unique due to extremely hot and dry weather, low rainfall, aridity, and seismic instability. The climate is characterised by hot summers and dryness in the non-rainy season. The land is partly marshy and partly dry. The period from March to May is the hottest with temperatures rising above 45°C, the rainy season is between July and September with rainfall anywhere between 250-500 mm, and then again the months of October and November reach a temperature above 45 °C. The winter season with a lowest temperature of about 5°C and cold winds spans the period of December - February. Although the region has been richly endowed with natural resources, the associated climatic and geological risks make them hard to access. Such an unusual resource-risk mix remains a challenge for development and living conditions continue to be harsh.

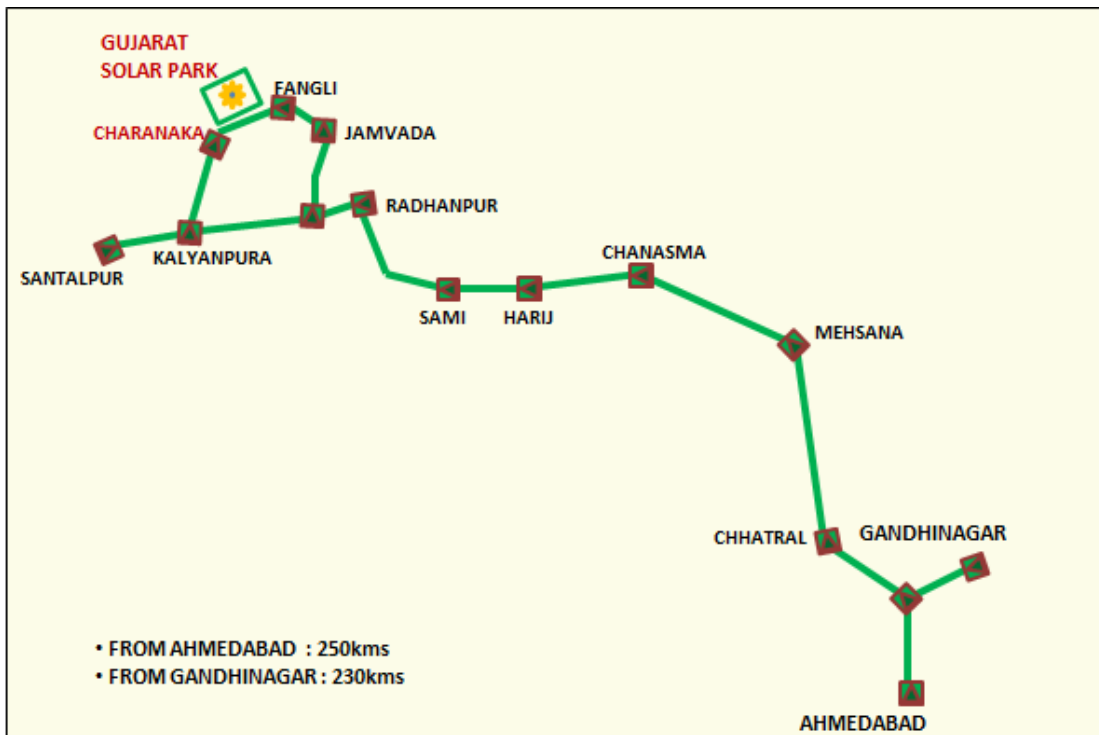


Plate 4-1 Access to Charanaka solar park through major towns and cities (source: author)

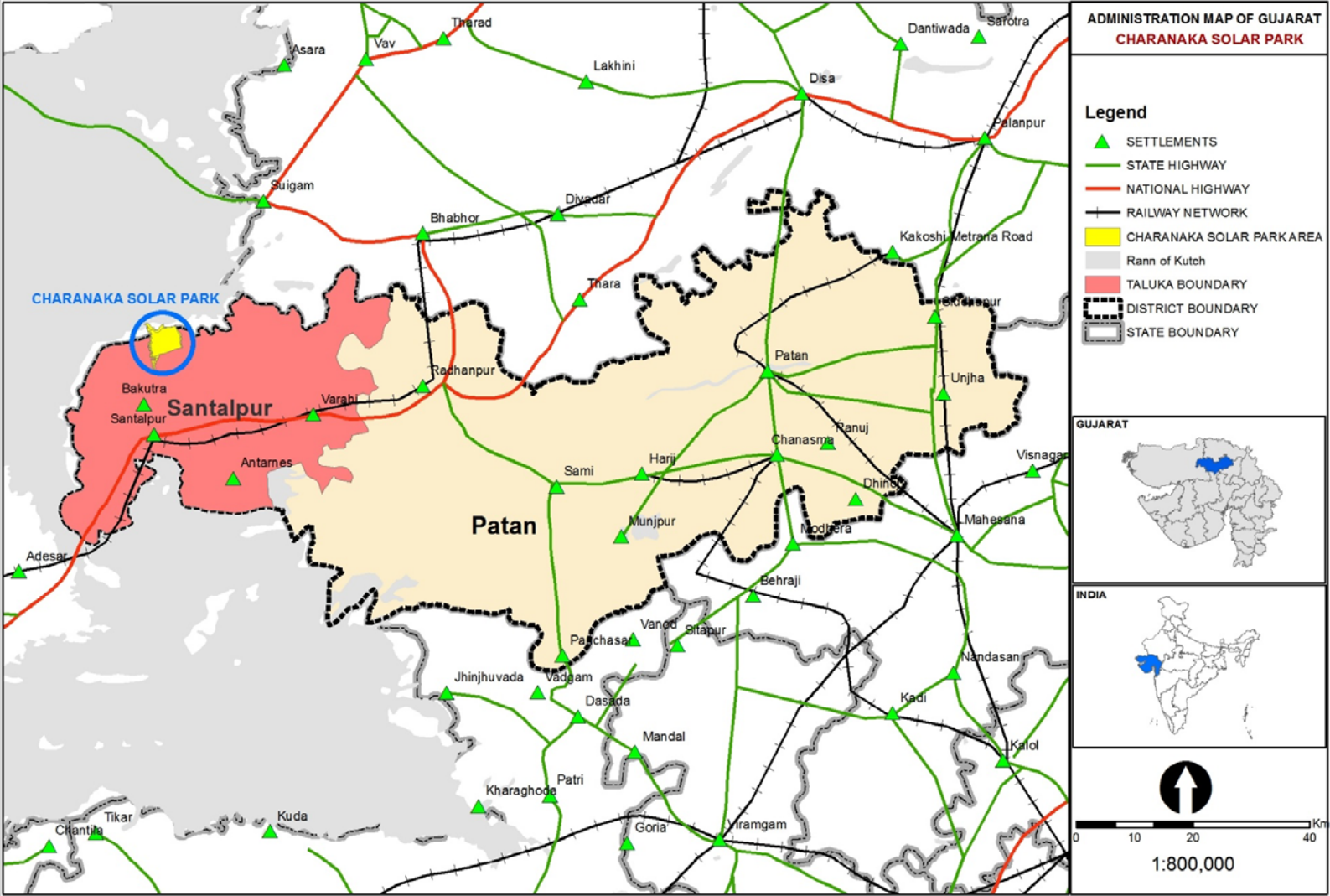


Plate 4-2 Location map of Charanaka solar park (source: author)

Note: the roads and railways are marked to provide details about connectivity to the region from major towns and cities

Before going into details of Charanaka’s social profile, it is important to highlight the Hindu caste based social stratification system in India. The caste system plays an important role in most parts of India, and especially in rural areas (for more empirical discussions on caste see section 7.5.1). Every Hindu falls into one of these categories. While there are five major dominant castes in India (table 4.1), there are several thousand sub-castes. Table 4.2 describes the social profile and caste system of Charanaka.

Table 4-1 Major castes in India’s hierarchical caste system (source: author)

Caste	Historical occupation
Brahmin	Priests or Scholars
Kshatriya	Nobles or warriors
Vaishnava	Merchants and skilled artisans
Shudra	Common labourers
Harijan*	Untouchables – degrading labour

* While untouchability was constitutionally outlawed during the time of Independence, socially it still exists in villages in several parts of India.

Table 4-2 Details of households in Charanaka (Source: Anganwadi office, Charanaka)

Caste	Major caste	No. of households	No. Households		No. of people	
			APL	BPL	Male	Female
Gadhvi	Kshatriya	25	21	4	58	44
Sadhu	Brahmin	1	1	-	3	1
Rabari (Desai+Jadeja+Rabari+ Goswami)	Kshatriya	103	52	50	281	272
Ahir	Kshatriya	11	5	6	44	28
Harijan	Harijan	9	4	5	37	22
Darbar or Thakore	Kshatriya	18	2	16	66	55
Muslim	--	11	2	9	46	32
Koli	Kshatriya	53	17	36	167	136
TOTAL		232	105	127	698	595

(Note: APL – Above poverty line, BPL – Below poverty line⁹)

⁹ According to the Government of India, BPL is applicable to people with income less than US\$1.25 per day per head of purchasing power parity. APL populations are those above the standard of US\$1.25 income.

Rabaris, a nomadic pastoral community, are dominant in terms of numbers. Rabari means an outsider. It is often said that they got this name due to their occupation and life on the outskirts of villages. Rabaris are also referred as *Maldharis*, which literally means herders. Based on geographical criteria, the Rabaris of India belong into four groups: i) of Kutch, ii) of Saurashtra (central Gujarat, also known as Kathiawar region), iii) of north Gujarat (the zone from Mehsana to Palanpur), and iv) of Rajasthan (Flavoni, 1990) (see plate 4.2 for Rabaris of Gujarat). The Rabaris of Charanaka belong to the group of north Gujarat. While there are about 133 sub-castes among Rabaris, in Charanaka, Desai, Jadeja and Goswami are the only sub-castes. The entire Rabari community belongs to the Kshatriya caste. Rabaris strongly believe in Hinduism and consider themselves to be descendants of Lord Shiva, who according to Hindu mythology is the destroyer of evil.

Rabaris are tall, with vibrant clothes and tattoos all over their body (Flavoni, 1990). Contrary to men in complete white *dhotiyu* (an unstitched garment wrapped around the waist and legs), *kurta* (double breasted waist coat) and *paghadi* (turban), women wear black *ghagro* (skirt), embroidered *kanchali* (back-opened blouse) and *ludi* (veil to cover hair), and are heavily decked with gold, silver and brass ornaments. Rabaris are known for their skills in embroidery and jewellery making.

Rabaris travel for about eight months in a year. During their eight month period of migratory movement in search of fertile land and food for cattle, the Rabaris of Charanaka cross two districts across a length of more than 200 kms in several halts (see plate 4.2 for migratory movement). One of the Rabari respondents described this movement:

We go to Radhanpur, and then to Mehsana. Due to lack to water and fodder we go there. We sit in farms. As the farm owner gets manure from our herd, he pays something or gives some grains. Sometimes, we also sit in waste land near villages. It takes 4 months to reach Mehsana and then 4 months to come back (Respondent #9, Rabari).



Plate 4-3 A Rabari family during their migratory period (source: author, 2011)

Flavoni (1990) nicely describes the above scene:

They migrate in small groups...the older members stay behind in the villages. The larger and stronger camels are used to transport their meagre belongings: cots, cooking utensils, blankets, water jars. The women lead the camels by hand, walking alongside. Only the youngest of the children, often along with the new-born lambs and kids, are permitted to ride on the camel's back. The men take care of the herds. (p. 10)

The dominant caste of the village both in terms of education and position are the farming Gadhvi community. According to history, this community is said to be a sub-caste of *Charan* (after whom the village got its name) which itself is a sub-caste of Kshatriyas. Some of the younger members of this community are also in urban professions. Similar to Gadhvis and Rabaris, Koli and Thakore communities are also a part of the Kshatriya caste. These communities are in different occupations including urban professions, agricultural labour, farming etc. Ahirs are largely a cow-herding community and Harijans are

agricultural labourers. The Muslim population livelihood activities include farming, and other non-traditional occupations such as driving and owning small shops.

As Charanaka is remotely located, there is no relevant published data about the profile of the village. Through my own understanding, and fieldwork, I compiled the profile of the village in the below table 4.3 (see Appendix I for more information about the profile of the village).

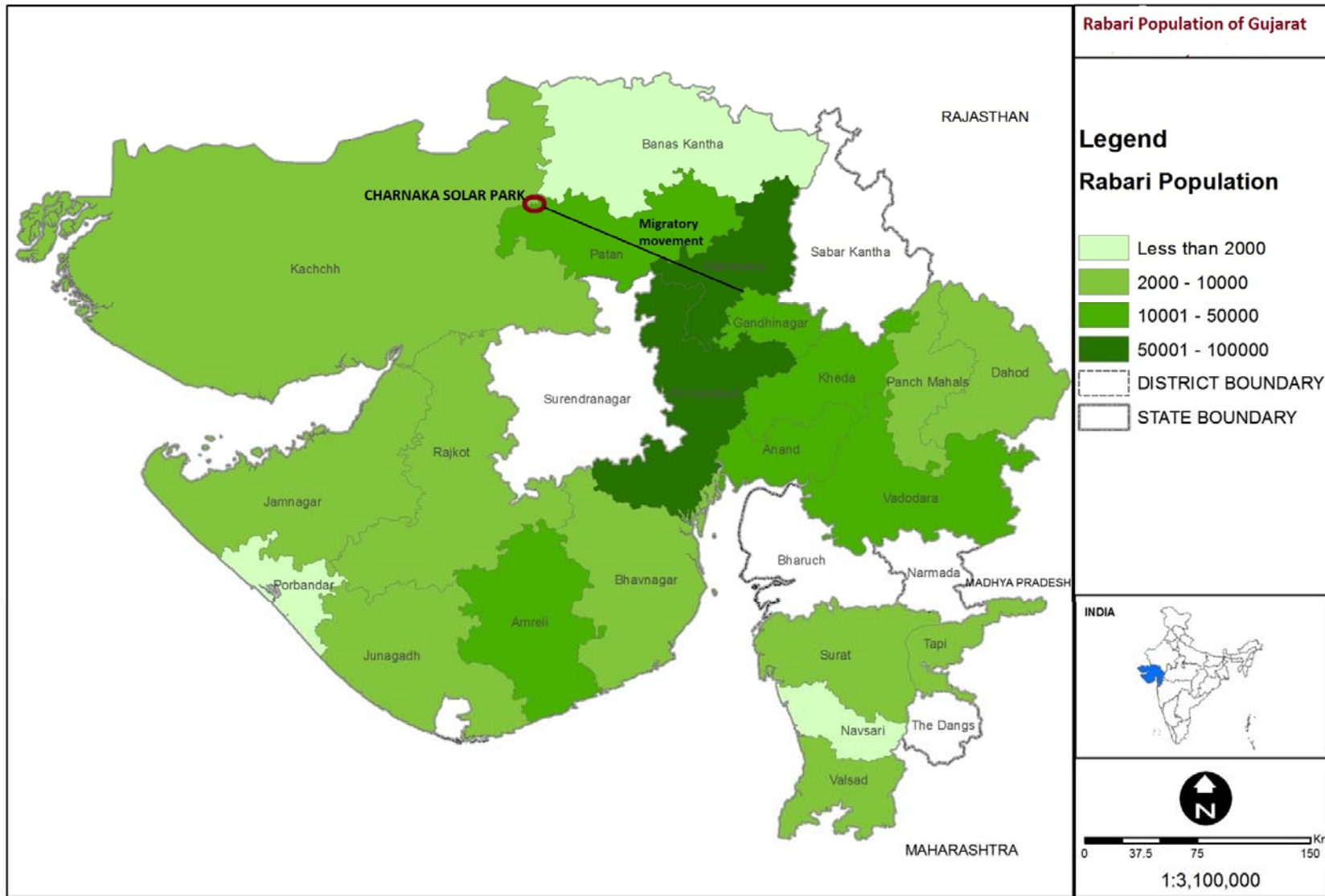


Plate 4-4 Rabari population of Gujarat with black line indicating ‘Rabaris’ of Charanaka village transhumant pattern. (Source: author, data from Joshua project, 2012 and interviews)

Table 4-3 - The profile of Charanaka village (source: compiled by the author)

Characteristic	Description
Land	Mixed use land – dwellings, many Hindu temples, large farmland and common property resources such as grazing land, shared well and graveyard
Soil	Clay, loam, and salty marshy land. pH is neutral, organic carbon is low, nitrogen is low, and phosphorous is medium respectively – so satisfactory soil fertility for agriculture
Crop	cotton, jute, cumin, millet, castor, sorghum, lentils, sesame
Rainfall	250-500 mm per year, which means generally low rainfall.
Animals/birds	Nilgai (antelope), peacocks and other different kinds
Access to common property resources	Grasses and ‘gando baval’ (<i>Prosopis juliflora</i>) grown in the grazing land. Gando baval is a thorny wild weed used for forage, and wood. It also reduces salinity in the soil.
Farm activities	Double cropping with major dependence on rainfall, no irrigation, traditional cropping techniques, few large land owning farmers, no co-operatives or government support banks, no seed farm ¹⁰ in the entire district of Patan
Level of education	Mostly primary school educated with handful of people up to undergraduate degree
Working population	Approx. 500 (no.)
Non-working population	Approx. 800 (no.) (non-working men/women, elders and children)
Cultivating population	Approx. 200 (no.) (included in the working population)
Housing	80% small brick houses with ‘terracotta’ roofs and low living standards
Access to finance	No banking or financing facilities in the village
Electricity & tele-communication	24 hour grid-connected electricity facility and mobile phones for most male working members. During rainy season and summer the power cuts could range anywhere between 2-4 hours a day.
Water sources	1 common village well, 1 open pond, 1 common overhead water tank
Sanitation	No sanitation facility in most houses (except big farmers)
Access to education	Primary school for children up to 12 years old (or 7 years of education)
Access to health services	None
Diet	Mainly vegetarian with homemade bread made of millet or wheat
Language	Gujarati, some can also speak Hindi
Religious ties	Mainly Hindus with a few Muslim households

¹⁰ A Seed-farm is necessary for producing certified seeds used by the farmers.

4.3. Research design

Hancock and Algozzine (2006) use the analogy of a map to describe the importance of a research design. Just as a map helps a traveller in a new place to take critical decisions regarding the route, a research design helps in making important decisions regarding the research. As a ‘blueprint’, it is ‘the logical sequence that connects the empirical data to a study’s initial research questions, and ultimately, to its conclusions’ (Yin, 2009, p. 26).

After reviewing several research design methodologies both in social sciences and geography, it was decided that this thesis would be guided by five components (see figure 4.1). This section expands on the interrelated elements of the research design used for this thesis.

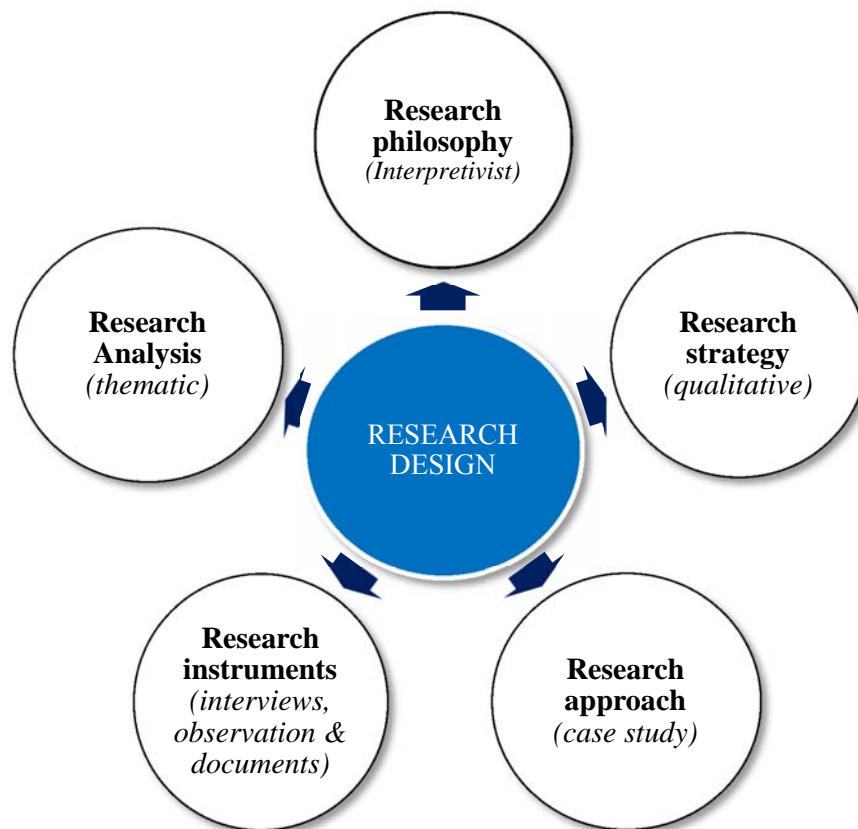


Figure 4-1 - The essential components of research framework (source: author)

In the development of social science research, different schools of thought and a diversity of approaches and methods of enquiry have emerged for understanding the relationship between space, society and environment (Cloke *et al.*, 2004; Hoggart, Lees & Davies, 2002; Kitchin & Tate, 2013). Out of all these the positivist and interpretivist paradigms have dominated human geography research. While positivists argue that only knowledge gained through scientific observation of facts can explicate theoretical generalisations, interpretivists argue that human behaviours, perceptions, emotions and beliefs are important in the search for knowledge (Kolakowski, 1972; Brannen, 2005). Of particular importance to this thesis is the interpretivist paradigm.

Human geography's long association with cultural and social aspects drove researchers to embrace qualitative research within the interpretivist paradigm (Baxter & Eyles, 1997; Crang, 2002). In addition to being less structured and more flexible, a qualitative research strategy provides in-depth perceptions, negotiations, impressions and shared meaning of interviewees' everyday realities and their social worlds (Limb & Dwyer, 2001; Philip, 1998). In short, it 'gets under the skin' and captures a real-life picture 'as it happens' (Gillham, 2000, p.2). As this research seeks to uncover meanings, concepts, definitions, characteristics and descriptions of justice aspects in the solar park implementation, a qualitative research strategy was selected.

Within the qualitative research strategy in human geography, multiple approaches have been in use in the past few decades (Eyles & Smith, 1988; Philip, 1998). Of the almost fifty different approaches to qualitative research identified by Tesch (1990 [reprint 2013], p.58), a 'case study' design was adopted for this thesis. Case study methods in social sciences are useful to understand complex social phenomena, in that they help to understand holistic and meaningful characteristics of human activities in the real-life world

(O’Leary 2005; Yin 2003). These real-life events include individual, group, institutional, community, social, political, and related phenomena (Gillham, 2000; Yin, 2003). Case study methods are found in a wide variety of academic fields including economics, business, sociology, political sciences, psychology, and linguists. This method is rightly relevant for this research as it seeks to illuminate the solar park implementation within its real-life geographical context: why and how it was implemented, and with what socio-cultural, and political implications. While case studies can be predominantly categorised into single-case or multiple-cases (Yin, 2009), as this research looks into implementation of only a single location based Charanaka solar park, it adopted a single-case study approach.

While there is a repertoire of research instruments for conducting case study based geographical research, this research mainly used interviews, activity observation, and collection and analysis of documents (Marshall & Rossman, 2010; Yin, 2009). The first method adopted in this research was ‘interviewing’. Of the different interviewing methods, considering the need for a more complex social interaction within a short period of fieldwork, this research adopted open-ended in-depth interview method (Yin, 2009). While interviews could arguably be manipulated according to interviewees’ personal interest, ‘observation’ of people’s real-time events provides a record of the infrastructure of a place, the habitat and, the socio-cultural practices and behavioural aspects of a society (Mukherjee, 2002; Kitchin & Tate 2013). Thus, observation was particularly useful to capture the dynamic social and livelihood patterns of the pastoral Rabari and farming communities in Charanaka which otherwise wouldn’t be possible through other methods. The third method of data collection adopted in this study was review of documents. These documents include closed ‘official’ government policy documents (both in English and

vernacular languages), census data, unpublished grey literature and dissertations by local universities, newspaper articles, and published information on government and think tanks' websites. While review of documents provided detailed accounts of how specific institutions reacted to the solar park implementation and valuable insights into the structures of the policy making institutions, the issues of authenticity, reliability and validity also need to be considered (Yin, 2003).

The next stage of this research was making sense out of the information collected, through data analysis and interpretation. Data analysis is an essential stepping-stone towards forming concepts from the findings (Given, 2008). For data analysis while different analytical techniques such as thematic analysis, narrative analysis, time-series analysis, pattern matching, explanation building etc., have been identified by researchers (Bryman, 2008; Miles & Huberman, 1984; Yin, 2009), this research embraced thematic analysis. According to Braun and Clarke (2006), thematic analysis is particularly useful for qualitative based social science research as it minimally organises and describes a data set in detail. As the research questions in this thesis are based on themes, such as procedural justice, distributional justice etc, thematic analysis makes it easy to identify, examine, record, analyse and interpret themes (within the data) that are important to the research and are related to a specific research question. For this research, with a 500 page transcribed dataset, as a manual process could be cumbersome and time-taking, I resorted to computerised software NViVo. The software facilitates the researcher to review, code, categorise, synthesise and interpret information easily and provides for easy editing in future.

4.4. Data collection

The data collection took place in two stages: secondary data collection which was carried out in Birmingham prior to the fieldwork and primary data collection which was carried out in India.

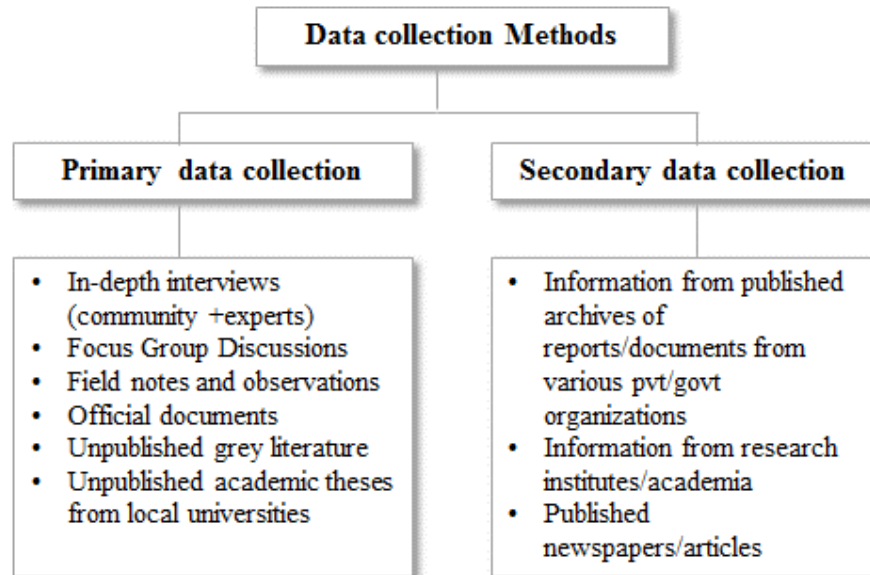


Figure 4-2 Research instruments employed for data collection (source: author)

Prior to the fieldwork, some information, through published web archives of reports/documents from government organisations, academia and think tanks on solar energy and more specifically Charanaka solar park, was collected in Birmingham. This stage also involved analysing the legal and regulatory framework of solar energy in both Gujarat and India. This helped to identify the policies and the major institutions involved in Charanaka solar park implementation. Secondly, web-based published newspaper and magazine articles on solar park were also gathered in Birmingham. These sources provided different views on the solar park.

Once in India, before getting into the field, to get an understanding about the project and the region, and to arrange my logistics, a few meetings with the project implementing authority were conducted in their head office in Gandhinagar. During meetings I observed that my young female and urbanite status initially made many officials uncomfortable. The project manager suggested ‘why do you want to go there, it’s so far, remote with no proper connectivity? Why can’t you do other case?’ These kinds of admonitions by my friends and other government people had almost scared me initially. However, I was able to overcome these with proper logistical planning.

The actual fieldwork was conducted in two phases i.e., during and after the implementation of the solar park. Much of the data using the three methods was collected during the first phase; the second phase, due to relatively short period, involved only observation. The fieldwork in the first phase was conducted between September 2011 and January 2012, and the second phase was conducted between October and November 2012.

Three main methods were selected for conducting fieldwork, viz. in-depth interviews, activity observations, and collection and review of documents. Whilst some secondary and basic published documents were collected through the internet in Birmingham, more important documents, such as Master plans, Detailed Project Report (DPR), preliminary environmental assessment, etc., and unpublished literature were collected from primary fieldwork in Gujarat. Using these multiple sources of evidence provided access to a range of information about the solar park and Charanaka.

4.4.1. In-depth Interviews

The first and most important method of this research was in-depth semi-structured interviews. The three major groups of actors identified for interviews were - a)

government representatives – who include various state and local governmental organisations involved in the solar park, b) project developers – involved in investment of the solar park and c) local community – specifically Charanaka village. Identifying these actor networks prior to fieldwork was helpful in the process of conducting interviews. As there was no specific and detailed information about who was involved in the solar park, most of these actors were contacted in the field.

Since there were a variety of actors involved, different interview guides were used for different actor groups. Though all the interviews with the three groups were guided by these interview guides, sometimes the wording and the pace of questions were tailored to the situation and interviewee's comfort. Furthermore, though I was aware that using different guides would produce different responses varying from one group to another (Valentine, 1999), the idea that such kind of interviews could facilitate access to vivid insights on the research topic persuaded me to choose them. The choice of questions in the interview guides (See Appendices V, VI, VII) came out of my theoretical knowledge on the subject coupled with international references on procedures related to social and environmental impact assessment of infrastructure projects (ADB, 1994; GIEK, 2010a; GIEK, 2010b; WCD, 2000; World Bank, 2011a) and previous unpublished works from my Masters education and professional work experience (CEPT University, 2008; LEA Associates, 2007). Using the interview guides as a starting point helped in opening up in-depth discussions on the solar park project and its implementation.

Community interviews

The interview process started with the community interviews. The path to conducting interviews started with finding and gaining access to potential interviewees. Considering

that not much information was available about the village, a mixture of snowballing (Oliver, 2006) and purposive sampling (Bloor & Wood, 2006) methods was adopted. After a discussion with a ‘village elite’ (a large land-owning Gadhvi farmer), who helped me to find a place to live in a Hindu temple¹¹, he was requested to locate interviewees. This helped me to identify key interviewees of different castes who in turn helped initiate access to other interviewees of their respective castes. At the same time stratified purposive sampling was used to search for ‘information-rich’ samples (Patton, 1990; Baxter & Eyles, 1997). Using this was helpful in getting representation from all castes and as many voices as possible within those castes. Based on the household social structure information collected from the village *Anganwadi* office (see table 4.2), purposive samples - relevant to factors such as caste and occupation - were selected. Considering the dynamics of the community and in order to get a reasonably representative sample, 30 focussed interviews each for about 1- 1.5 hours were conducted (see Appendix II for list of community interviewees). Though this number of interviews provided a detailed picture of the community dynamics, it took a little longer than anticipated.

The actual interview sessions were conducted using the pre-determined semi-structured schedule. While the interview guides were prepared in English, the questions were translated into *Gujarati* (the language of Gujarat) during the interviews. Every interview was started with me introducing myself, the motivation behind my visit to the village, and with a general discussion about the practices and traditions of the local community (see Appendix V for a sample community interview schedule). This created the ‘human moment’ necessary to bridge a gap between the researcher and the interviewees. Informing participants at the start of the interview that I spoke to the village elite helped to create trust

¹¹ No safer accommodation facilities were available within 70kms of the village.

and respect. After this short general discussion and some unstructured questions on their day-to-day activities, the interview finally moved to semi-structured questions related to the research area. This helped the interviewee to settle down and comfortably respond to the questions. During the interview procedure, when it was felt that the participant had little knowledge about the solar park or issues associated with it, or if it was felt that the participant was fabricating responses, the interview was brought to a close in a polite but not abrupt manner. For example, one interviewee first said that he will sell the land to the government and buy elsewhere. After his mother came and started saying that ‘whatever it may be we will not give land’, he quickly changed his previous opinion. Such kind of opinions and changed answers were carefully taken into consideration. While in most cases it was ensured that the interview was one-to-one, as in the above example it was not always completely private. At times due to eagerness a few surrounding people also used to contribute their perspectives. Watts and Ebutt (1987) describe that this is quite common in interviewing methods, especially when working in rural areas. The in-depth interviews with the communities in general provided two categories of information i) socio-cultural information about the community and ii) information about the solar park implementation and related issues.

One important aspect that was observed in the interview process was that the village is still dominated by a patriarchal system. Any matters related to occupation and work are dealt by men. So even when I started discussing with women, the conversation was often taken over by men. So the name and gender of the person who spoke most were written in the interview notes. I also found that women knew much less about the solar park and often the answers were ‘we don’t know anything’.

Apart from the formal interviews, listening to stories of people, their narratives about the village and their complaints during informal conversations were particularly informative in this research. These informal, yet enlightening conversations naturally allowed the informants to describe several stories about the socio-cultural aspects of the village in general and related to the solar park. Apart from strengthening the trust of the interviewees and unravelling issues which might not be revealed through standard interview procedures (Teye, 2012), being empathetic towards those informal conversations also facilitated ‘opening up’ for formal interviews.

Creating rapport and gaining trust of the local communities by initiating talks about the community everyday life, local culture, their livelihoods and festivals helped in supportive reactions and even eliciting positive feelings during the entire period of my stay in the village. I agree with Mukherjee (2002) that accepting the deprived and marginal people as teachers and learning from their skills, livelihoods, their problems and preferences with a positive approach, transparency and respectful behaviour could ‘break the ice’ and eventually build rapport and trust between the researcher and the researched.

Expert interviews

After the community interviews, expert group (project developers and government) interviews were conducted. Similar to the community interviews, snow-balling or my previous direct contacts were useful methods in finding potential interviewees. In fact, upon contacting the project implementing government organisation, potential interviewees of other government organisations and project developers were easily identified. With the contacts given by the project implementing organisation, a letter written by my original supervisor (see Appendix VIII for fieldwork support letter), and a letter obtained at the

beginning of my field (in September 2011) from the principle secretary of a top bureaucratic organisation requesting all solar park related institutions to support my fieldwork, it wasn't too difficult to get access to both the business and government interviewees. My previous contacts with some senior officials in other bureaucratic organisations in Gujarat helped me getting in contact with the principal secretary. In fact, despite their busy schedules and long working hours under high pressure, I was able to gain immediate access. Even when I went 'knocking on the door' for an interview, they agreed. This helped in saving a large amount of time which is unusual with business interviews (Mullings, 1999; Ganga & Scott, 2006).

Out of the 19 business developers in the solar park, 14 interviews were conducted. In addition, 6 interviews were carried out with government representatives (see Appendix III & IV for a detailed list of expert interviewees). Both face-face and telephonic interview methods were used in interviewing them. The telephone interviews were conducted where the interviewee was either out of city or too busy to meet in person. While a majority of the interviews were conducted at their site offices by simply 'knocking at the door', others were conducted with prior permission at different places such as head offices, hotels etc. In most cases, except the local government officials the interviews were conducted in English using the interview guides (see Appendix VI for sample project developer interview schedule and Appendix VII for government interview schedule).

Given that the interviewees were experts, the ordering of questions and the interview procedure had to be strategically worked out. Information on issues such as experience in the solar park implementation and problems encountered by them was preliminarily sought. Taking into account the suggestions of previous work (Healey & Rawlinson, 1993), questions on sensitive issues such as land acquisition and local communities were

left to the end of the interview to allow a greater time for building trust and confidence. During the interviews it was also observed that some of the responses were in defence of the state government, in that because they invested in a project implemented by the state they were naturally guarded as to what they revealed, and diplomatic in their responses (Ganga & Scott, 2006). This could pose a question over credibility of the information. In such cases, credibility of the information from all the interviews was based on how many interviewees answered a question with similar accounts.

In both the community and expert interviews, follow-up questions through probes and prompts were used where required to establish clarity on issues relevant to the research. This also helped in establishing validity of a statement made by an interviewee. In some cases, I didn't need to use prompts and probes; the interviewees provided examples and long stories about their experiences with the solar park and their expectations.

Research ethics

As this research studies 'a contemporary phenomenon in its real-life context' all the necessary ethical concerns were addressed at different stages of the research (De Vaus, 2001; Yin, 2009, p.73). Before commencement of the field work in 2011, the research attained University of Birmingham's (UoB) Ethics committee approval. As most of the community interviewees were illiterate, no written consent was taken from them. Along with providing information about the researcher and her research topic, the community interviewees were explained the purpose of the research, how they were selected, the approximate time of interview, and the complete right to end the interview at any point. All the respondents were very open to me and said that written consent was not required, and that I can use any information shared by them in any way. Even in cases where the

interviewees were literate, the opinion was the same. In the case of expert interviewees, written consent was taken on a form which provided information about my identity, my university, and the research topic (see appendix IX for a sample consent form). At the end of the interviews, all participants were debriefed and asked if they wanted any parts to be excluded (Denscombe, 2005). While both the community and expert interviewees' names remain anonymous at every stage of the research, the gender and caste of community respondents, and gender and job of the expert interviewees are identified to understand the context of the quotation. All respondents gave verbal consent about using their quotations in the research.

Elwood and Martin (2000) suggest that the physical location of the interview itself affects the responses. Keeping this in mind, interviews in most cases were conducted in different locations and at most times the participants were invited to suggest a suitable location for them. For example while the business developers interviews were conducted at a wide range of places including construction site offices in Charanaka, head offices, solar manufacturing plants and even hotels, government representative interviews were conducted at their respective government offices. Community interviews were conducted at places the interviewees were comfortable; these included their 'home grounds', temple, walking in the village etc. In all cases every effort was made to ensure the participants' comfort, safety, confidentiality, and privacy.

For accurate rendition, with prior permission of the interviewees, most of the interviews were audio recorded. In cases where the interviewee refused recording or appeared to be uncomfortable, only field-notes were taken. For example one government interviewee while discussing about the solar park did not consent to be recorded. In this case, only hand-written notes were taken and after the interview the field-notes were expanded for an

in-depth record of the interview. He consented for the information to be used on the condition that I didn't mention his name explicitly anywhere.

4.4.2. Observation

The second method of data collection adopted in this research was observation. Yin (2009) argues that as observation takes place in the natural setting of the 'case', it yields additional information which might be difficult to capture through other sources of evidence. With prior consent where necessary, observation recorded through photographs (Dabbs, 1982) and field-notes imparted a new dimension to the process of understanding the solar park implementation and the social and livelihood patterns of the village communities. Similar kinds of observation methods, using photography as a tool, are also found in other exemplar works in ethnographic anthropological studies (Hopkins, 1998; Becker, 2000)

Observation was used as a method to understand the lives of the villagers, their day-to-day activities, their socio-cultural contexts, their livelihood activities, and as a validating support for statements made by the interviewees. The observation was less structured, sometimes unscheduled, and sometimes even 'on the go' when I was moving around the village and interacting with people. During the first couple of days I observed that the people's daily activities generally began in the early morning (between 5-8 am) when the men left for solar park work or traditional occupations such as farming and pastoralism and the women were busy doing household chores. This was repeated during the evenings when the men returned from work (between 6-8pm) and some elders were sitting in groups

for informal conversations. Observation of community activities, as an unobtrusive method imparted a nuanced understanding of the complex lived-experiences, cultures and everyday human behaviour of these not-so well researched and documented communities.

Observations also included several site visits to the solar park construction site. Where I conducted on-site project developer interviews, I requested to visit their construction site. To my surprise, this request was kindly granted every time; in fact, before I requested, some of the project developers suggested visiting the construction site. During the interviews and visits, I observed that the construction site was full of male workers. Though initially I did feel uncomfortable being in all male-surroundings, I didn't feel threatened. This uncomfortable condition subsided with several site visits made over a prolonged period of time.

At the end of each observation as described by Creswell (2012), points such as i) a brief description of observation (participant (s) and setting (s)); ii) time, date, location, and length of observation, and; iii) short reflections (experience) were noted.

4.4.3. Document review

The third and final data collection method adopted was collection and review of documents gathered during fieldwork in Gujarat. Document review, as a source of evidence was used to corroborate and augment evidence from other sources (Yin 2009, p. 103). Apart from the not so easily accessible documents such as 'Master Plan (MP)' of solar park, and 'Detailed Project Report (DPR)', district census from the Census of India office, maps of the solar park and geographical information of the place, vernacular language documents, newspaper clippings and other articles on the solar park that appeared both in English and vernacular mass media were collected whilst in Gujarat. Specifically for accessing the MP,

and DPR, a letter and a telephone call from the top bureaucratic level were required. With my prior contacts in Gujarat, to whom I got access through my uncle, I was able to get access to the top bureaucrat who was involved in the project implementation. After his letter and personal call, I was able to review the confidential documents in the office of the project implementing organisation. They were not allowed either to be photocopied or taken out of their office. For information on the ecological and environmental system of the 'Rann of Kutch' region and the project region, various documents from the 'Gujarat Ecological Commission (GEC)' were collected. My personal contact with a top bureaucrat in GEC was particularly helpful. Another important primary source of documents related to the project was various local university libraries in Ahmedabad. Periodicals, magazine articles and undergraduate dissertations which are not available electronically were acquired from local universities.

Though review of these documents provided rich information about the solar park, considering that the documents were written for the specific purpose of project development, the reliability of the content needs further consideration. Furthermore, though the review of documents for relevant information could be the best unobtrusive method, the validity of the information provided through this is often debated.

Throughout the three data collection methods and at all stages of data collection, field notes were recorded in a research diary to provide running commentary and reflection on the day's activities. Mukherjee (2002) explains that field notes help in reminding of the empirical setting, and with key events and information about the respondents and data. All through the course of data collection, the field diary was used to jot down the observations, impressions and important points of the activities carried out (Van Maanen, 1988).

4.5. Positionality, power & access

In social science research information sharing by the potential informants depends on myriad positionality factors such the researcher's age, gender, class, cultural background education, ethnicity etc vis-à-vis the researched's power, acceptance and other bureaucratic obstacles (Narayan, 1993; Srivastava, 2006). Considering the multi-language and multi-cultural background of the author as well as the researched, discussing the issues of positionality encountered certainly becomes imperative. Apart from describing my positionality, this section also explains the power relations and access issues encountered. The contribution of this section is reporting the experience of conducting research in developing countries, specifically a socio-culturally complex and dynamic country like India.

4.5.1. Insider/outsider status

Before describing my positionality, it is important to discuss my multiple identities. At the time of fieldwork, I was an Indian living in the UK for one year for my PhD. Apart from frequent travels for work purposes across the world, for most of my life I had been living in India. I was born in the southern state of Andhra Pradesh, so my mother tongue was Telugu and not Gujarati. After my undergraduate degree (for about 7 years), though I had been living in Gujarat and though I am fluent in understanding the language and culture of Gujarat, I am not a native Gujarati. Living in cities and going to an English speaking Catholic school had made me an alien to the rural side of the country. Apart from once conducting a short ten day rural study as part of my graduate degree at CEPT University in Ahmedabad I had never been to a village. So I never had a close understanding of the

villages of India. These factors had made me anxious about my fieldwork. I knew I would have to shuttle between multiple identities/positions.

Though initially I planned to set off to the field alone, because of the remoteness of the region, and the lack of secure living facilities in and around the region, my partner refused to let me alone and accompanied me to the village. Whilst this was the main reason, the fact that he is a native *Gujarati* from the hierarchically uppermost *Brahmin caste* was another factor. In fact, because he is a Brahmin, I was allowed to live in the Hindu temple. Considering the lack of accommodation facilities up to 75kms distance, the caste certainly played a major role for better access to and acceptance of the local community. However, during interviews with expert respondents there was no role of caste or religion.

In India's rural areas, caste and religion play a dominant role in defining the position of a person (Chacko, 2004). During the interviews, the first question posed to me was about my caste. As I am very uncomfortable about this social stratification system, every time somebody asked about my caste, I answered it by saying that I belong to Gujarat Chief Minister's (CM) caste. During the course of interaction, the dominant perception was that we (me and my partner) were 'privileged' Hindu, upper-caste (and class), educated, urban Indians. Being an Indian, and a Hindu, while I share a general 'insider' status, my 'non-Gujarati' status coupled with my upbringing in cities made me an 'outsider' to the community. Furthermore, due to my class, education, and affiliation to a UK university, several interviewees perceived me to be a privileged Indian who doesn't understand the complexities and the suffering of these poor rural communities. For those who lost land or had impending land loss, I could not understand their suffering because I wasn't in their situation. During the interviews, some of them often began the responses with 'you don't

know how difficult it is.....’ or ‘you may not understand...’ These two short quotations explicitly reveal my ‘outsider’ status. While I was deeply affected by their plight and was increasingly becoming sympathetic towards their experiences, I seemed to be walking in the steps of Soni-Sinha (2008)’s experience by not being able to do much about the improvement of their lives.

While the dominant perception existed till the end of my research, it was partially blurred after I accepted food and water from all hierarchy groups while conducting interviews. Though I knew about the existence of social stratification in India, perhaps due to my urban living, I was very uncomfortable about being labelled with caste and class. At all points of field work, though I wasn’t able to reject the local perceptions about caste and class, at least I ensured myself to reject any caste, class-based or religion-based hierarchical structures. I also changed my dressing sense, mannerisms, use of language specifically with elders, and also maintained some local protocols in efforts to change the dominant perception. Unlike my usual casual wear, I preferred to wear a full-sleeved and full-length ‘salwar-kameez’ with ‘dupatta’¹², a traditional three-piece dress worn by most young women in India. I tried to experience their life throughout my stay by living in an extreme climate with no comfortable living conditions, lack of proper food and water to even bathe. These simple and sensible factors partially created an ‘insider’ position both in the eyes of men and women. Various previous researchers who worked in India also stressed the careful choice of dress, respecting local cultures, simple gestures and language as major factors for gaining access (Soni-Sinha, 2008; Srivastava, 2006).

¹² ‘salwar’ is a loose trouser and ‘kameez’, a half or full-sleeved, is top over the trousers. ‘Dupatta’ is a long-scarf worn by a woman over the ‘kameez’ around the entire torso. In Britain this is often termed as ‘Punjabi suit’, which came from the state of Punjab, and is worn by South Asian women.

While doing business interviews, I was an ‘insider’ by virtue of my nationality, but as a doctoral candidate at a UK university and seeking information on solar park implementation, I was an outsider. My education and demonstration of sound knowledge on the topic many a times helped to create a positional space. Apart from creating rapport with the business developers, this also created confidence. For example, a couple of project developers offered an ‘open job’ to me in their companies by asking ‘tell me how much you want?’ (Respondent #14, ZFS). On the other hand, for the government representatives, despite my fluent understanding of culture and language, my ‘non-native’ Gujarati status and being a doctoral student at a UK university were default factors of outsider status. Though they symbolically respected my education and knowledge compared to my age, I was never an insider for them. I was also aware that the amount of information provided by these expert groups would depend on their perceptions of my insider/outsider status.

Throughout the research there was constant slippage between the two positions. Being a ‘native’, or ‘insider’ by nationality, I was able to penetrate and interpret the culture of the communities and the power relations of the government from an intimate position (Narayan, 1993). My multiple oscillating positions and the easy movement along the axis of multiple identities also helped me to reach to the insider stories.

I was juggling between the roles during the analysis as well. Considering that I am fluent in Gujarati and that I can translate and transcribe the interviews at the same time, I was an insider. On the other hand, when I had to translate local idioms, phrases, or typical names of trees, animals and birds, I had to resort to other sources. Here I was a visible outsider. This experience of dual identities and confusing roles during the analysis is also discussed in other literatures (Asselin, 2003; Dwyer & Buckle, 2009).

These multiple positionality experiences of ‘native’ Indian social scientists, who chose to work in their own cultures and communities, are numerous (Nagar, 2002; Chacko, 2004). These studies describe how in pluralistic societies like India and especially ‘given the varied cultural context of people in different regions, castes and classes’ and diverse languages, the so-called ‘Indian’ identity cannot completely position a researcher as an insider (Soni-Sinha, 2008, p.534). Likewise, I observed that my multi-language abilities, multi-city residencies and nuanced understanding of the research community did not gain a complete insider status. The binary of insider/outsider position in my case was highly fluid, unstable and subject to the dynamism of the research situation in time/place (Herod, 1999).

4.5.2. Power and access

One of the most important and implicit dimensions in positionality is how the researcher and the researched negotiate unequal power relations (Chacko, 2004; Teye, 2012). The issues from the power relations between the researcher and the government, the business developers and the local communities are certainly important in this research. Though I tried to maintain balanced power relations with all groups of informants, at times an imbalance emerged without me realising it immediately.

During the initial stages of gaining access to the community, the power was with the village elite who allowed me to stay in a temple. When conducting interviews with the local communities, observing their activities, I was more powerful; the community were temporarily colonised by the very presence of an ‘outsider’. I had the power of not only choosing the interviewees, but also choosing the length of stay in the village.

Many a times, despite stressing that I was a student, the local interviewees had mistaken me for an ‘official representative’ doing some sort of ‘survey’ to get information about

land availability in Charanaka. They also requested me to convey their problems and the needs of the village to the government. When I cast myself in the role of an ‘honest inquirer’ (Bouchard, 1976), the interviewees turned seeking advice on how and what action they should take to protect ‘their land’. Due to my privilege of higher education, they often considered me in the role of an ‘expert’. At times this had a direct impact on the interviews where the interviewees on some questions posed ‘you know better about this issue, we don’t know anything’ (Respondent #3, Male, Rabari). However, in due course these unequal power relations were resolved by constant negotiations, being non-argumentative and by openness to people from different socio-cultural and economic backgrounds (De Vault, 1999; Winchester, 1999).

I also had to renegotiate the power relations and trust by being neutral and objective and at the same time be genuinely empathetic about statements made by the interviewees. For example, there were instances when several community interviewees asked my opinion and stance towards the solar park implementation – whether I supported it or not. Related questions such as ‘who else did you talk to’, ‘what did others say’ also emerged during the course of interviews. In those situations I had to softly deny or divert the topic to be neutral and to protect the confidentiality of other interviewees.

At the same time, due to restrictions the access to the solar park was gained through top bureaucracy. My previous contacts with principal secretaries of various key departments in Gujarat was helpful. These contacts were made through a chain of references: an initial contact to a principal secretary in the ‘Department of Environment and Forests (DoEF)’ of Gujarat was made through my uncle’s reference. From this, I was able to make several contacts. In the process, one important contact with a principal secretary of the department

responsible for energy development in Gujarat was helpful. In fact, as the bureaucrat was also pursuing a PhD in India at the time of my visit, he was empathetic towards me and my research. After showing the request for fieldwork support letter written by my original supervisor (see Appendix VII for fieldwork support letter), and having a short conversation about my research and its relevance to Gujarat, he provided me with a letter that could enable me to get access to every department involved in the project. That letter and authorization from the top bureaucratic level helped in reducing the power differences between my position as a researcher and the expert interviewees. Although with this letter it was easy to access the good-natured, open and receptive business developer interviewees, there were still issues with some of the government representatives.

Another factor that emerged in these negotiations of power relations with experts was age and gender. Both the business developers and government informants saw me as too young a female researcher to be asking questions related to policy aspects, financial structures, and social issues which they thought was a task of ‘grey-haired experts’. However with business developers age and gender also emerged as beneficial factors for two reasons: first, most of them would have children of my age and pursuing some kind of similar higher education and the second, I invoked sympathy as a ‘harmless’ female researcher. Similar to my experience, various other researchers argue that age and gender, especially with male interviewees, could influence the research process (Herod, 1993; Mullings, 1999). On the other hand to some of the government representatives I was an Indian PhD researcher in the UK trying to negatively portray and badmouth the actions and activities of the government. They were suspicious: why was I doing this research and who was funding my research? What would be the outcomes of the research? These questions are similar to those encountered by Sanghera & Thapar-Bjokert (2008). In fact, when one of

the government representatives from the project implementing authority came to know that I was residing in the village and conducting community interviews he was unhappy. There were several uncomfortable instances in which he explicitly exhibited his hostility. In one instance, despite the lack of safe hotel facilities within 75kms, and though the letter from the top bureaucrat authorised me to stay in the guest house of the project implementation authority for three days, he refused to allow me even for a day. Such issues of conflict arising between the researcher and the researched in different contexts, and the researchers experience of oppression in the power relations is well noted in previous literature (Narayan, 1997).

Despite all these issues, factors such as the common nationality and the fact that to some extent I share a common ethnic background, sympathy for a female researcher and my considerably higher education facilitated access to diverse and rich information on the research topic. It could be argued that in the perspectives of the researched, I had certainly transformed my positions between ‘untrustworthy spy’ to ‘well-respected feminine researcher’ (Hunt, 1984).

4.6. Data analysis

Kitchin and Tate (2013) argue that data analysis methodology is an art. It cannot be prescribed by someone or rigidly defined. Based on the thematic analysis technique, and with the help of computer assisted software -‘QSR-NViVo’¹³ - I defined my own methodology for data analysis. The data analysis methodology used in this research can be condensed into five major phases (figure 4.3). However, the stages are not completely

¹³ Prior to fieldwork, training on NViVo was undertaken in 2011 at University of Birmingham. As I used this software in another project for the Centre for Learning and Academic Development at UoB, I am proficient in it.

linear, as they form a continuum with inductive and iterative procedures (Kitchin & Tate, 2000).

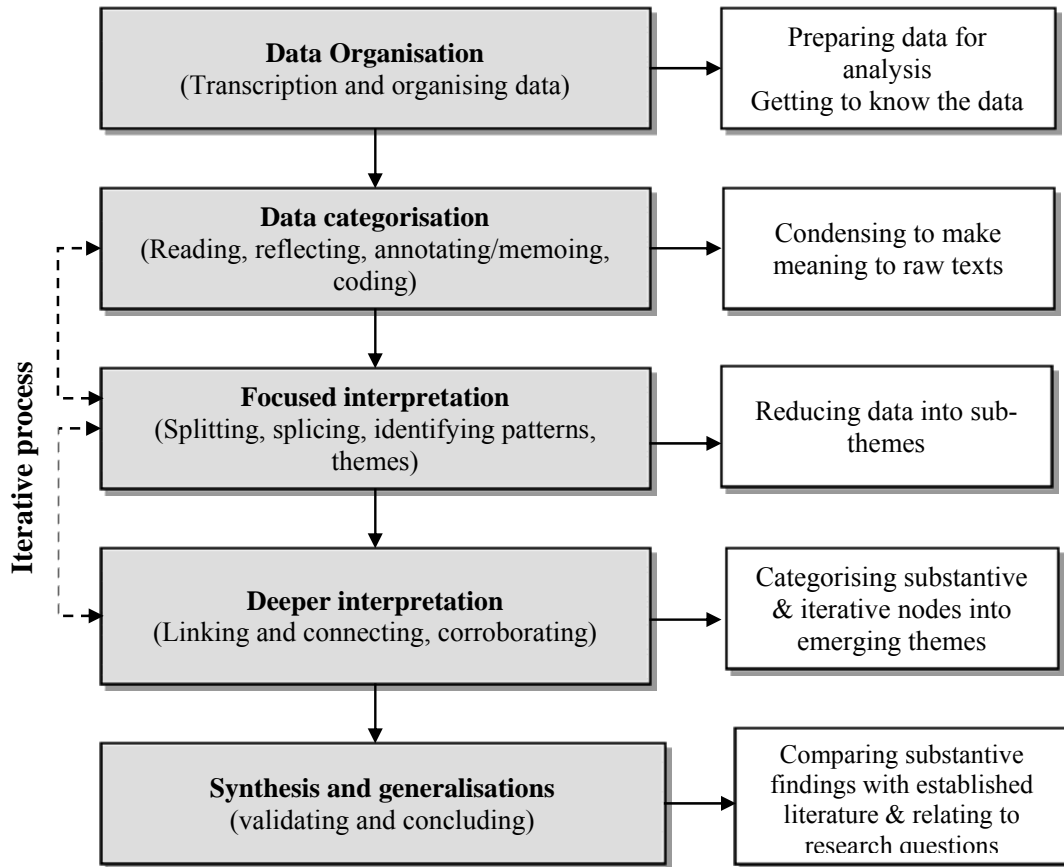


Figure 4-3 Inductive & iterative thematic analysis used (source: author)

After coming back to Birmingham from the fieldwork, the first task I undertook was organising the data into smaller, accessible units. All the data from interviews, observation and both hardcopy and softcopy documents was organised in different folders. Organising the data facilitated easy reference. After this, the next step carried out was translating and transcribing the interviews. Translation is particularly important in this thesis because the

interviews were conducted in multiple languages: *Gujarati*, *Hindi*, and English¹⁴ (also see section 4.7.3). After translating and transcribing, each interview was labelled with date, category, and respondent number (see Appendix. II, III & IV for transcription reference system of individual category of interviews). Both in analysis and the final thesis all identities of the individuals, places, and locations were anonymised for confidentiality of the interviewees. After transcribing and before coding, the typed papers were read and re-read for consistency and typos. This provided a foundation for initial analysis and getting to know the data.

Data analysis cannot be undertaken without breaking data into smaller bits and then joining the bits together (Dey, 1993). This means all the organised data needs to be further broken into smaller databits and placed into similar categories to make a meaning out of it. In the first instance, each word document of the interviews which were imported to NViVo was stored as ‘sources’. These sources were split and stored under the major themes of the research i) procedural justice, ii) distributional justice, and ii) solar policy development. Annotations, memos, comments of the author, which emerged during conducting interviews and across the course of reading the transcripts, were attached to the sources. Adding annotations and memos provided continuous logical reflections on the interviews.

Using NViVo through inductive and iterative process of reading and re-reading the sources, ‘text’ which linked or connected to the research themes or questions were coded as ‘free nodes’. After initial coding, text not relevant to the research questions was left out. Through initial focussed coding, 28 coded categories emerged. The best part of NViVo is that all codes in ‘free nodes’ are automatically ordered for any further reference. However,

¹⁴ While Gujarati is the vernacular language of the state of Gujarat, Hindi and English are both official lanaguages of India.

one important aspect to be considered is that though NViVo performs complex analysis through counting the occurrence of the words or codes, tabulating the frequency of different categories of codes and even Boolean searches, all the textual data need to be initially defined into different sets of codes by the user. Dey (1993) summarises that ‘a computer can help us analyse our data, but it cannot analyse our data....we must do the analysis’ (p. 55). Thus the data had to be prepared into categories and codes for further complex thematic analysis.

Data interpretation is a precursor to construction of findings and synthesis. After an initial focussed interpretation and establishing preliminary themes, deeper interpretation was carried out for understanding relationships between themes. For example one of the objectives of the research is to understand where the benefits and costs of solar energy implementation accrue. To do this, all the initial free nodes on ‘electricity’, ‘jobs’, which emerged from the interviews, were tabulated under the theme ‘project benefits’. Similar kinds of sub-themes were then tabulated under the theme of ‘distributive justice’. In this way after the initial identification and sub-categorisation, the ‘substantive’ statements – statements that really say something relevant to the research questions or themes – were grouped and categorised into the overarching themes called ‘tree nodes’ in NViVo (see plate 4-4). Based on the number of sources and references of ‘tree nodes’ and their ‘free nodes’ that emerged during the analysis, the quotations from the interviews were selected. Through a non-linear and iterative process of writing, the quotations were validated and synthesised with established literature. Four empirical chapters were built as draft chapters immediately after the data analysis.

In all through the process of analysis it was ensured that the four criteria of thematic analysis were addressed: i) the themes must reflect and respond to the research questions; ii) the themes must evolve from a saturation of the information; iii) themes should represent separate and distinct categories of findings; and iv) the themes should be as specific and explanatory as possible (Hancock & Algozzine, 2006).

Using thematic analysis with the help of NViVo helped to categorise every bit of new information with respect to a particular research question or a particular theme of this research. Using this qualitative analysis software was useful in terms of large storage, retrieval capacity and exploring new relationships as data analysis unfolded.

Name	Sources	References
Distributional justice	0	0
Accessibility issues	7	14
Cancellation of Narmada	3	6
Distributional justice of infrastructure	23	60
Project benefits	36	155
Electricity	0	0
Jobs & business	0	0
Procedural justice	0	0
Access to Information	14	39
Act of power	20	42
Community representation	18	30
Education and empowerment	22	45
Environmental Impacts	15	18
Impact on livelihoods	12	20
Land acquisition	19	47
Land rights	12	28
Lay knowledge on geographical area	6	12
Lay knowledge on project	8	9
Participation & voice	27	69
Respect and dignity	1	2
socio-cultural impacts	19	25
Trust	14	19
Socio-economic characteristics	0	0

Plate 4-5 - A screen shot of the nodes categorisation into themes relevant to the research (source: generated by author using NVivo)

4.7. Methodological reflections

The reflection on the research methodology enables a researcher to create meaning and interpretation out of research experience (Collins, 1992). Consideration of the dynamics of working in a ‘cross-cultural’ setting and on a research topic of national importance had certainly made me inclined to flag up the methodological issues and practical difficulties. This section discusses the difficulties encountered during the field work and with the

methods employed in this research. These reflections could help a future researcher address the issues identified.

4.7.1. Single case study design

One of the important methodological reflections for this research is the well-established critique on generalisability and representativeness of a single case-study research (De Vaus, 2001; Winchester, 1998). Not only in the previous literature but also during the field work I was constantly questioned about the validity of my selected single case study. For example, one of the business developer interviewees posed me: ‘why are you taking only solar park case, why not other solar projects in Gujarat?’ (Respondent #12, Sun Edison). While single case studies are widely argued to lack rigour, objectivity and generalisability compared to other social research designs, for this research based on newly established literature on energy justice, a case study certainly provides new avenues for knowledge production. The rationale for specific choice of research method needs to be taken into consideration at the stage of developing research design itself.

4.7.2. Timing of the field-work

Another issue, although out of my control, was the timing of the research. During the initial discussions with the project implementation authority I was told that due to torrential rains the accessible road to the site was completely blocked. Due to this, out of my four months of fieldwork, I couldn’t visit the site for the initial month. After this one month, for two months I conducted research in the village. In the month of December I conducted project developers’ and policy makers’ interviews. Despite their busy schedules and intense pressure to complete the project before December 31st 2011 (which was the tariff period set by the ‘Gujarat solar policy 2009’), the business developers were welcoming.

This might not be the case in all fieldwork, especially when conducting interviews with experts. Conducting the entire set of interviews in the available 3 months period, available in both the phases of fieldwork, also exerted an intense pressure. Thus, while planning fieldwork and scheduling interviews with often busy experts and mobile communities, and selecting research instruments and methods, these issues related to ‘timing’ need forethought.

4.7.3. Working in multi-language settings

Discussing the experience of working in multi-language settings is certainly important in this research. As discussed elsewhere in this chapter, the interviews were conducted in three different languages: Gujarati, Hindi and English. Although I am fluent in all of them, and there were no major issues during conducting interviews, difficulties arose at the translation and analysis stage. For example, after transcribing one interview directly from Gujarati to Roman Gujarati (by using Roman script instead of traditional *Devanagari* script), and then translating to English, I learned that the process demanded not only an enormous amount of time but also a great deal of hard work. Consequently, it was decided to translate and transcribe the interviews simultaneously; it means that I would listen in the source language and translate it to the target language i.e., English. While undertaking this process, I found myself engaged in continuous repetitions of the audio recordings to understand and precisely capture the strong Gujarati dialect of the community interviewees. This process also consumed a considerable amount of time – for example, one hour of Gujarati interview took about 4-5 hours to transcribe in English. A similar process was undertaken for Hindi interviews as well. The transcription of English interviews was verbatim.

During this translation I realised that certain words or phrases need to be ‘preserved’ in their original language (for example maldhari, taluka or panchayat), as they were of significant importance to analysis. At other times the interpretation of native words was a challenge. For example translating names of some trees, animals and birds into English was not an easy task. While I was successful in getting some of them translated by resorting to various sources, others were left untranslated. It was also a challenge to get the right representation of the interviewees’ views and stories. These issues in translation while working in multi-language settings were also experienced by previous authors (Herod, 1999; Srivastava, 2006). Despite these issues, the capture of overall meaning and patterns correctly was possible not only due to my proficiency in multiple languages, but also an ‘intimate understanding of the culture’ (Srivastava, 2006, p.218).

4.8. Conclusions

This chapter discussed the research methodology adopted in this research through a step by step process from research design to methodological reflections. This qualitative research on social justice and solar energy implementation in India was carried out using a case study design. Within the case study approach, it embraced multiple sources of evidence: i) in-depth interviews designed to elicit a vivid picture of interviewees’ perspectives on solar park; ii) observation to gain an insight into real-time lives and experiences and; iii) documents to corroborate and link evidence from the other two sources and to provide a critical analysis on the solar policy development in Gujarat. It is particularly important to highlight that the critical analysis of the documents collected from the fieldwork in Gujarat helped me in framing the first empirical chapter on analysis of Gujarat solar policy.

Both the interviews and observations also provided a great deal of insight into how the participants interpret solar park implementation. Using these multi-modal research instruments not only helped this research to gather information from diverse actor groups ranging from local communities through business developers to government representatives and academics, but also enhanced the ‘validity’ of findings. The interactions between multiple positionalities of the author and complex power dynamics were closely captured in this research. All the multiple positions had significant impact in gaining access to the interviewees, the entire research process and the findings of this research. The overall framework of the research starting from research design through data collection and analysis to conclusions is summarised in figure 4-4.

This chapter demonstrated that selection of appropriate research methods, researcher’s reflection on the way knowledge is produced in the field work, and recognition of appropriate technique for information analysis are all paramount aspects of a research. It is not the case that every ‘cookbook recipe’ for methodological selection would be applicable in all researches. The tools and techniques should be tailored to the context of a research, as was done in this case.

The next chapter seeks to develop an understanding on the solar policy development in India, by discussing the evolution of solar policy through different policies and programmes underpinning the development of solar sector in India.

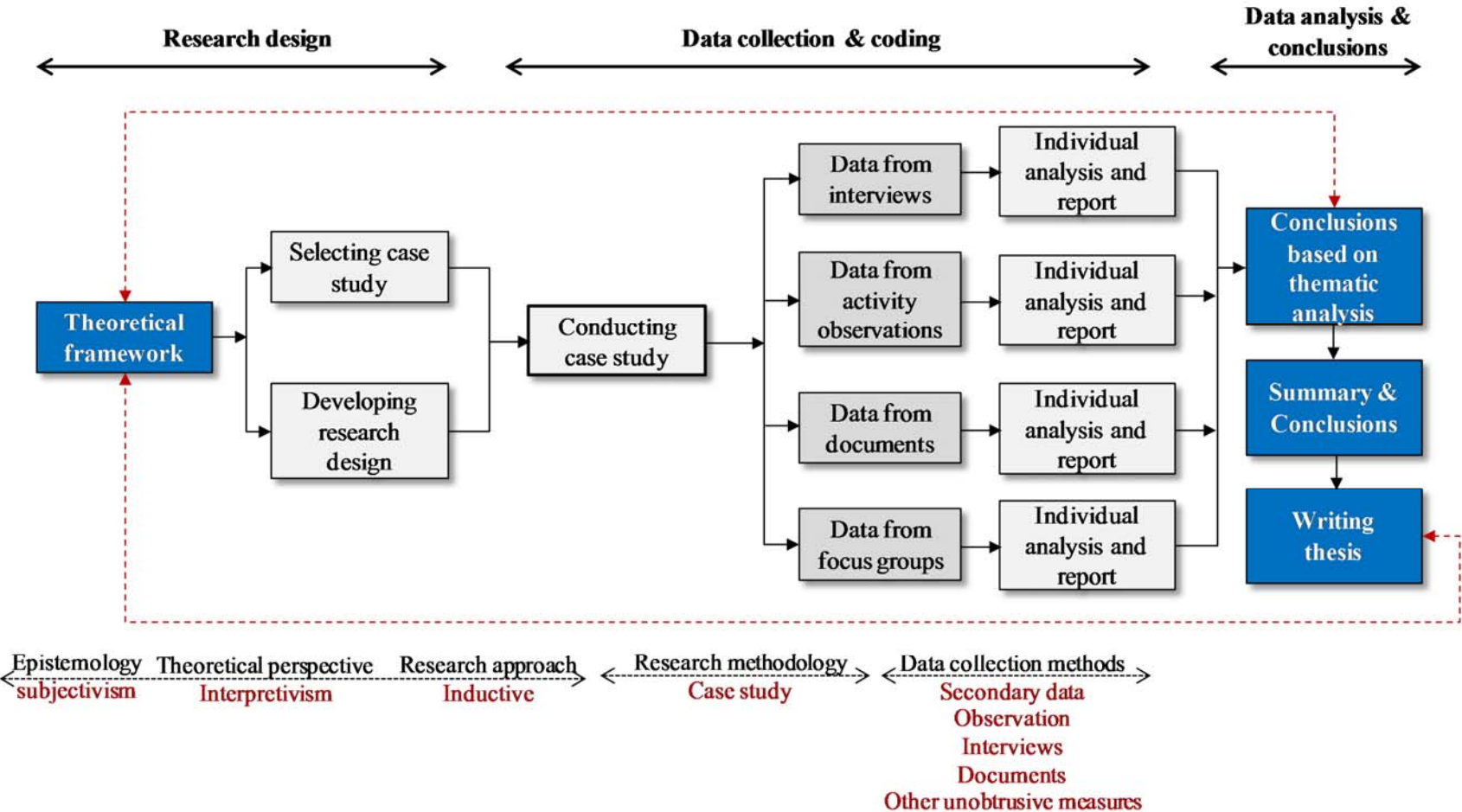


Figure 4-4 Framework of the research methodology (Source: adapted from Yin, 2009; Saunders, Lewis, & Thornhill, 2000)

5. EVOLUTION OF SOLAR ENERGY POLICY FRAMEWORK IN INDIA

India does have a chance to prove to the world that solar energy is an important tool to alleviate poverty and solve many of the energy needs in the lower strata of the society.

— Dr. Harish Hande, MD of SELCO Solar and Magsaysay Award Winner

5.1. Introduction

Between Independence in 1947 and economic liberalisation in 1991, India's national policy largely concentrated on economic development through internal industrialisation. The period post economic liberalisation has seen even more growth in the economy through intensifying industrialisation in the country. This industrialisation path to maintain high economic growth and to address poverty has been contributing to frequent blackouts and other energy-related challenges both in rural and urban areas (Bhattacharya, 2010). The power cuts range from 2-4 hours in cities, with over 4-6 hours in towns and 8-14 hours a day on average in villages (Krishnaswamy, 2012). However, these power cuts can vary between regions and states. This non-uniformity depends on several factors such as governance, implementation systems, management practices etc. To meet India's energy demand, it is estimated that the current installed capacity needs to be augmented to 800,000MW by 2031-32 (Parikh, 2005). With about 625 million people not having access to modern cooking fuels, traditional fuels still provide 80–90% of rural energy needs (Planning Commission, 2008).

Considering that this energy shortfall is a herculean challenge and resolving it will require an out of the box approach, the nation realised the limited potential of conventional fuels and the need for alternative energy sources to maintain its burgeoning economy and address rural energy needs (Ravindranath *et al.*, 2004; Balachandra, Ravindranath, &

Ravindranath, 2010). The role renewable energy (and specifically solar energy) can play in addressing India’s energy security and providing its populace with non-intermittent supply of clean and affordable energy for basic purposes, such as cooking and lighting, is studied by various authors and organisations (Bhattacharya & Jana, 2009; Neudoerffer, Malhotra, & Ramana, 2001; Planning Commission, 2008; Ramachandra, Jain & Krishnadas, 2011; Ummadisingu & Soni, 2011). Due to its huge potential, support for solar energy has been gaining momentum in the country (Chakrabarti & Chakrabarti, 2002; World Bank, 2011b). Solar energy investment in India has seen a steep rise with about \$10.2 billion invested in 2011 (Schario, 2012) (figure 5.1).

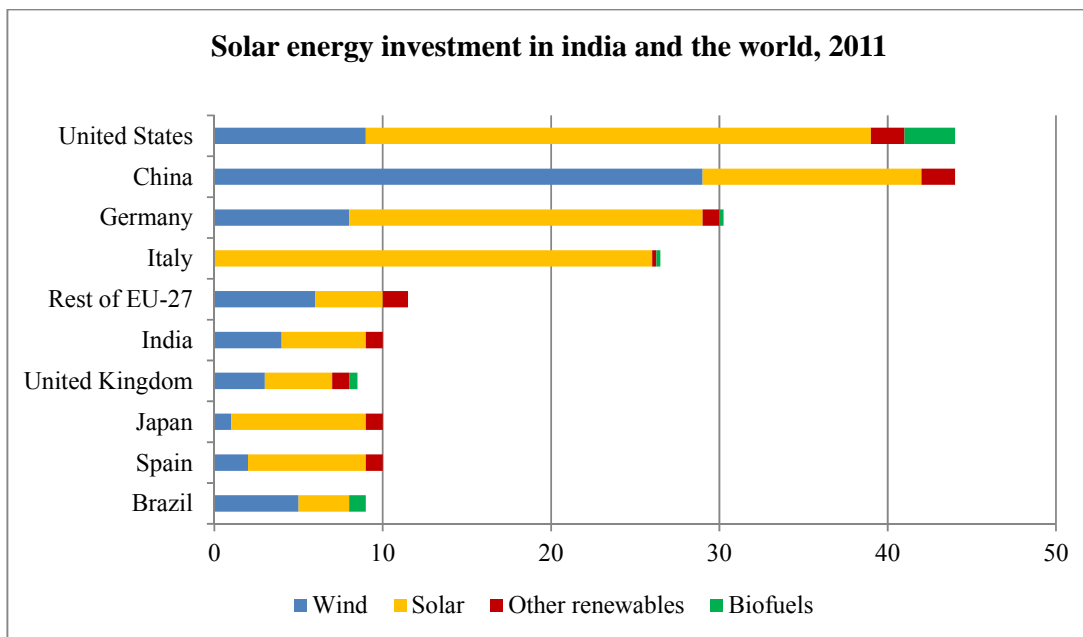


Figure 5-1 Solar energy position of India and the rest of the world by Investments, 2011 (billion US\$) (source: Schario, 2012)

So what bring this huge investment– what kind of policies or regulatory mechanisms have enabled the sector’s development? To answer some of these questions and to consider the future of solar sector development in India, the chapter outlines the historical development of policy and institutional framework of solar energy. After this introduction, the rest of the chapter is organised as follows: first, it briefly explains India’s legislative system. Second, the chapter attempts to track the evolution of solar energy policy regimes in the larger energy planning of India. Third, it unpacks the institutional set-up of solar energy. Fourth, it critically discusses the provisions for public participation in solar energy policy making and project implementation processes. Finally, the chapter ends with some concluding remarks.

5.2. India’s legislative system

Before tracing the evolution of policy framework, it is important to understand India’s legislative system. Such an understanding helps to explain how the policies are made. The law making powers are enacted within the three forms of government in India (figure 5.2) and the powers on each ‘subject’ between each form of government are specified in the ‘Constitution of India’. At the first level (central level), India has a Parliament system similar to the Westminster system with two houses – the ‘Lok sabha’ (Council of the People) and the ‘Rajyasabha’ (Council of States). The law making power resides with these houses. The central government has greater powers in many of the law making aspects. At the second level (state level), the central system is replicated at the state level through ‘Legislative assemblies’ and ‘Councils’. The state has powers on specific aspects: for example, for implementation of a development project, the state laws are applicable where that project is implemented. At the third level, for urban areas the governance is through ‘Municipal corporations’ (for cities), ‘Municipalities’ (for towns), ‘City councils’

or widely known as *Nagar panchayat* for transitional areas (i.e., an area in transition from rural to urban). An urban area is divided into one of the above three categories of administrative structure based on its size of population. For easier administration, several large urban areas in India, such as Mumbai and Delhi, are divided into zones, which in turn consists of numerous ‘wards’. At the rural level, a ‘Block’ (widely known as *mandal/tehsil*) is a rural area which serves as an administrative headquarters for a number of villages. The villages are governed by *Panchayats*. Unlike the central and the state governments none of the administrative structures at the district level have law-making powers. Finally, the *Union Territories*¹⁵ are directly administered by the Central government. As they are directly administered by the central government, they don’t come under the dominant three tier system.

¹⁵ Unlike the states which have their own elected governments, the union territory is an administrative division in India ruled directly by the president of India; the president appoints an administrator or lieutenant governor for each territory. There are seven union territories in India - Andaman and Nicobar Islands, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, National Capital Territory of Delhi (NCT), Lakshadweep, Pondicherry.

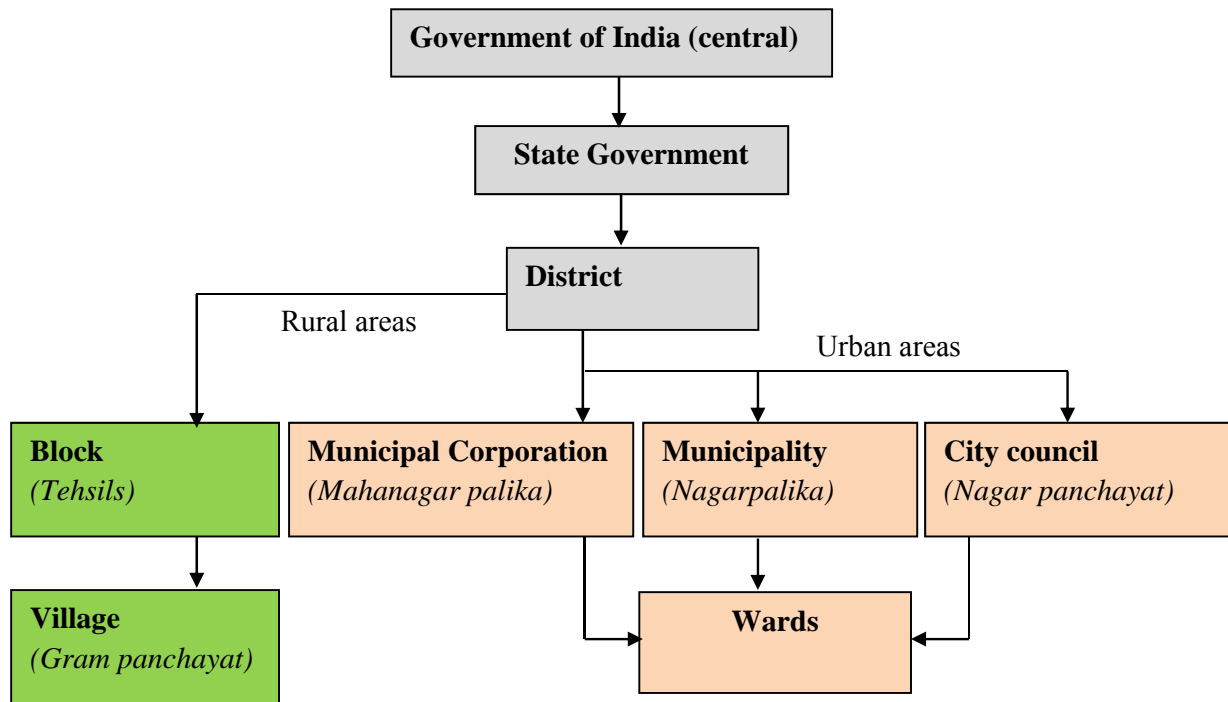


Figure 5-2 - Administrative structure of India (source : author)

As per the constitution of India, ‘electricity’, as a subject comes under the ‘Concurrent list, Entry 38 in List III, Seventh Schedule’, which means that it is a subject of both the central or union government and the state governments. The federal governance structure necessitates involvement of the central and the state governments in formulation or implementation of laws and policies in the electricity sector. There are two kinds of provisions for enforcement in any subject: a) legal provisions, where the hierarchy is **Act**>Rules>Notifications>Circulars>Guidelines, and b) administrative provisions where the hierarchy is **Policies**>Plan>Programme. Within these legal and administrative provisions, acts and policies facilitate any sectoral development.

The act, rules, notifications, circulars, and guidelines form the basis of legal provisions in the constitution. A bill (or an ordinance) that has been passed by both the houses of

Parliament (the state legislature for State Acts) and approved by the President (or the Governor) becomes a law and is called an Act. This law with a clear and consistent regulatory environment is constant and cannot change, but could be amended with change in governments. Rules are standard methods and procedures that explain how certain sections of an Act operate. A rule cannot contradict any of the provisions of an Act --- if it does so, an Act will prevail over a rule. A single Act may give rise to numerous rules, e.g. the different rules under the Environment (Protection) Act, 1986. Notifications and circulars are issued under various Acts to clarify the provisions of law. Guidelines are suggested courses of action.

Administrative provisions facilitate the functioning of legal provisions. These provisions include policies, plans, and programmes. Policies are intentions of Government. Policies have no legal meaning (and are not enforceable in court of law) unless a legislature translates a policy provisions into a law. However, sometimes a court of law invokes policy provisions in their judgement. It becomes a subordinate legislation. Planning involves analysis of conditions, setting goals, and developing methods of reaching those goals (e.g National Action Plan on Climate Change, NAPCC). Programming, in most cases, is associated to the development of an actual program of projects to reach that goal. The individual projects developed under plans are programmes (e.g. National Solar Mission developed under NAPCC).

5.3. Regulatory provisions for solar energy

The three major energy markets in India are (i) power or electricity markets, (ii) conventional fuel markets (coal, petroleum, gas, lignite etc) and (iii) renewable energy markets (Baker & McKenzie, 2008). Though each of the energy markets internally

interacts with others, this section concentrates on renewable energy markets – specifically ‘solar energy’. While there is no national law on solar or renewable energy currently, India and its states over the years have made various policies for solar energy development. This section outlines the evolution of India’s solar sector governance. It can be broadly divided into five phases: (i) Pre-reforms; (ii) Post-reforms; (iii) Post-Electricity Act 2003; (iv) National Five-Year Plans; and (v) National Solar Mission (NSM).

5.3.1. Pre-reforms

India’s national energy policy planning began prior to Independence, in 1910. The first ‘Indian Electricity Act, 1910’, emphasised infrastructural development for supply of electricity, generation and transmission through conventional fuels and attracting private capital. This was under enactment until the formulation of the ‘Electricity (supply) Act, 1948’. After independence in 1947, development was a priority for India, and hence, increasing the capacity of power supply for sustaining growth took centre stage along with the beginning of liberalisation of the power sector under the EA 1948. The Act also mandated creation of the State Electricity Boards (SEBs). Apart from these two acts, no major changes took place in the power sector until the 1970s.

The 1970s ‘oil shock’ is the major cause for India’s renewable energy (including solar energy) development. As a result of vision of the then Prime minister Mrs. Indira Gandhi, India’s journey on solar energy initiated in 1973 (Parthsarathy, 2003). In addition, the ‘Fuel policy committee (FPC)’, which outlined the ‘National Fuel Policy’, was also set up during that period. The aim of the policy was investigating the technical and organisational aspects of energy planning, and analysing the supply and demand options in the energy sector (Balachandra, Ravindranath, & Ravindrananth, 2010). A detailed report submitted

by the committee in 1974 identified the need for substitution of coal by renewable energy, (ibid.). The committee also suggested setting up an ‘Energy Board’ for integration of an energy plan into the national plan. Further, a ‘Working Group on Energy Policy’ formed in 1979 first identified the utilisation and integration of non-conventional sources of energy into the energy planning (ibid.). This was strengthened with the formation of the ‘Department of Non-Conventional Energy Sources’ in 1982 (Parthsarathy, 2003). The suggestions of the fuel policy committee came into implementation by formulation of the ‘Advisory Board on Energy (ABE)’ in 1983 which submitted ‘Energy Policy’ to the Prime Minister.

5.3.2. Post-reforms

It could be said that liberalisation of the power sector in the 1990s brought an array of programs on solar energy along with other renewables (Pachauri & Bhandari, 2004, Baker & McKenzie, 2008, Bhide & Monroy, 2011). A series of reforms in the power sector were initiated with the trifurcation of the Ministry of Energy into the Ministry of Power, the Ministry of Coal and the Ministry of New and Renewable Energy in 1991 (Baker & McKenzie, 2008). Later the ‘Electricity Laws (Amendment) Act 1991’ permitted the entry of the private sector into power generation (thermal, hydro, wind, and solar power projects) (Pachauri & Bhandari, 2004; Schmid, 2012). However, renewables, especially solar, took a trajectory of development only after the formation of the Ministry of Non-Conventional Energy Sources (MNES) in 1992, later renamed as the Ministry of New and Renewable Energy (MNRE) in 2006.

The implementation of solar energy until 1993-94 was largely through individual subsidies provided by the MNES (Baker & McKenzie, 2008). This approach later shifted to fixed

tariffs and private investments. Later looking at the low financial performance of the existing SEBs, India established the ‘Electricity Regulatory Commissions Act, 1998’. This act decentralised the existing utilities and formed the ‘Central Electricity Regulatory Commission (CERC)’ and the ‘State Electricity Regulatory Commissions (SERCs)’ as independent regulatory bodies for fixing tariffs and attracting private sector investments (Schmid, 2012).

5.3.3. ‘Post- Electricity Act (EA) 2003

The ‘Electricity Act (EA) 2003’ dissolved all the previous acts, such as the Indian Electricity Act, 1910’, ‘Electricity (supply) Act 1948’, ‘Electricity Laws (Amendment) Act 1991’, and consolidated all laws pertaining to all forms of electricity. Along with providing an overall framework for preferential feed-in tariffs and quotas, introducing a host of important reforms, such as establishing provisions for power trading, and allowing phased open access to both transmission and distribution (World Bank, 2010), the EA 2003 explicitly recognises the role of renewable energy in grid-connected power generation (Schmid, 2012).

As per the proviso of Section 61 of the EA, 2003, the terms and conditions framed by the Central Electricity Regulatory Commission (CERC) under the Renewable Energy Sources Regulations, 2009 cover the grid-connected solar energy projects. Section 63 of the EA 2003, through the Renewable Purchase Obligation (RPO), mandate individual states to procure a certain percentage of power from any renewable energy sources, including solar energy (Sant, Rao, & Rajan, 2009, ABPS, 2009). The RPO mechanism formulated under the EA2003 provides a boost to the NAPCC’s target of 5% RE share by 2010 and subsequent 1% increase each year for the next 10 years (i.e., 15% RE share by 2020).

Independent regulators of the SERCs in 24 states (accounting for 92% of power consumed) set RPO targets (ABPS, 2009). With RPO specifically for solar energy, varying from 0.25% to 3% in different states across different periods, solar projects are expected to create a favorable effect in the growth of the solar sector (Ghosh *et al.*, 2012). Under the EA 2003, the policies, which directly address different aspects of the RPO are the National Electricity Policy 2005, National Tariff Policy 2006, and Rural Electrification Policy 2006. While the National Electricity Policy 2005 stipulates the progressive increase of RPO and mandates a competitive bidding process for power purchase by distribution companies, the National Tariff Policy 2006 stipulates the required SERCs to fix the minimum percentage of state RPO and to set a preferential rate for renewable power (Sharma, Tiwari, & Sood, 2012).

In the process of achieving the RPO, some states noted the limitations of geographical and climatic conditions for renewable energy development. To address mismatch between the availability of renewable energy resources in a state and the requirement of the obligated entities to meet the RPO, the Renewable Energy Certificates (REC) mechanism was initiated in 2006 (Pandey *et al.*, 2012). Under the REC mechanism a state which can generate renewable energy can sell power to one that couldn't achieve the target, in the form of tradable RECs¹⁶ (Deshmukh, Gambhir, & Sant, 2010). This mechanism is overseen by the regulatory body - 'Forum of Regulators' constituted in February 16, 2003 under the Electricity Act, the National Electricity Policy and the Tariff Policy (Magal, 2012). From the first Solar Project with a capacity of 8.5 MW accredited in the state of Maharashtra and commissioned in March 2012, the total grid-connected solar PV capacity

¹⁶ One REC represents 1 Mega Watt hour (MWh) of renewable electricity.

registered under the REC mechanism as of April 2014 lies at 430MW (REC Registry of India, 2014).

5.3.4. National Five year plans

Owing to the urgency of development, the ‘National five-year plan’ was first initiated post-independence and after drafting the constitution of India by India’s highest planning agency – the ‘Planning Commission’ (formed in 1950). Each National five-year plan is a significant outline of development envisaged by India in various sectors during that specific five-year period. It outlines broad schemes, programmes, and organisational frameworks for different sectors. Currently, after preparation by the Planning Commission, the National Development Council (NDC), approves and stamps the plan. From the first five-year plan (released in 1951) to date, twelve five-year plans have been formulated.

The Planning Commission aims to increase renewable energy capacity by 40GW to 55GW by the end of the 13th Five-Year Plan in 2022 (Kumar & Jeynath, 2012). A working group on R&D – energy sector, set up during the drafting of the 11th Five-Year Plan, also supported the creation of the ‘National Energy Fund’ (NEF) (R&D). The NEF is governed by an independent board with representatives from different government institutions including the Department of Science and Technology, the Planning Commission, and energy ministries (Planning Commission, 2008). Between the 10th (2002–2007) and 11th (2008–2012) five-year plans, in spite of an INR15 (US\$ 0.30/kWh) feed-in tariff offered by the MNRE, only 1MW solar energy was installed in the country.

5.3.5. Jawaharlal Nehru National Solar Mission (NSM)

The average intensity of solar radiation received over India is 200 MW/km² (megawatt per kilometer square) with 250–325 sunny days in a year. With a national solar radiation potential of generating 5,000 trillion kWh/year, solar energy has been the greatest unexploited renewable energy source for India (Velayudhan, 2003; Ummadisinghu & Soni, 2011). Most parts of the country receive a daily solar energy incidence of 4 to 7kWh/m² per day and sunshine of about 6-8 hours a day averaging 2300 to 3200 hours per year (Raghavan *et al.*, 2010; Sharma, Tiwari, & Sood, 2012). Driven by this huge solar energy potential and in order to revive the solar energy sector, the NSM was released in 2010.

With a challenging target of 20GW by 2022 in three phases¹⁷, the NSM is one of the eight missions of the National Action Plan on Climate Change (NAPCC)' (table 5.1) (MNRE, 2010). This phased approach is adopted to modify policy guidelines based on learning and experiences gained from the previous phases. It is a major initiative and a milestone of the Government of India to address the climate change and energy challenges (MNRE, 2010) and bring 'great energy transformation' (Leggewie & Messner, 2012). The NSM is a unique and ambitious transformational programme that aims to establish India as a game-changer in solar energy by creating enabling policy and economic conditions (MNRE, 2010). The aspiration is to ensure large-scale deployment of solar generated power for both grid-connected and decentralised off-grid provision of commercial energy services. Apart from providing clean energy and addressing India's energy issues, it is also expected that through implementation of the NSM, India could cut about 42 million tonnes of CO₂

¹⁷ While the Phase – I is expected to complete during the rest of the 11th V year plan (2007-12), Phase – II will ramp up during the 12th 5 year plan (2012-17) and Phase –III is targeted to reach its goals during the 13th 5 year plan (2017-22).

emissions and consequently increase India’s bargaining power in international negotiations (REFOCUS, 2009).

Table 5-1 National Solar Mission targets (Source: Yenneti, 2013)

Period	Solar collectors (million m²)	Off grid solar applications (MW)	Utility grid power, including roof top (MW)	Focus of the period
Target for Phase - I (2010–13)	7	200	1,000–2,000	Promoting solar thermal and off-grid systems to serve population without access to commercial energy and modest capacity addition in grid-based systems.
Target for Phase - II (2013–17)	15	1,000	4,000–10,000	Capacity to be ramped up to create conditions for scaled up and competitive solar energy in the country.
Target for Phase - III (2017–22)	20	2,000	20,000	Create favourable conditions for solar manufacturing capability, particularly for solar thermal for indigenous production and market leadership.

If the targets are successfully achieved, it is expected that the major shifts in energy mix in India facilitated through the NSM can surely exert a powerful influence on its economic prosperity, social and geographical structure and international relations. Balachandra, Ravindranath, & Ravindrananth (2010) argues that the NSM as a policy influenced ‘establishing and enforcing energy codes, standards and labels, promoting new initiatives related to technological and process changes, regulating energy use through various economic and financial instruments, creating and facilitating capacity development and information dissemination programmes, and creating favourable conditions for R & D, technology transfer and innovations’ (p.6433-34). While the mission has various targets,

policies and guidelines for different solar technologies in different phases, here those related to grid-connected projects implemented up to now (Phase - II) shall be outlined.

Phase – I

The capital subsidy is the predominant policy instrument in India, but a mix of policy instruments, such as subsidies, fiscal incentives, preferential tariffs, market mechanisms and legislation, have been encouraged for the deployment of solar energy (Timilsina, Kurdgelashvili, & Narbel, 2012). Later policies for Phase – I of the NSM are largely based on a ‘competitive (or reverse) bidding’ process. In solar energy development in India, reverse bidding is a process where the government invites competitive bids for tariff determination from interested solar energy developers and the lowest bidders are selected for solar project development. According to Arora *et al.* (2012) reverse bidding has two main benefits:

first, they allow government procurers to select projects based on lowest cost (thereby keeping the burden on fiscal resources and taxpayers low), and second, they ensure that a price-based selection process will be transparent and fair (p.8)

All the existing individual energy policies and acts to integrate solar energy culminated with the NSM (Balachandra, Ravindranath, & Ravindrananth, 2010). In 2010, the guidelines for migration of existing individual grid-connected solar projects to the NSM were also approved. The other solar projects implemented before the release of the NSM are eligible for the migration scheme. The migration guidelines facilitate those projects that implemented or signed a ‘Power Purchase Agreement (PPA)’ before November 19, 2009 and achieved financial closure within 3months of signing the PPA to be eligible for migration to the NSM. The major advantage for the projects which migrated to the NSM is a guaranteed purchase of power by the NTPC Vidyut Vyapar Nigam Ltd. (NVTN - the

electricity trading company owned by the National Thermal Power Corporation, NTPC), a designated nodal agency set up by the Ministry of New and Renewable Energy (MNRE). In the case of projects which are implemented outside of the NSM, the project developers have to run behind the state regulatory agencies for purchasing power and in some cases the regulatory agencies which are financially weak often delay the payments, making solar projects financially unstable. Such issues are assumed to be addressed for projects that are migrated to the NSM.

Apart from the guidelines on migration, since the announcement of the Phase – I in 2010, several rounds of guidelines with different tariff orders were released (Raghavan *et al.*, 2010). While the generic tariff set by the CERC for solar PV for a PPA validity period of 25 years was INR.91/kWh (US\$0.36) in FY 2010/11, the actual average tariff for solar projects bid was INR12.20/kWh (US\$0.24) in 2010 and INR8.78/kWh (US\$0.17) in 2011 (MNRE, 2012a). The competitive bidding process in Phase-I has facilitated an average per kWh price as low as INR 7.49 (US\$0.15), approaching grid-parity with conventional fuels.

While the batch I minimum solar project size requirement for implementation is 5MW, the batch II requirement is 20MW. For easier co-ordination, allocations, and implementation of projects, each phase of the NSM is divided into two batches. Through the Phase- I, PPAs worth 150MW for solar PV and 500MW of solar thermal in Batch-I, and 350MW solar PV in Batch-II were signed (SEMI, 2010). The total target for the Phase- I to deploy 1000MW was achieved by July 2012, actually before reaching the deadline, with Gujarat (654.8MW) and Rajasthan (197.5MW) representing the largest share (Bollhorn, 2012). The individual projects size of Phase - I range from 5MW to 50 MW which are implemented largely through private or public-private partnerships (PPPs).

To support the domestic manufacturing industry, a policy on ‘Domestic Content Requirement (DCR)’ which specifies that about 30% of the project technology should be locally manufactured, was also released during Phase – I (Anand, 2012). While for batch –I (FY 2010-11) of the Phase - I, it was mandatory for the PV projects (based only on crystalline silicon technology) to use modules manufactured in India, for the batch – II (FY 2011-12) it is mandatory that projects incorporating crystalline silicon technology should use both cells and modules manufactured locally (MNRE, 2010). To summarise Phase - I of the NSM provided a series of guidelines and policies to boost the nascent solar sector.

Phase – II

Expanding on the lessons learnt from Phase – I, and with a similar strategy to implement in two batches, guidelines for setting up 750MW in Phase – II were released in April 2013. According to the guidelines, the minimum and maximum capacities of the projects are set to be 10MW and 50MW respectively. Under the mechanism of Viability Gap Funding (VGF), a fixed tariff of INR5.45 (US\$0.10) per kWh is allegedly paid to developers over a 25-year period (MNRE, 2012). If an accelerated depreciation is available for a project, the tariff will be reduced 10% to INR4.95 (US\$0.09) per kWh (Ali-Oettinger, 2013). The upper limit of the VGF is 30% of a project cost or INR2.5 crore (about US\$461,425) per MW, whichever is lower (Clover, 2013). Though the guidelines also state that some capacity is reserved for bidding with Domestic Content Requirement (DCR), the exact capacity under DCR is not stated in the guidelines. One important ruling under the Phase - II is that a project owner cannot sell his plant for at least the first 12 months. This is proposed in an effort by the Indian government to discourage foreign owners acquiring Indian projects. Expanding on the experience of implementing large scale grid connected projects, under the Phase - II of the NSM, India is also planning to build mega size solar

projects (> 500 MW). The primary objective of this initiative is to bring down the tariffs. As the Phase - II of the NSM just started, new questions about the details of the implementation of projects are still unanswered.

To conclude, a series of policies and financial incentives, such as fixed tariffs, REC mechanism under the EA 2003, and competitive bidding under the NSM, have been initiated for growth of solar energy in India (World Bank, 2011b). Due to these policies while the nascent solar industry has witnessed some growth, the link between the numerous initiatives and the tangible impact and growth of the sector is not completely visible.

5.4. Institutional set- up

To assist the implementation of the above discussed multiple policy and regulatory frameworks, a number of dedicated institutions have been created. As there are various institutions involved in the policy, this section tries to bring the complex institutional structure together. In the process it explains the roles of different institutions in the structure of the solar policy in India.

5.4.1. Policy institutions

Without a strong institutional framework, it is not likely that the ambitious long-term targets and policy frameworks, and the scale of investments required would be achieved (Ghosh *et al.*, 2012). Thus it is important to identify the different institutions responsible for creating and shaping India's solar energy industry.

The initiation of institutions responsible for solar energy implementation in India dates back to the post-Independence period. The *Central Government* (the cabinet of the

parliament) and the *Planning Commission*, formed under the constitution of India, are the highest level bodies responsible for planning and passing of policies for power, energy policy, rural energy and renewable energy within the framework of each National Five-year plan, after approval of the National Development Council (NDC) (PSI Media Inc., 2011).

The second level of institutions responsible for policy implementation are the *Ministry of New and Renewable Energy* (MNRE) and its designated nodal¹⁸ agencies. After the oil shock in the 1970s, MNRE was set up as the Department of Non-Conventional Energy Sources, under the Ministry of Energy, in 1982 (Sinha & Joshi, 2012). This department became the world's first government agency for renewable energy development. Subsequently, it became a full-fledged ministry in 1992 as Ministry of Non-Conventional Energy Sources (MNES) and renamed as MNRE in 2006. MNRE, as a nodal agency of the Government of India, is responsible for all matters relating to development and deployment of solar energy, along with other renewable energy, in the country. It is also responsible for developing the NSM mission objectives, implementation strategies, setting guidelines and timelines.

As a power trading arm of the National Thermal Power Corporation (NTPC), NTPC Vidyut Vyapar Nigam (NVVN) has been the nodal agency for Phase - I (2010-12) of the NSM. During this period NVVN was also responsible for arranging PPA to purchase 1,000 MW of solar power (500 MW each from solar thermal and solar PV) from project developers, bundling it with an equivalent amount of fossil-fuel based power and selling

¹⁸ Any institution responsible for execution, administration, supervision, and implementation of any policy/programme is termed as nodal agency. For example, MNRE is a nodal agency for all solar energy related matters in India.

the total mixed power to utilities at market price. In Phase - II, Solar Energy Corporation of India (SECI) is designated as an implementing and executing arm of NSM for development, promotion and commercialisation of solar energy technologies in the country along with handling power procurement.

At the state level, the *State Renewable Energy Development Agencies* (SEDAs) are the state nodal agencies for policy development, promotion and implementation of solar energy programmes (Velayudhan, 2003). For grid-connected projects, a nodal agency is responsible for selecting project developers, and making PPAs between a government and a project developer.

The next level of organisation responsible for solar power development in India are the electricity regulatory commissions. The *Central Electricity Regulatory Commission* (CERC), a national legislative body constituted under the Electricity Regulatory Commissions Act, 1998 on 24th July, 1998 and currently functioning under Section - 76 of the Electricity Act 2003, is responsible for regulating the tariff, issuing licenses for trading of electricity (as in REC mechanism) and overseeing all aspects of quality, continuity and reliability of services provided by the project developers. At the individual state level, the *State Electricity Regulatory Commissions* (SERCs)¹⁹ of the 18 states, envisaged in the Electricity Regulatory Commissions Act, 1998 are responsible for all the activities relating to tariff determination, buying and trading electricity, and quality and reliability aspects.

MNRE works in co-ordination with all the above nodal agencies and regulatory commissions at the central and state level.

¹⁹ See http://www.powermin.nic.in/indian_electricity_scenario/s_e_regulatory_commission.htm for more information and activities of the SERCs of the 18 states.

5.4.2. Project implementation institutions

For the overarching strategies to translate into particular policies at an individual project level there is a need for integrated involvement of institutions at project implementation level. There are three different kinds of institutions involved in the implementation of solar power projects in India: i) project developers, ii) engineering, procurement, and construction (EPC) contractors and iii) financial institutions.

At the first level, the *project developers*, who are responsible for bidding, and commissioning projects to supply solar-generated electricity to the grid, play a major role in developing solar projects (CEEW & NRDC, 2012). The project developers on signing a PPA with a specific nodal agency, are responsible for power procurement. The project developers sub-assign the task of development of a project to the *Engineering, procurement, and construction* (EPC) contractors. The EPC contractors, who have expertise in designing, building and understanding local challenges, are responsible for implementing projects.

Finally, the *financial institutions* which provide financial capital (such as debt, loan, guarantees, and risk insurance) to commission solar plants are most important. As most of the projects are implemented through a public-private partnership mode, the different types of financial capital are often add-ons to a developer's equity contribution. The first important financial institution is the *Indian Renewable Energy Development Agency* (IREDA). IREDA is a non-banking financial agency that provides financial support through soft loans, capital subsidies and other investment support for solar PV technologies (PSI Media Inc., 2011). Apart from the IREDA, various other financial institutions including the '*national commercial banks, non-banking financial institutions, private*

infrastructure financial institutions, and international funding agencies including the World Bank, IFC, OPEC, ADB, are involved in funding solar projects' (Respondent #12, Sun Edison). It could be observed that much of the funding comes in the form of loans through lending institutions – public, private and multilateral.

5.4.3. Supporting institutions

The supporting institutions encompass agencies, organisations, and networks that support the process of implementation of a solar project. Without the active engagement and involvement of *communities* during land acquisition processes and infrastructure development, or during implementation and operation phases, projects risk losing legitimacy or facing social acceptance challenges (Ghosh *et al.*, 2012). The other key supporting stakeholders include i) domestic or international *manufacturers*, who manufacture components or raw materials required for a solar project ((cells, modules, batteries etc.) or from whom the project developers and EPC contractors buy solar modules and others technical equipment; ii) *generation, transmission, and distribution companies* at individual state level, such as Gujarat Energy Transmission Company (GETCO) who facilitate grid-connection. They are important actors at project level and as supporting institutions; iii) government owned or private or non-governmental *Research and Development institutions*, which range from developing new technologies to manufacturing, from innovating product and processes to looking through value chains, from conducting social research to econometric analysis, and from installation to power plant operation; and iv) government, private or *research networks* which facilitate or support solar environment at both national and state levels. One example of these networks is the Solar Energy Industry Advisory Council (SEIAC), a high level council comprising eminent scientists, technical experts and representatives from academic and

research institutions to guide and advise MNRE on issues of solar industry development and building a pathway for achieving a target of 4 - 5 GW in the manufacturing sector (Ghosh *et al.*, 2012).

All the above discussed key stakeholders of grid-connected solar PV, their roles and responsibilities and how the system works at central and state level have been summarised in figure 5.3 below.

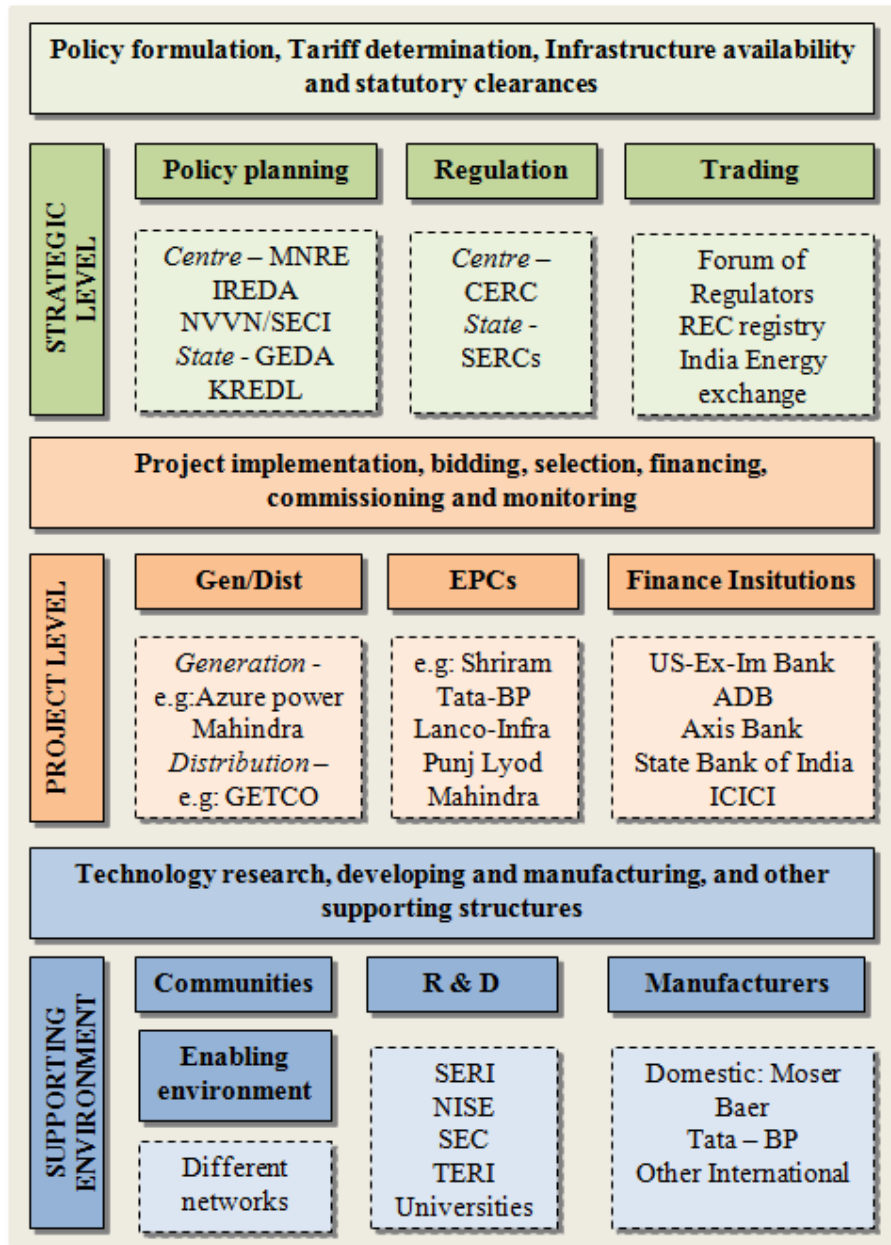


Figure 5-3 Institutional framework for grid-connected solar PV projects in India

(source: adapted from Arora et al., 2010)

5.5. Provisions for procedural justice

The constitution of India mandates protection of public interests in any industry/trade through Articles 19(1)(g) , 301, 304 and 304(b²⁰). Due to this recognition, the EA 2003 emphasises transparent decision making process and public and civil society participation (CSO) in all regulatory processes (MoP, 2003). Apart from specifying regulations for involvement of consumers in all regulatory processes, the EA 2003 also strengthens the protection of consumer interests through the Appellate Tribunal. Reddy and Dixit (2010) state that ‘The Preamble’ to EA 2003 clearly mentions protecting the interests of consumers.

The public hearings for tariff determination in EA 2003 provide a platform to civil society organisations (CSOs) and customers to participate in the country’s energy development processes. The state ERCs take decision on energy matters after considering invited written suggestions/objections (if, any) and hearing of all the parties. It has to be also noted that while there is a weak CSO participation, involvement of public or communities is nowhere in the process (table 5.2).

²⁰ Article 304: Notwithstanding anything in article 301 or article 303, the Legislature of a State may by law – Article 304(b): Impose such reasonable restrictions on the freedom of trade, commerce or intercourse with or within that State as may be required in the public interest (Ministry of Law and Justice, 2007, p.179-80). However, the right to practice any trade or business under the Articles 19(1)(g), and the protection of public interests in any trade or business under 301, and 304 are subject to certain limitations imposed by the State (GERC, 2010).

Table 5-2 CSO participation in regulatory process on RE tariff/RPO determination
(Source: Reddy & Dixit, 2010)

Event	Andhra Pradesh	Gujarat	Maharashtra	Odisha	Tamil Nadu
1st RPP0*	9	0	1	1	2
2nd RPP0	6				6
1st tariff order	9	Wind – 1	Wind – 6	0	2
			Biomass – 1		
		Bagasse - 3	Bagasse – 4		
			Small Hydro – 0		
			Municipal solid waste – 1		
		Solar – 0			
2nd tariff order	6	Wind – 1 Solar – 0			6

Note: Numbers indicate total participants/comments received in response to public notice issues by the respective SERCs. * Renewable Power Purchase Orders

After the EA 2003, the major policy that recognises public participation is the NSM. Although solar is a clean and renewable form of energy, various societal impacts have been raised in the recent past (Reddy & Dixit, 2010; Bhide & Monroy, 2011). Some of them are: ownership, conflicts over common property resources in siting of solar plants, huge land requirement (about 5-10 acres per MW) and exclusion/marginalisation of communities in decision making processes (Deshmukh, Gambhir, & Sant, 2010; Ghosh *et al.*, 2012; Planning Commission, 2008; Reddy & Dixit, 2010). Such impacts are also potential in the implementation of the NSM. Despite assurances of a participatory process at all stages of NSM implementation, until now it has been largely non-transparent and non-participatory (Deshmukh, Gambhir, & Sant, 2010). Two other major challenges are also identified here.

First, land acquisition is one of the most important issues in the implementation of any project in India, including solar energy, due to local people and farmers' protests. In a recent judgement on petitions filed by farmers in Uttar Pradesh, the Supreme Court of India identified 'The Land Acquisition Act, 1894' as an instrument for 'forcible acquisition' of private farmlands (Indian Express, 2011). The court also ordered justifiable resettlement and rehabilitation to be provided in cases where land is acquired. A new bill is being considered by the government of India to replace and repeal the LA Act 1894.

Second, community involvement in decision making and law making process has been out of focus in energy policy. Out of 53 recommendations of the 'Integrated Energy Policy 2006', there was only 1 recommendation which demanded involvement of consumers at state level and appointing an office of 'consumer advocate' in every state. According to MNRE (2011), the 'Strategic Plan 2011-17' for renewable energy development identifies that the success of these programs depends on the acceptability. However, the consultation meetings held for the plan involved only government, private sector organisations and NGOs²¹. As it isn't feasible to allow direct involvement of all communities across India (given the size of the country), NGOs could have some role in protecting consumer and community interests. However, a lot of this depends on the NGOs who are invited or allowed to participate, their primary objectives for participation, and the constituency they represent.

²¹ The stakeholders consulted in the engagement plan were CERC, IREDA, development alternatives, TERI, Ecogrid, Enercon, Vestas, IIT Delhi, Nualgi nanobiotech, technology and action for rural advancement (TARA), Rohit electronics, Subtechnics, Aditya associates, Emmvee Solarizer, Central Power Research Institute (CPRI), ICF Consulting.

5.6. Conclusions

India realised the potential of solar energy in 1970s. Since then for about three decades, the Indian government experimented by releasing various policies and programmes along with establishing various institutions for solar energy development (PSI Media Inc., 2011). Though it identified solar energy as key for addressing power shortages in the country by establishing MNES in 1992 (renamed as MNRE in 2006), the sector was dormant until 2003. The real change for the sector came in 2003 through the enactment of the Electricity Act (EA) 2003 which released Renewable Purchase Obligations (RPOs) and Renewable Energy Certificate (REC) mechanisms. Since then, through an array of policies and institutions, and a series of regulations India made a leap forward in the solar sector development though still much smaller than some other developing countries like China. The grid interactive solar energy increased from a mere 2MW during the 9th five year-plan (1997-2002) and an addition of only 1MW during the 10th plan to currently more than 1000MW by the end of the 11th plan (2007-2012). This has largely been due to the conducive financial, environment and policy environment provided under the NSM. Various regulatory reforms and sectoral policies have also played a prominent role in changing India's solar energy portfolio - bringing up the sector from a nascent stage to its position today as one of the largest generation based markets in the world. To support these numerous policies and regulations, a number of institutions have also emerged.

Most of the empirical studies and policies on solar energy in India conclude that issues such as politics, policy effectiveness, institutional performance, organisational behaviour, and regulatory outcomes are important factors driving renewable energy development (Benecke, 2011). While there are a small number of academic works addressing the social aspects of renewable energy implementation in India, most of those are focussed on

finding ways for adoption of solar technology (Sant, Rao, & Rajan, 2009; Reddy & Dixit, 2010; Bhattacharya, 2010; Benecke, 2011). It could be also observed that while most of the policies and regulations concentrated on providing fiscal incentives or technology development, there is a recent recognition of importance of community participation in solar project implementation (Ghosh *et al.*, 2012). Similarly, although some policies, such as EA 2003, make some provisions for public involvement, it is quite weak in the legislation and even weaker in practice.

6. EVALUATION OF THE GUJARAT SOLAR POWER POLICY

'Let's not work in regions. Gujarat is a part of India. You cannot say Gujarat is energy sufficient state. Renewable energy is everyone's right...Sun is abundant... renewable energy should be tapped regardless of whether the state is energy deficient or energy sufficient.'

— (Project engineer, Electrotherm, interview)

6.1 Introduction

While the previous chapter outlined an array of policies, rules and regulations that are applicable to renewable energy and solar energy in India, this chapter will discuss the solar energy policy environment in Gujarat by drawing on interviews with business developers and policy makers. By bringing out the underlying contexts of the 'Gujarat Solar Power Policy (GSPP) 2009' (GEDA, 2009) development and its institutional framework, this chapter also identifies provisions for community participation in decision-making in the policy. This sets the stage for developing the subsequent chapters which are based on the application of theoretical concepts of justice to GSPP 2009 as it unfolded in the case of Charanaka solar park.

The structure of the chapter is as follows: first, the background of energy and solar energy policy landscape in Gujarat is discussed. Second, the chapter evaluates the GSPP 2009. In this section the chapter addresses the drivers of GSPP 2009 development and the underlying challenges and opportunities. Third, it conducts a comparative analysis of GSPP 2009 with the National Solar Mission (NSM) and other state policies. Fourth, the chapter follows up with discussions on understanding the institutional framework of the GSPP 2009. Here, it identifies provisions for public participation. Finally, the chapter ends with discussions and conclusions.

6.2 Solar energy landscape in Gujarat

With a total area of 196,024km² and constituting 5.9% by area of India, Gujarat is one of India's most advanced and rapidly developing states. The economy of the state since its formation from the erstwhile Bombay presidential state in 1960 has been largely dominated by a variety of industries. The state is currently growing at 2-2.5% higher 'Gross Domestic Product (GDP)' than the country's average and has about 20% higher per capita income than the Indian average (Planning Commission, 2012). It is home to some prominent industries such as the world's largest ship breaking yard at Alang, the world's largest oil refinery at Jamnagar, and *Tata's* world's cheapest car manufacturing industry at Sanand, and it also ranks first nationwide in gas-based thermal electricity generation. Apart from being India's largest producer of milk, the state is also home to Asia's biggest dairy located in Anand. It also houses India's and the world's diamond industry and trade hub in Surat. As well as giving 91% of India's required amount of soda ash it produces 66% of the nation's salt requirement. The other major industries include ports, chemicals, drugs & pharmaceuticals, auto-manufacturing (e.g. General Motors, Ford etc), cotton production, textile manufacturing & trade, animal husbandry and dairy production, tourism etc. While these are a small number of examples, Gujarat maintains its foothold in a wide variety of industries. Growth in industrialisation led to a continuous increase in per capita income over the last decade which has been much higher than the average for all India (Planning Commission, 2012) (figure 6.1).

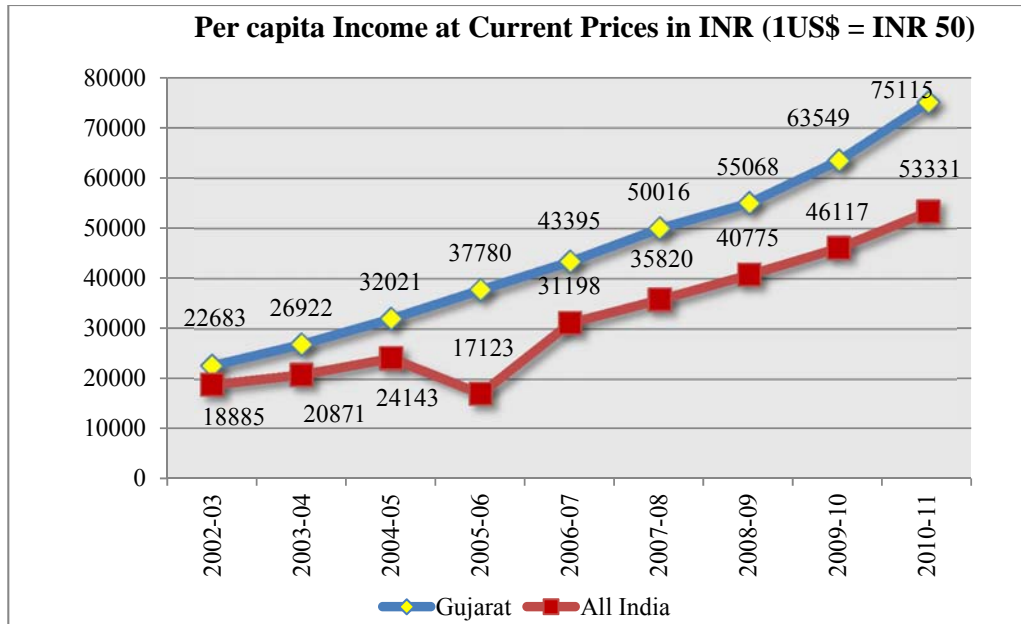


Figure 6-1 Per capita income of Gujarat vs India (as on 01-06-12)

(Source: adapted from Planning Commission, 2012)

The staggering growth in industrialisation, development and urbanisation of the state especially over the past three decades led to increase in energy consumption. The total installed capacity of energy in Gujarat as of April 2013 was about 21,294MW from conventional fuels, 3,114MW from wind (GEDA 2013a), and 852MW from solar (GEDA, 2013b). From figure 6.2 on the distribution of installed capacity and growth in Gujarat by fuel type, it can be observed that the majority of generation capacity of the state comes from conventional energy sources such as coal and gas (about 50%). Renewable Energy Sources (RES) including hydro, wind, solar and biomass account for about 20%. However, because of the availability and climate change issues around fossil fuels, and safety and resettlement issues around nuclear and hydro, the share of other RES in the total energy generation capacity of Gujarat has been continuously growing - the installed

capacity of solar and wind combined together is now more than 3500MW (SLDC, 2012) (figure 6.2).

With over 300 days of sunshine, solar radiation of 5.6-6.0kWh/m² per day and availability of huge tracts of waste and barren land, Gujarat has a huge potential for generating solar energy (GERC, 2009). Due to this potential, solar energy along with wind is one of the fastest growing renewable energy sources in the state (figure 6.2). The state also has the largest number of solar power projects in India. This growth in solar generation in Gujarat has largely been achieved after the release of the State SPP 2009, a year before the release of India’s NSM.

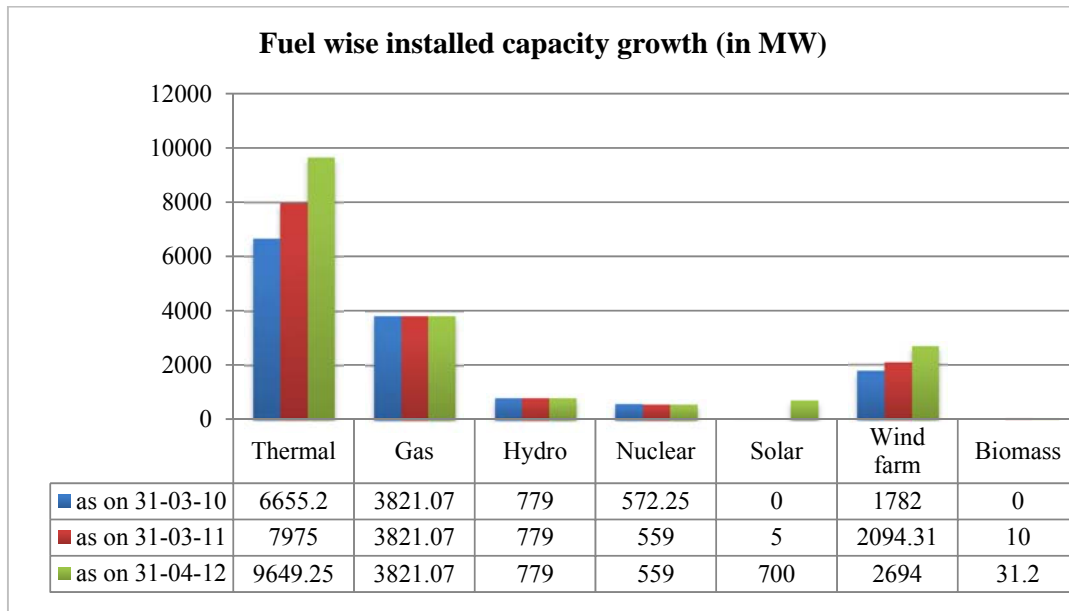


Figure 6-2 Fuel wise installed capacity growth in Gujarat (Source: SLDC, 2012)

Before and after the initiation of the NSM the Government of Gujarat (GoG) initiated necessary steps and leading actions for addressing energy security and climate change, especially through encouraging solar energy. Many states in India including Gujarat have

undertaken various measures for renewable energy development (especially solar). The Gujarat Electricity Regulatory Commission (GERC), like the other states' ERCs and under the aegis of central government, has released a series of internationally successful policy mechanisms such as Renewable Energy Purchase Obligations (RPOs)²² and Feed-in-Tariffs (FiTs)²³ for procurement of solar energy. The RPOs of Gujarat for solar energy are 0.25%, 0.5% and 1.0% (of the total energy generated in the state) for the periods 2010-11, 2011-12 and 2012-13 respectively (GERC, 2010).

Though various guidelines were issued for solar energy development, the release of the SPP 2009 (GERC, 2009), with an overarching aim of promoting alternative sources of energy through investment from private developers, was an important step for solar power development in the state. The solar policy during its operative period (from 06.01. 2009-31.03.2014) had a target of installing 1000MW capacity by 2012 and 3000MW by 2014. From the release of the solar power policy to the end of April 2012, the state had accomplished about 968 MW of solar energy projects, out of which 700MW had already been commissioned or grid-connected, including Charanaka solar park. The other 268MW capacity of solar power projects were expected to be commissioned by early 2014. In terms of total installed capacity, though Gujarat seems to be doing better than other states, due to the current economic crisis in the country and investors lack of interest in the solar industry, the target of 3000MW by 2014 looks as though it might be missed.

²² As per the section 63 of the EA 2003, under competitive bidding process, the individual states are mandated to procure certain percentage of power from renewable energy sources including solar energy, which is termed as Renewable Purchase Obligation (RPO).

²³ FiTs is a policy mechanism designed to accelerate investment in RESs by offering attractive long-term financial contracts for project developers.

This chapter, with the aim of setting the context for solar policy development in Gujarat, concentrates on the SPP 2009 (GERC, 2009) which provided a favourable environment for the implementation of solar energy in the state. From the release of the solar policy in 2009 to mid-2013, the state contributed to 700MW of the total installed 1044MW capacity in the country. Apart from providing details of FiT, and guidelines for developing individual solar power projects, the SPP 2009 is also a policy mechanism for implementing a series of solar parks with common infrastructure facilities. These infrastructure facilities including roads, water, drainage, street lights, and access to grid are provided by the Gujarat Power Corporation Limited (GPCL). The first of the series of solar parks is the Charanaka solar park with an installed capacity of 214MW. The 214MW is a total of different MW capacities developed by individual developers at one location. In the next few sections, I shall provide an analysis of the SPP2009.

6.3 Analysis of Gujarat Solar Power Policy

The Solar Power Policy (SPP) (2009) assists the implementation of the state's aim to develop a series of solar parks in the state. The first of the solar parks was developed in the remote Charanaka village. The solar park was initially planned in two stages – Phase-I dedicated to solar power generation and Phase-II for both generation and manufacturing facilities. After the completion of Phase-II, the project is expected to generate solar energy up to 500MW. Phase-I of the project, implemented on 1080hectares of land with a power generation capacity of 214MW (commissioned on April 19, 2012) and an investment cost of about US \$280 million, became the world's largest solar park after beating China's 200MW 'Goldmud solar park' (Plate 6.1). It was also given an award by the Confederation of Indian Industry (CII) for being the most innovative and environment-friendly project in India.

After this brief introduction on the first solar park developed under the SPP 2009, this section unpacks the drivers of policy development and the underlying challenges and opportunities of the policy. As the SPP 2009 is a policy mechanism for the development of a series of solar parks in the state, there is often an overlap on the SPP2009 and Charanaka solar park throughout the discussions and interview quotations.



Plate 6-1 Gujarat solar park after commissioning (*Source: Gujarat Solar Park, April 2012*)

6.3.1 Drivers of policy development

On the first question around reasons for promoting solar energy despite Gujarat being a power surplus state, interviewees' answers echoed themes around addressing climate change and energy security. Firstly, according to several respondents Gujarat, with a high

solar radiation and large tracts of available land, is an ideal place for developing solar energy:

Gujarat and Rajasthan are the states where the direct radiation of sun is abundant. There is also a lot of waste land available in the state...so the Government thought that's the best way to bring in industrialisation which will assure economic development. (Respondent #1, AES Solar)

The solar radiation analysis of Gujarat shows that it has about 300days of sun. So considering this it was thought that, why not make use of solar energy for generating energy in the state...Maximum barren government land is also available...So considering all these advantages government had initiated this project. (Respondent #3, EIT technologies)

These quotes resonate with Detailed Project Report (DPR) of the Charanaka solar park which recognises the potential of solar energy in Gujarat, i.e., availability of large land areas feasible for solar development in the state coupled with high solar insolation of 5.8 – 6.0Kwh per sq.mt. per day (GPCL, 2010a). Vast tracts of land in Banaskantha (in North Gujarat region), Kutch and Saurashtra regions are also identified for tapping solar energy. During a discussion with a government official, it was mentioned that the government identified a total of 14.40million acres of uniquely positioned waste land in areas of high solar radiation. Accordingly, the state government is planning to set up mega-size solar energy projects in North Gujarat, Kutch and Saurashtra.

Secondly, considering the environmental issues around fossil fuels and quick depletion of coal, renewable energy – especially solar – seems to provide a promising future for several project development interviewees. One of the respondents said:

Basically the motive for creating solar power is...they want to reduce carbon emissions... and slowly increase the renewable energy capacity so that it can also take base load. This project is 500MW and then they are planning to go for 3000MW...all this can contribute to reducing GHG emissions. (Respondent #11, Sun clean)

The above respondent considered reduction in GHG emissions which can accrue to addressing global warming, as the main benefit of a solar power project. According to the estimations of GPCL (2010a), the solar park has life cycle GHG emissions in the range of only 25-32 g/kWh which could further decrease to 15 g/kWh in future (similar findings in Alsema, Wild-Scholten, M.J.de., Fthenakis, V.M., 2006) . This is much lower than the emissions from a conventional fossil fuel based power plant which varies from 400 to 1000g/kWh (GPCL, 2010a). According to GPCL (2012), the Charanaka park itself accounts for 3, 42, 400 tons Carbon Emission Reductions (CERs) (GPCL, 2012). This considerable amount of GHG emission reduction in a solar vis-à-vis a coal-fired power plant was highlighted as one of the major drivers for solar energy development in the state.

The fuel crisis leading to huge power scarcity in the country is another considerable issue driving the state to lean towards solar energy. It was emphasised that solar energy provides a platform for the state to generate extra revenue through the sale of power to energy deficit neighbouring states:

The government would utilise for some other purposes or sell to the other states.... (Respondent #4, GPCL)

They will sell it to other states, they are already selling it. This is an insignificant amount to them... (Respondent #5, GoG)

While the energy requirement of Gujarat in 2010-11 was around 10,000MW/hour, it was producing more than 13,000MW/hour (GSECL, 2011). As the state is a power surplus state, the excess power produced in the state is being exported to the neighbouring power deficit states such as Tamil Nadu and Rajasthan at high prices. The Gujarat *Urja Vikas Nigam* Limited (GUVNL), a state government owned corporation is responsible for inter-state transmission and distribution. It was identified that the state, by generating this excess

power, may also sell it to industries at a much higher tariff compared to the tariff that is paid to the developers. As one of the business developers described it:

if you are very smart enough...I mean if the government is buying from you at INR15 then they should sell at INR16 to recover their cost, but at that cost who would buy? See, the best part is to attract industries. I think you have seen other developments taking place in parallel - Suzuki is coming up with a plant and some other automobiles and chemical companies are also coming up...recently chief minister has visited China and asked them to come up with other industries in Gujarat. What they do is that they not only generate employment but also sell this power to these commercial establishments at a higher tariff. (Respondent #15, Yantra e solar)

As described by the above interviewee, the state of Gujarat is a highly industrialised state with a growth in the industrial sector at 12.5%, and contributing 16% of the total industrial production in the country in 2009 (Government of Gujarat, 2009). It is already a hub for petro-chemicals, shipping, pharmaceuticals and automobile industries. The government through the ‘Vibrant Gujarat’ summit conducted once every two years invites business developers from across the globe to invest in setting up industries in Gujarat. These initiatives and interviews emphasise that economic development through encouraging development of new and non-conventional energy sources was one of the other main drivers of the solar policy and the development of solar projects under the policy.

6.3.2 Challenges and opportunities

The solar policy’s overarching aim of providing ‘single window processing’²⁴ for the developers was discussed as a major strength of the policy in drawing business developers from various corners of the country for setting up solar projects in the solar park. This Gujarat government led initiative encompassing single window processing, and hassle-free

²⁴ A single government agency as a contact point throughout the development of the park for all facilities and clearances.

provision of infrastructure which is unique to the solar park and unlike other solar projects developed outside the solar park, made the development process easy for the developers. One business developer from his experience in developing a solar project outside the solar park in a different area of Gujarat explained:

The main thing is you have single window clearance for all the things. If I am at Shivlakhia, I have to run around 100 departments on a day to day basis, to get all the clearances. If I buy land it would take around 7-8 months to get all clearances from all departments. Then agriculture to non-agriculture, that's a big headache, after that you have to put your project within 6 months...
(Respondent #15, Yantra e solar)

This business developer who initially thought of setting up an individual 5MW solar power plant at a different place in the state shifted to the solar park because here he didn't need to build any infrastructure or even get involved in the complex land acquisition process. All forms of supporting infrastructure and land were provided by the government. The developer just needed to build the project. This process also made it easy for the government to create infrastructure in a much cheaper and quicker way. For example, Gujarat Energy Transmission Company (GETCO) is responsible for the connection of power to the grid in Gujarat. However, it becomes easy for GETCO to provide grid infrastructure at a single place instead of different places across the state. As discussed earlier, this single window processing system coupled with attractive policy and a strong implementation mechanism also emerged as a major cause for choosing Gujarat as a destination for investment:

The Gujarat government has first come out of this policy, the tariff is really attractive for the investors and if you see most of the developers are from Andhra. We have this entrepreneur way, they go out of their way; they go anywhere and start doing things. (Respondent #15, Yantra e solar)

The above interviewee, who was a business developer from the state the author originally belongs to, related the general entrepreneur spirit of the state of Andhra Pradesh to developing solar projects. In the solar park the author observed that while all of the developers were from outside the state of Gujarat, the majority were from Andhra Pradesh. Despite being from a different state, most of them expressed the opinion that Gujarat's solar policy is a well drafted policy with an attractive tariff. This is also directly reflected in the implementation of projects across the state. Before the release of the SPP 2009, no serious progress on solar energy was made either in the country or the in the state. But since the release of Gujarat's solar policy in 2009 to the end of March 2014, the state contributed to about 916MW of installed capacity out of the total 2600MW capacity in the country (Chadha, 2014). However, between 2012 and 2013 states like Rajasthan and Madhya Pradesh, with policies released after 2010, quickly increased their pace. Due to this increased development of solar energy sector, by the end of March 2014, while Rajasthan (approx. 700MW) ranks second, Madhya Pradesh (approx. 300MW) is only third in the country (ibid.).

While most of the developers' interviewees considered Gujarat solar policy as an opportunity for attracting investors, a few also argued that as solar energy is a relatively new technology in the country, the slippage possibility in revenue generation is a key challenge. The business developers' interviewees stressed that financial institutions were reluctant to fund solar energy projects for several reasons and hence support for achieving financial closure from policy and the government would be an added advantage:

The banking system is not conversant with the new technology or other forms of power generation in India. You can easily avail finance for coal power plant or hydro power plant, but for solar power plant...it would be better if the

government also eases inflow of capital maybe through banks or through other means. (Respondent #9, Electrotherm)

Developers from their experience expressed that ‘*banks are too conservative and want to see the last 3 years’ record*’ (Respondent #11, Sun clean). Though banks want a guarantee on the consistent output of the projects, some of the interviewees explained that it’s not possible because ‘*sun is in no one’s hands*’ (Respondent #9, Electrotherm). On the other hand with technologies being imported from countries like China, banks consider it too risky to finance these projects. Apart from non-availability of funding sources, the other challenges that project developers’ interviewees mentioned were the non-tradability and bankability of the ‘Power Purchase Agreement PPA’ document:

there are several people who have come in between as well hoping for the availability of non-recourse funding, but when RBI has declared that PPA is not a tradable document...they are helpless, once electricity is generated they have to sell all that to GETCO...even if we ourselves start a factory next to the solar park, we will not be able to use the electricity produced in the solar park. (Respondent #11, Sun clean)

As said by the above interviewee, the SPP 2009 of Gujarat has a specific clause that the energy produced in the solar park should be sold only to GETCO and not to any buyer the developer wishes to sell to. This makes the PPA a non-tradable document. According to the banking system in India, a product or project is considered bankable only if lenders are willing to finance it. For the lenders to finance, the project has to be tradable. Generally with any wind farm or solar project, the owner should be able to sell the power to anyone – may be a local grid, or to a local village, or to an industry – which makes the PPA tradable. But as Gujarat’s PPA was non-tradable, the interviewees lamented that bankers were reluctant to fund solar park projects. People who had strong balance sheets were able to generate finance but those balance sheets that were not strong could not generate finance. On the other hand, if the PPA is not bankable, it affects the credibility of the developers.

The performance of the electricity utilities such as GETCO and GUVNL closely relate to bankability of the project. Failure of performance of any of these utilities at any point will result in debt and penalties; hence, the developers felt that the performance of utilities should be closely tied to the PPA:

If I raise a bill, they will definitely pay. They don't say that they are not going to pay, if they don't pay we are not supposed to pay any debit or penal interests. so that's again another lacuna that the performance of GUVNL in payment is not tied to any penal clause which will enable lenders have any additional confidence. So GETCO and GUVNL financial stability is important criteria for trust building. (Respondent #12, Sun Edison)

However, this notion was rejected by a senior official in 'Sunborne energy' who stated that the issue of bankability is for those developers who delay the project. As the banks are concerned about getting their returns back, poor execution and delays can result in a loss of credibility of the developers. He stated that knowledge about risk mitigation in implementation of projects and understanding the banking process in India can help to increase bankability of projects (Solar quarter, 2013).

A recent report titled 'India's solar market at a cross roads' in line with the findings here emphasised that with borrowing costs of 13-14% and no technical requirement for bidding, banks consider it too risky to finance solar energy projects (Mercom, 2013). To create credibility and security of the solar projects in the eyes of bankers, the PPA has to be made strong between the developer and the power distribution utility. Most developers unanimously concluded that over the next 20 years, as the focus shifts from fossil fuels to the development of cleaner sources of energy, solar technology needs to be supported with proper policy and financial mechanisms for better implementation.

6.4 Comparative analysis of solar policies

The NSM provides a policy and regulatory environment for implementation of the ‘Renewable Energy Purchase Obligation (RPO)’ mandate for power distribution companies. According to the RPO states are required to generate or procure 0.25% of net energy produced from solar energy by 2013 and increase it to 3% by 2022 (Reddy & Dixit, 2010). To achieve this RPO either through generation or procurement (for elaborate discussions on RPO see section 5.3.3), about 20 states in the country came up with state solar procurement policies. Apart from the RPO, the states are also free to carry out independently any further solar energy related activities through the state specific solar policies. The GoG with an aim of addressing climate change released its independent state solar power policy before the release of the NSM. Various other states such as Rajasthan and Karnataka initiated similar independent policies based on Gujarat policy. While the main focus of this section is to provide a comparative analysis of the NSM and the Gujarat SPP 2009, to some extent it also provides comparison between Gujarat SPP 2009 and other state policies.

Though the NSM is the major driving force for promoting solar energy in India, several interviewees strongly considered that the NSM’s competitive reverse bidding process - where the project developers bid a competitive tariff for the power generated - made it disadvantaged compared to Gujarat solar policy, where a tariff for a specific period is pre-fixed by the state government. The tariff has been the most important criterion and role player in the decision-making of the developers to choose a specific policy (national or state policy). As the Gujarat SPP 2009 is an independent state policy with a pre-fixed tariff mechanism and released before the initiation of the NSM, project developers are free to choose either of the policies. Eventually, the high tariff of Gujarat compared to the NSM

made the business developers lean towards Gujarat solar policy. One of the respondents said:

I know that there would be lot of response for NSM, in fact there was lot of response but how much have been successful? so many of the projects sites are vacant, people have not even cleared the land....this is a common policy and PPA is a standard document and the price is same for everyone, it's a regulatory price and there is no bidding rule, so that's the interesting part of Gujarat policy. On the other hand under JNNSM, they are going for the reverse bidding. (Respondent #4, GMR)

The Gujarat solar policy was announced a year before the NSM came into force. Unlike NSM which has strict timelines for bidding process, as no timelines or guarantees are required from developers to sign PPAs initially many developers took interest. After the NSM policy was formalized in 2010, developers moved away from Gujarat toward the NSM. This is because many developers assumed that NSM as a central government backed policy would be more profitable and viable than the state-government led solar policy. The enormous interest from developers in the NSM led to competitive bidding for the projects and this situation led to a decrease in power generation tariffs. The steep fall in the NSM tariff below the levelled tariff²⁵ of Gujarat resulted in developers' sudden interest in Gujarat SPP 2009. For example, from the below figure 6.3, it could be noted that after the release of the NSM in 2010 (the dotted red line) there was a sudden rush to the NSM bidding process. The total amount of capacity that was bid under the NSM in July 2010 was as high as 5126MW. However, within months due to a steep fall in the NSM tariff, the bid capacity was reduced to as little as 650MW (in September 2010). Of the total 5776MW

²⁵ Levelled tariff refers to the average fixed and variable tariff over the entire term of the PPA or Power Purchase Agreement adjusted for inflation. In the case of Gujarat, it is the fixed tariff floated by the government to the developers unlike the NSM. Hence Levelled Tariff = (Arithmetical Average of Tariff over the life of the plant/PPA) / Discount Factor. The Discount Factor could be linked to an appropriate inflation index such as the Wholesale or Retail Price Index.

capacity bid under the NSM in 2010, only about 620MW capacity projects reached the stage of signing PPAs (in January 2011). This shows that due to fluctuation in tariff prices, unlike the fixed tariff of Gujarat, the initial rush to the NSM declined later. The project developers preferred Gujarat's fixed tariff. It was also stressed that a significantly higher feed-in tariff in the first 12 years in Gujarat matches investors' timelines, as they would look to recover the cost of debt during this period. Furthermore, unlike the NSM's Phase-I (2010-13) project execution timelines, the Gujarat SPP 2009 has longer timelines for the execution and commissioning of projects (up to 2014) (figure 6.3). But at the same time, it has a stringent penalty mechanism for delays that forces developers to speed up the implementation process. Delayed projects would face a downward revision in tariffs.

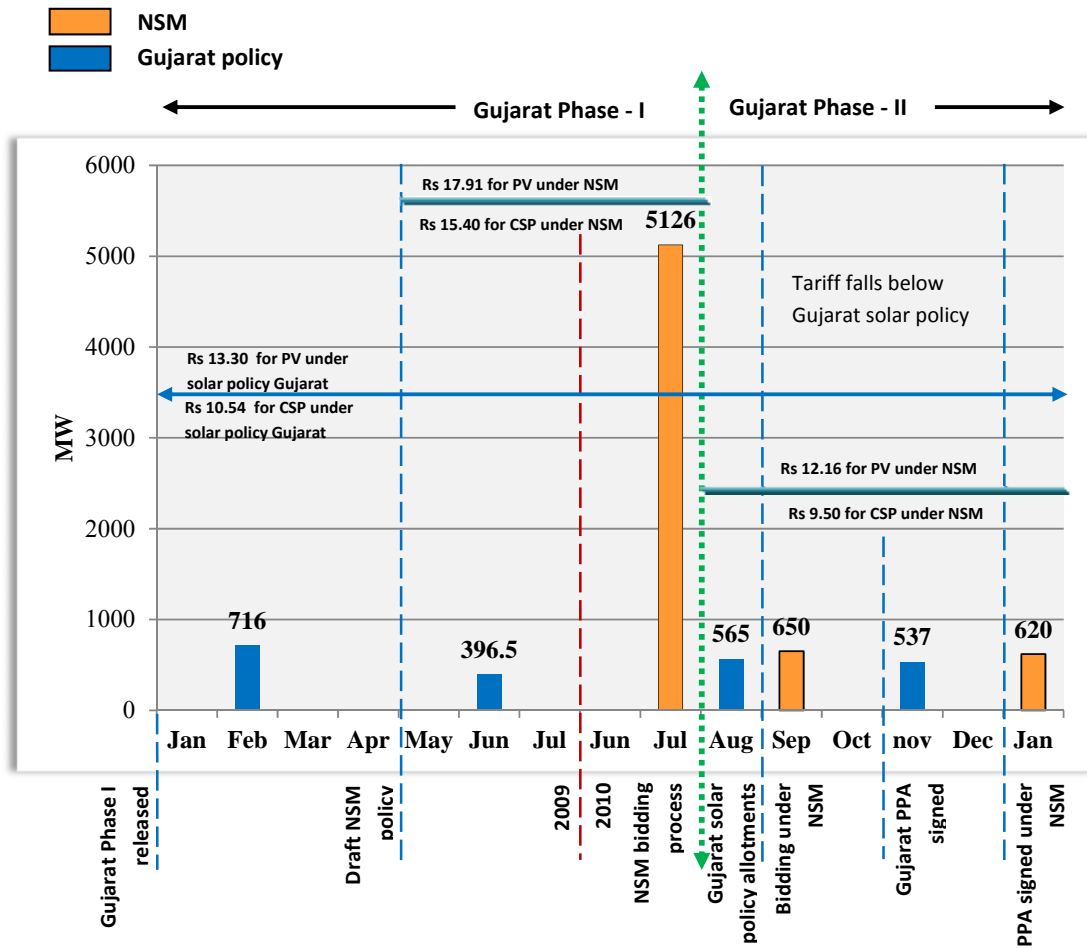


Figure 6-3 Gujarat Phase I and II vs NSM (Phase I and Batch I) event Timelines

(source: author from analysis of policies)

Note: The number on each bar represents the amount of MW under different categories as mentioned above in respective policies

Most of the business developers interviewed also felt that the state of Gujarat policy is comparatively better in implementation and achieving the targets:

The international banks are not funding solar projects in India other than Gujarat. All other state governments are not financially very prompt- Karnataka DISCOMs are all in negative cash flow, there is no transparency in Tamil Nadu, Gujarat has transparency and are investor-friendly. (Respondent #1, AES)

Many other state governments are trying to copy this...Rajasthan has come up with a kind of similar one but they are not as successful as Gujarat. Tamil Nadu had sent their team to study the policy. Andhra is trying to do but they haven't come up with any policy because of the political instability in the state. I think this is the one of the best policies in the country as solar is concerned. (Respondent #15, Yantra e solar)

As Gujarat initiated the policy first and the other states are trying to adopt it, business developers were keen on Gujarat policy. Despite businesses originating from other states such as Andhra Pradesh and Karnataka, the above business developers' interviewees had a strong sense of confidence in Gujarat solar policy. This is because the payment of such high tariffs for power distribution utilities in other states will not be easy because most of them are currently under financial stress. One of the business developer interviewees from the state of Karnataka expressed the reason for investing in Gujarat:

Today people come to Gujarat to make investments because you have some set policies, and these policies are always investor-friendly, not exactly 100% but better than the policies in other states (Respondent #6, ZF steering).

Issues of strong tariff, transparency, financial stability of the state electricity utilities and government agencies seem to be playing a major role in business developers' interest in Gujarat. It is also important to mention the state's investor friendly environment as stated by developers as an important factor for drawing the maximum business interest.

6.5 Understanding the Institutional framework

As there are various institutions involved in the policy, this section, drawn from the interviews, tries to bring the complex institutional structure together. It explains the various roles of different institutions in the Gujarat SPP 2009. The institutional framework is summarised in the figure 6.4 below.

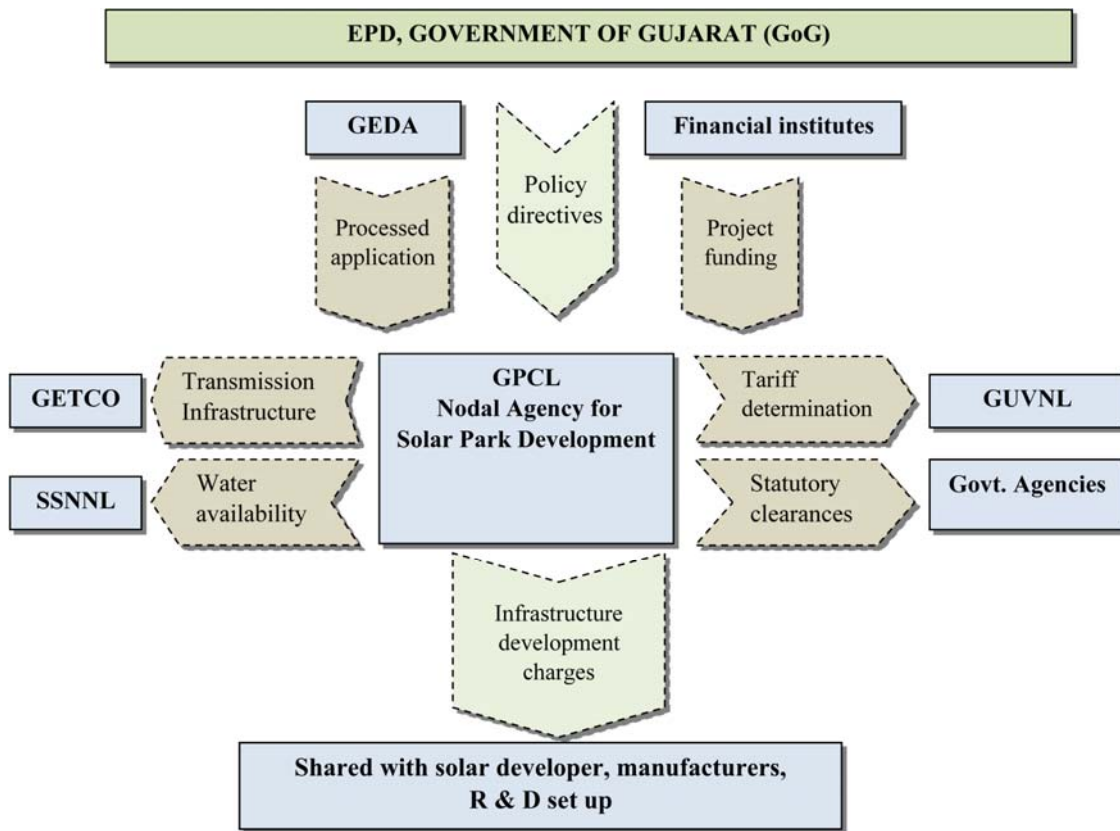


Figure 6-4 Solar park development – institutional framework (source: by author from interviews)

Note: EPD – Energy and Petro Chemicals Department; GPCL – Gujarat Power Corporation Limited; GERC - Gujarat Energy Regulation Commission; GEDA - Gujarat Energy Development Agency; GETCO – Gujarat Energy Transmission Company; SSNNL – Sardar Sarovar Narmada Nigam Limited.

Energy and Petrochemicals Department (EPD), Gujarat - The solar power policy was released under the governance of the EPD, a state government department responsible for policy-making related to all aspects of conventional energy transmission, distribution, energy conservation and use of non-renewable sources. The solar power policy was developed under the purview of the EPD:

When the whole concept started, the first department that comes into the picture is EPD...it is the umbrella department and the Gujarat home department....so under that the solar policy came into the picture. (Respondent #5, GEDA)

The solar power policy was developed by the EPD and the GERC. The EPD apart from the solar power policy also released a ‘wind power policy’ in 2007 through which the state has already established a strong profile generating 2,884 MW (second only to Tamil Nadu with 7,134MW). Various other acts, rules and resolutions pertaining to both solar and wind power in the state are also regularly released by the EPD.

Gujarat Urja Vikas Nigam Limited (GUVNL) – Another institution that emerged in the process is GUVNL, which is responsible for tariff determination. The GUVNL was formed as a part of the power reform structuring process under the central government EA 2003 (see section 5.3.3 for discussion on EA 2003) and the state Gujarat Electricity Industry (Reorganisation and Regulation) Act 2003. Under this reform process, the erstwhile Gujarat Electricity Board (GEB) was reorganised into seven companies²⁶ including

²⁶ The seven companies are Gujarat Urja Vikas Nigam Ltd. (GUVNL) - holding company; Gujarat State Electricity Corp. Ltd. (GSECL) – Generation; Gujarat Energy Transmission Corp.Ltd (GETCO) - Transmission; Uttar Gujarat Vij Nigam Ltd. (UGVNL) – Distribution; Dakshin Gujarat Vij Company Ltd. (DGVCL) – Distribution; Madhya Gujarat Vij Company Ltd. (MGVCL) – Distribution; and Paschim Gujarat Vij Company Ltd. (PGVCL) – Distribution. The rest of the six companies are subsidiary companies to GUVNL.

GUVNL. As GUVNL is responsible for purchase and sale of electricity, it is responsible for tariff determination and also PPA²⁷ for solar projects:

GUVNL is the main agency that is dealing with the tariff and PPA thing...The PPA has all the terms relating to tariff, the location of the project, project deadlines...They are the technical people who are writing the terms in PPA and supplementary PPA. (Respondent #5, GEDA)

A supplementary PPA - mentioned in the above quote - is a PPA to support cases where there are changes in location, company name or MW capacity. For example, one of the project developers who initially bought land in Shivlakhia for individual solar project development later shifted to the solar park in Charanaka. In such a case, with the consent of GUVNL and permission of GETCO for providing grid-connection, the developer can change location of the project through a 'supplementary PPA'. Apart from details on location change, the terms and conditions of the supplementary PPA remain similar to the original PPA. As the project developer described above described:

You could only change the location...but all the other terms and conditions remain same. This is also called 'supplementary PPA' but not cancelling the original PPA...that too only if you had mentioned solar park. If you had mentioned any other place, you don't need to have this also, you can change with the same PPA. (Respondent #15, Yantra e solar)

According to the above discussions a PPA plays a major role in solar energy development; without a PPA the government will not buy the power and the general public cannot afford at such a high rate. The tariff rate of INR13 (US\$0.26) for the first 12 yrs and INR3 (US\$0.06) from 13th to 25th yr for solar PV projects compared to the conventional power

²⁷ PPA for solar energy is a contractual document between the power producer or the seller and an electricity company (such as GUVNL) or the buyer. It specifies all terms and conditions for both the parties, including the commercial operation date of the project, obligations for the buyer and the seller, rates and charges for purchase of electricity, financial terms, penalties for delays and termination, and so on (GEDA, 2011).

rate of INR3 (US\$0.06) at any given period of time, was seen as a major benefit by the project developers.

Apart from tariff determination and making PPAs, GUNVL is also responsible for testing of technologies because most of the solar technologies used in India are imported from different countries:

Testing comes from GUVNL side. After the setting up the plant is completed, the developers have to do some paperwork for testing procedures and other things. Generally the panel testing and connecting to the grid is done by GUVNL and UGVNL²⁸. (Respondent #1, GPCL)

To support the domestic market, and to establish India as a global hub for solar manufacturing, the policy on Domestic Content Requirement (DCR) was proposed as a part of the NSM. According to the DCR, all the solar power project developers using crystalline silicon PV technology are mandated to use modules manufactured in India. However, due to a lack of large and quality manufacturers and lower international price compared to crystalline based modules, most of the projects are still largely based on imported thin-film PV technology. Furthermore, of the total in-house production of about 3000MW of crystalline silicon PV, much of it caters to the export market. The NSM targets 4,000–5,000MW capacity of annual domestic module manufacturing capability by 2022 (Arora *et al.*, 2010). However, this is far less than the NSM's grid-connected solar energy target of 20GW by 2022. Considering these factors, many of the project developers are resorting to cheap solar markets such as China, Europe and other countries. With the increase in imports of cheap solar panels, the governments are increasingly becoming

²⁸ Gujarat Urja Vikas Nigam Ltd. (GUVNL) – a holding company and Uttar Gujarat Vij Nigam Ltd. (UGVNL) – a Distribution company are two of the seven energy distribution companies of Gujarat. (also refer footnote 1)

cautious about the quality of the technology. GUVNL as an agency is responsible for testing these imported thin-film panels and other technology related to solar projects.

Gujarat Energy Development Agency (GEDA) - GEDA as a state nodal agency for the Ministry of New and Renewable Energy (MNRE), is responsible for developing renewable energy across the state. From the interviews, it is apparent that in the solar park and other solar projects, GEDA is responsible for allocating power capacities for the business developers and getting all clearances from the MNRE for tax and custom duty exemption on technologies and materials imported:

GEDA is involved for MNRE certificates. When you are importing certain things, they ask for custom clearance but you get exemption. Anything that you are going to import regarding solar, you get an exemption provided you get signed. (Respondent #6, GoG)

GEDA analyses the capacity of the developers and grants the PPA based on the techno-financial capabilities of the developers. It allocates the capacity that a certain company can generate through developing a solar project through the PPA. (Respondent #4, GPCL)

All these aspects of inspection, communication, legal aspects in the policy procedures, processes and procedures to be followed by the project developers are specified and set by GEDA. Apart from providing technical and financial eligibility criteria for setting up a solar project inside or outside the solar park, GEDA is also responsible for promoting socially oriented solar schemes for urban, tribal and remote underdeveloped regions.

Gujarat Power Corporation Limited (GPCL) - GPCL, a fully government owned company, as a nodal agency for solar policy is responsible for implementation, land acquisition and provision of common infrastructure (water, sanitation and roads) for solar parks to be developed in the state. It was stated that the EPD has designated GPCL for the development of solar parks:

the project was initiated under the solar power policy. GPCL was considered as nodal agency to set up solar park anywhere in Gujarat. Whoever wants to set up a solar plant needs to go through GPCL...the rest of the works are taken care of by GPCL – land allocation, roads, canals, street lights, auxiliary power works etc. (Respondent #4, GPCL)

As mentioned in the above quote, while GPCL is responsible for providing common infrastructure for the solar park, the infrastructure required inside the solar projects has to be developed by the developers themselves. Further, the land allotment to the project developers is carried out based on the ‘plot allotment policy’ developed by GPCL (GPCL, 2010b). GPCL is also responsible for carrying out financial assessment studies, environmental clearance aspects, studies on topography, hydraulics, hydrology, geo-technical survey, environment and Resettlement & Rehabilitation (R & R) studies. GPCL appoints individual consultants such as the National Environmental Engineering Research Institute (NEERI) to work on required studies, master plans, designs and drawings, tendering processes and evaluation, R & R studies for environmental clearances, and project management consultancy (PMC) for other any works related to the solar park. However, individual solar energy projects developed outside the solar park are not under the purview of GPCL.

Gujarat Energy Transmission Company (GETCO) – Though GETCO or other distribution companies (see footnote 26) are responsible for providing grid infrastructure for power transmission in any energy projects (including solar), in the case of solar parks (or for any solar project) it was explained that GETCO provides the transmission networks and also buys power from developers according to a PPA:

there is a clause in PPA for GETCO - for energy transmission, so where the plant is laid, from there to the main sub-station you have to do the transmission line, GETCO is responsible for that...then license, construction and operation,

undertaking - all those things are also mentioned in the PPA.. (Respondent #5, GEDA)

the work of GETCO is basically to set up the sub-stations and connect power to the grid. All electrical works are taken care of by GETCO as it is also another government organisation involved in the power related works. (Respondent #4, GPCL)

Financial institutions – Various financial institutions including the national banks, private funders, and international funding agencies including ADB are involved in funding the Charanaka solar park and other solar projects developed under the policy:

there are several bankers who have come forward to fund...I think GETCO is independently getting the fund but ADB is helping them in a form of loan.... central government has given a grant of 210 crore²⁹ to Gujarat for developmental activities. This project is a part of all the developmental activities. (Respondent #3, GPCL)

major portion is coming from lending institutions...world bank, IFC, OPEC, then L & T infrastructure finance, even banks, State Bank of India -infrastructure have come forward... (Respondent #12, Sun Edison)

Various sources of funding were mentioned by the interviewees. The financial institutions which provide financial capital (such as credit, loans, guarantees, and risk insurance) to commission solar plants are important for project implementation. Various financial institutions including the national commercial banks, non-banking financial institutions, private infrastructure financial institutions, and international funding agencies including the World Bank, International Finance Corporation (IFC), and the Asian Development Bank (ADB) are involved in funding solar projects. Along with debt funding from different national and international financial institutions, project developer's equity contribution was also a major part of the financial investments. Apart from the sources of funding through these various financial institutions, a few interviewees also discussed self-funding for parts of the project:

²⁹ INR1 crore = INR10, 000, 000 or US\$200,000 (@exchange rate of US\$1= Rs 50)

We have our own liquidity and we are also going for debt equity...it would be 70:30 sort of ratio. (Respondent #9, Electrotherm)

We have invested from our side.... but don't worry it's not black money. (Respondent #10, Roha)

According to the above interviewees, the nationalised banks are supporting in the form of equity mostly of 70:30 i.e, 70% loan from the bank and 30% liquidity of the company. ADB is further supporting with an initial investment of \$100 million in the form of loans, and the Gujarat government invested \$37million. Part of the fund also comes from central government's one-time fund for any development activities in the state. It could be observed that much of the funding comes in the form of loans through these public, private and multilateral lending institutions. The funding from the banks is also based on the clients' and Engineering, Procurement and Construction (EPC) contractor's turnover (last 5 years' balance sheets). Many project developers' interviewees discussed this as an issue for access to funds.

Business developers and EPC contractors - the business developers play a major role in developing the projects in the Charanaka solar park. There are about 20 developers (see Appendix III for list of project developers) in the solar park who on signing the PPA with the GPCL and GUVNL, had sub-contracted the task of development of the project to EPC contractors:

After we got the project, we got a financial closure and then we gave it to the EPC contractors. They would do the engineering, procurement and construction. So there were common infrastructure like switchyard, power motor etc. we have awarded to Indu projects. We are executing the project and EPC we have awarded to Indu. (Respondent #4, GMR)

From collation of the various interviews highlighted above, it could be noted that there are different institutions responsible for different activities in the development of the solar

policy and the Charanaka solar park. Various intermediary government and government companies under the umbrella department are assigned various tasks in the development. Through the institutional framework, it is interesting to note that while the project developers play an extensive role from the initial stages of the policy development, there isn't any space for public participation. In the name of 'public hearing', calling for objections/suggestions from project developers and other major players is well noted in the SPP 2009 and other solar energy guidelines in the state (table 6.1). The public hearing, as it is termed by the government, is usually held regarding two areas (1) Solar Policy related (2) Land acquisition related.

(1) For solar policy related - As GERC is responsible for solar policy drafting (including updates of policy), it hosts a draft policy document on the commission's website and publishes as booklets for circulation among various departments, agencies, and project developers calling for comments and suggestions through affidavits. Once the comments are received the commission would publish the final policy document, along with its take on the comments and discussion. Here, the general public don't have any role.

(2) For land related – after the publication of Section 4(1) of Government of India's 'Land Acquisition Act 1894', the government should hold public stake-holder meetings (calling for objections/suggestions) with the communities from whom the land is to be acquired. After addressing the received objections/comments, the government would then issue Section 6(1) (final acquisition notice). However, as per the 1894 Act, the government has the final right to acquire the land for any kind of project. The solar park also went under this process.

Table 6-1 Timeline of solar policies in Gujarat (source: author’s own data compilation)

Policy document	Year	Description	No. of participants in the public hearing*
GERC guidelines (notification no 15)	2005	RPO specifications for procurement of power from renewable (for the period 2005-09)	None
Discussion paper on tariff and grid connected demonstration solar power plants	2008	Solar tariff determination for the period after 2005-09.	None
Solar power policy (SPP)	2009	Policy to promote grid-connected solar energy generation (operative period until 2009 - 2014)	None
GERC guidelines (for the period 2009-12)	2009	Proposed a higher RPO percentage of the total energy generated to open access users/consumers	57
Tariff and grid demonstration solar power plants notification (order 1)	2009	Tariff for the period 2009-12 (after the expiry of 2005-09)	None
Tariff and grid demonstration solar power plants notification (order 2)	2009	Specifies tariff for the grid interactive solar power plants which are eligible to avail Generation Based Incentives (GBI) from MNRE	None
Tariff for procurement of power from solar energy projects (order 2)	2010	Decided approach of generic tariff determination	20
Tariff for procurement of power from solar energy projects (order 8)	2010	Tariff specific for solar thermal projects (including roof-top projects) and other small projects (<5 MW)	None
Notification No. 3 of 2010 titled “Procurement of Energy from Renewable Sources”	2010	The policy specifies RPO which is to be in line with the national targets under NAPCC	24
Discussion paper for proposed tariff order	2011	Proposal of specific tariff for solar energy projects (for the period 2012-15)	25
Regulation 1 “Multi Year Tariff Regulation, 2011”	2011	Supports the Solar Power Policy in the methods of promoting solar energy.	None
Tariff for procurement of power from solar energy projects (order 1)	2012	Not Available	20

* as per the author’s observations, public hearing for all of the specified policy documents involved only solar power project developers.

The environmental assessment study conducted by NEERI³⁰ identified that for the construction of the project, out of the 2024ha (contiguous) land, 1015ha was government land and the remaining 1009ha land (in patches) was under private ownership. As per the study, based on the revenue records this 1009ha land is with 440 owners from 154 families, which are considered to be Project Affected Families (PAFs). The PAFs are the land losers in one village i.e., Charanaka. The report also stated that to assess and evaluate the likely impacts arising out of the solar park on the socio-economic environment, it is necessary to gauge the apprehensions of the people in the project area. It also suggested that close communications with the PAFs and the community living in the project area should be undertaken. These issues on community participation, enfranchisement and land acquisition are discussed in the next two chapters.

6.6 Conclusions

This chapter discussed how the Government of Gujarat (GoG), with the aim of reducing pressure on the environment from the energy sector, initiated the promotion of alternative energy sources such as wind and solar. With its vast geographical benefits of availability of solar radiation and land, the state is now focusing on promoting solar energy. The announcement of its solar policy in 2009, which was designed to give a push to solar development in the state, proved to be a major step towards major grid connected solar power generation in Gujarat.

³⁰ Institution appointed by the GPCL for conducting the study. The study is not openly available. The author had to sit in the office of the GPCL to read and note the points in the document during the field work in 2011.

With an a total capacity of installed capacity of 214MW in Phase-I, and 500MW by the end of Phase – II, the Charanaka solar park was the first of the series of solar parks proposed under the solar power policy. The project not only promoted a large amount of solar power generation at a dedicated site through private sector participation in a cost effective manner, but also enabled a huge amount of Greenhouse Gas (GHG) emission reductions. The electricity produced through the solar park was expected to connect into the national grid or be sold to neighbouring power deficit states as Gujarat is a power surplus state. For the implementation of the solar park various institutions from the state level to the local business developers were involved.

The wide variety of incentives, the attractive tariff and the single window mechanism for infrastructure development and implementation made Gujarat solar policy profitable compared to the NSM, Ministry of New and Renewable Energy (MNRE) PV scheme and other state policies. These initiatives and policies for harnessing solar energy and making it grid interactive also attracted several project developers from across the country to set up solar plants inside and outside the solar park. The chapter further documented a wide range of issues and advantages felt by the developers due to policy interventions, facilities, infrastructure and incentives provided by the Gujarat government. However, on a larger scale it could be observed that the project developers had a positive outlook on the policy. This is evident from the fact that the business developers interviewees were looking forward to the extension of the policy after its lapse in 2014. A new policy with new tariff and details is supposed to be released soon and developers were keen to invest in second and third phases as well. Given the huge interest of the developers, the state government is also in the process of developing a new policy. In one of my personal discussions with government interviewees, it was stated that for the development of the second phase of the

solar park about 1000ha of land was identified by the government in the village of Morvada, near Radhanpur in Banaskantha district. Research and development activities are also proposed in the second phase of the Gujarat policy. However, much of the information is currently unavailable.

The empirical findings finally emphasised that provision for participation in solar energy development in Gujarat is meant for project developers, and not communities. Let me conclude by reflecting on provision for public participation in implementation of the GSPP 2009 and the NSM 2010. According to the Constitution of India, while ‘electricity’ is a ‘concurrent’ subject, ‘land’ and ‘local administration’ are ‘state’ subjects (also see section 5.2 for India’s legislative system). Hence, while both the ‘centre’ and ‘states’ have equal legislative powers in making and implementation of ‘electricity’ related policies, the state legislatures have exclusive powers on governance related to land and local administration matters. If not satisfied or if it didn’t want to comply with a national policy on ‘electricity’, a state could formulate its own policy. Accordingly, the Gujarat government’s state solar policy, (termed as GSPP 2009 in this thesis) released one year before the NSM’s release in 2010, is independent of the NSM. While the NSM is based on the competitive bidding process, GSPP 2009 is based on fixed Feed-in-Tariffs (FiTs). So, a provision for public participation in the NSM and projects implemented under it, may not necessarily apply to projects implemented under GSPP 2009. Similarly, the land acquisition procedures and local administration of solar projects (or any other infrastructure projects) implemented either under the NSM or a state policy are governed by the respective state where the projects are implemented; the centre has no role in land acquisition or local administration. Hence, in the case of Charanaka, or any other solar projects implemented in

Gujarat, the state government should make necessary provisions for public participation both in the solar and land acquisition policies.

7. JUSTICE IN IMPLEMENTATION PROCEDURES

Grim clay huts – pathetic trees and bushes – lakes of mud, stinking garbage – countless creatures with backs bent over – next to them faces that had already gone beyond all pain, on which were written : we will hold out, we will outlive you, you cannot destroy us.

-- David M. Smith, Geography and Social Justice (1994)

7.1 Introduction

Chapter 3 on theoretical frameworks of procedural justice indicated that in contrast to development literature, considerations of procedural justice elements, such as access to information, inclusive and influential participation, enfranchisement, and empowerment are under-explored in the context of energy policy or renewable energy. While the little available literature on application of procedural justice to energy policy is concentrated in developed country contexts (Gross, 2007; Walker & Day, 2012; Walter & Gutscher, 2011), there is a dearth of literature in a developing country context. Building on these findings, this chapter, drawn from face-to-face in-depth interviews³¹ of Charanaka communities, project developers and government representatives, explores the considerations of justice in decision-making and implementation procedures of Charanaka solar park. In the process of discussing the procedural involvement of local communities in implementation of the Charanaka solar park, this chapter tries to address the above identified gaps (see section 1.1).

³¹ While all the community interview quotations cited in this chapter were translated from 'Gujarati', the local taluka development officer interview was translated from 'Hindi', and the business developers and government quotations were directly quoted from English.

After this introduction, the rest of the chapter follows the following structure. First, it discusses the issue of information sharing and importance of local knowledge. Second, the chapter discusses the significance of participation and enfranchisement in decision-making processes. Third, it explains how issues of political domination and oppression are important for this research. Fourth, it considers the determinants and implications of representative participation. Finally, the chapter concludes summarising the findings from previous sections.

7.2 Information and Knowledge

Following chapter 3, it can be reemphasised that two-way ‘information’ exchange is one of the three pillars of procedural justice. As highlighted by Portman (2009) ‘information’ exchange as a two-way process includes the provision of information by authorities to public and feedback from the public with respect to their ‘local’ or ‘indigenous’ knowledge. This section discusses these two aspects.

7.2.1 Project information

‘Providing information’ (about the project) was one of the most discussed issues among the community respondents. In the first instance many respondents said that no information about the solar park was provided either by the project implementing government authorities or business developers prior to initiation or construction of the project. They were aware about the project only when several excavators entered their village for clearance of the land:

About 10 JCBs were brought through Fangli road into the village. What would we do when suddenly 10 JCBs entered our village? ...Then some of us asked ‘for what purpose are these JCBs brought’? It was told ‘to cut the baval’.
(Respondent #1, Male, Rabari)

we got to know when JCBs started levelling land, removing baval trees etc. we thought they are doing something...we thought as this land has some minerals - if you dig 3 feet you get minerals³² - it was being sold for that purpose.
(Respondent #10, Male, Rabari)

An important resemblance in both the above respondents was that both of them were elderly people from the economically marginalised Rabaris. These transhumant pastoralists live in Charanaka only for about four months in a year (see section 4.2 for patterns of Rabari movement). Due to this migratory movement and lack of land ownership (more findings on land ownership in section 8.2), large land-owning farmers and public authorities often ignore them (Choksi & Dyer, 1996). Mitra (1992) attributes the omission to provide information about development projects and new policies for these economically marginalised communities to the ignorance of authorities and rich landowning farmers.

Mitra (1992) further emphasises that illiterate older people generally experience less access to information compared to the young and active. While the above elderly Rabari respondents, with little access to information and ignored by others, claimed that officially no information about the project was provided, other young and comparatively literate respondents related that they had information about the project through a land acquisition ‘public notice’ sent from the state government’s local revenue department. Some of the interviewees reported:

Some people came with a public notice from ‘taluka’ office and told that land from survey numbers 230 will be acquired. (Respondent #5, Male, Muslim)

³² Kutch region is rich in minerals such as Bauxite, so large areas of waste land, which were fodder sources for pastoralists, have been given to cement, salt and bauxite production over the years (Choksi and Dyer 1996, p.8).

We got to know through a public notice. As our village Charanaka is under 'group panchayat', we got to know about the public notice from our main panchayat office which is in Bhabra village. (Respondent #9, Male, Rabari)

In India according to the *Panchayat Raj* system, which was adopted in 1957 to decentralise administrative functions, every village with a population of 5000 or more was supposed to have its own Panchayat (box 7.1). However, as Charanaka and its neighbouring villages of *Bhabra*, *Bhaveda* and *Patanaka* had less than 5000 population, all the 4 villages were merged under a *Group Panchayat* with the main Panchayat office and the *Sarpanch* (head of the Panchayat) located in Bhabra and the *Upsarpanch* (deputy head) in Charanaka. This Bhabra village lies on the east side of Charanaka at a distance of 14kms. The public notice which the above respondents referred to was a notification of 'land acquisition' of specific survey numbers³³ but not information about the project. From the above respondents' quotations it could also be identified that the public notice was not received directly by the village upsarpanch or any other *goan ka neta* (village elite), but through a source from the panchayat office in Bhabra village. The distance, and the technical information provided in the land acquisition 'public notice' document also emerged as reasons for the illiterate elderly Rabari respondents not being aware of the information. Several other young, educated (at least undergraduate) or educated-working (outside the village in a town) respondents, who agreed about the public notice, also reported that information about the project was known through land acquisition procedures. As part of the land acquisition procedures, section 4(1) of the Government of India's 'Land Acquisition (LA) act, 1894'

³³ Survey number or a sub-survey number is a legal land document which contains all information pertaining to a piece of land, including the boundaries, title and ownership, names of tenants and owners, the total area of the holding, the area under agricultural and non-agricultural use, crop details, and so on. The survey numbers are maintained by the revenue officials in registers/forms (Ministry of Agriculture, 2006).

(see chapter 8 for more discussions) mandate providing notice about land acquisition and call for objections for any infrastructure development in all major English and vernacular language local newspapers. So, according to these young respondents, information about the solar park was known through the notice of land acquisition given in the local newspapers:

No one told about the project. We just read in the newspaper that they are going to take all land. (Respondent #19, Male, Ahir)

There was Jahernamu- government gazette in the newspaper which states about the land acquisition of 1 to 230 survey numbers of the Charanaka. We got to know from that. (Respondent #20, Male, Gadhvi)

The above respondent #20, an undergraduate student belonging to an upper caste farming community, also went on saying that gathering of information had enabled him to track the project and the land pricing. He knew the existing market land value: ‘the *current land price is Rs 13 lakh / bigha*³⁴’ (Respondent #20, Male, Gadhvi). The above observations, similar to the previous literature, illustrate how information about land acquisition and market value of land often provide land pricing bargaining power to upper caste farming communities (in this case Gadhvis) (Choksi & Dyer, 1996; Mitra, 1992).

In all the above cases the sources of information (public notice and notice in newspapers) about the project were the LA Act give year here obligatory requirement of providing information through public notices or official gazette, and calling for objections about land acquisition through newspaper advertisements. The interviews further showed that while information about the nature of the project was not provided, information about the land acquisition for the project was known only to those active in society (literate or illiterate),

³⁴ 1 bigha = 1.75 acre in Gujarat and 1 \$ = Rs 60 approx, Rs 1 lakh = Rs 100, 000 (or \$1666 approx)

or the educated who sought it (more findings on literacy in section 7.5.3). While the literate population knew about the land acquisition and the project from reading newspapers, other illiterate respondents knew about the project by using their own wits and visits to the construction site. A young and active Rabari described it:

No one came to explain us anything. But as per my knowledge and from the discussions I heard, about 2000 ha of land has been proposed for the development of the solar park. In that government land is about 1200 ha and the rest about 900 ha is private farm land. (Respondent #1, Male, Rabari)

The above respondent gathered this information about the project and the amount of land to be acquired through different ‘self-help’ information sources including constant use of internal information networks, communication between the different communities and discussions in the village (Casimir, 1996). Though the above respondent ‘self-gathered’ information about the extent of land requirement for the project, appropriate knowledge and understanding of a development can only really be achieved through accurate information provided by the authorities (Abelson *et al.*, 2003).

Similar to the community interviewees, a majority of the government respondents also agreed that there were no public participation or consultations to share information as the project was initiated quickly:

It all happened suddenly. Some people got transferred here in a single meeting. The next day they all came here, started cleaning the land etc, as the time passed by, the local people got to know about the project. (Respondent #1, GPCL)

I don't know if they had done it, but I think they should organise at least 1-2 meetings with the people and share information about the project. (Respondent #4, TDO)

Both the community and expert interviewees then admitted that officially there was no information about the project. A large number of institutional calls for participation (UNCED, 1992; European Commission, 1997) and much literature argue that while free

flow of relevant, accurate and up-to-date information about a development is important for democratic participatory processes or influential participation (Arnstein, 1969; Dolan *et al.*, 2007; Soneryd, 2004), poor or no information results in low level of participation (Burns, Hambleton, & Hoggett, 1994). The case of environmental decision-making in Usangu, Tanzania, where people were empowered by information provided, understanding of the procedures and influential participation, could be cited as a useful example of good practice (Thomas, Geoffrey, & Kayetta, 2005).

7.2.2 'local' or 'indigenous' knowledge

While information about a proposed development from the authorities forms the first half of two way information flow, soliciting and valuing 'local' knowledge completes the second half of the process (Portman, 2009). It means that communities not only want scientific information provided by the authorities but also to have their feedback valued in all decision-making processes through recognition of their knowledge. One of the first themes on local knowledge that emerged from the interviews was on selection of the project location. According to the 'Detailed Project Report (DPR)' of the solar park, the location of Charanaka was selected due to factors such as high solar radiation, availability of a large chunk of government land (at a single location) and private farm land (with single cropping patterns), and the relatively small population of the village. However, various respondents, through their indigenous knowledge, lamented that instead of acquiring one single piece of land from a single village, using different pieces of land from different locations could had less livelihood impacts for the pastoralists or the farmers:

The government is taking 900 ha of Charanaka village to include the 1200 ha of government land for the project. Instead of taking this much of land from a single village, it would have been better if bits of land from surrounding villages

are acquired. This way impact for the ‘Maldharis³⁵’ and farmers would be less.
(Respondent #21, Male, Gadhvi)

About 10,000 ha of waste land is located on the other side on the hill. It is neither being used for agriculture nor for grazing. If the government used that, there would not have been any problem for the farmers or the ‘Maldharis’.
(Respondent #1, Male, Rabari)

The above quotations emphasise that local communities, bestowed with valuable local knowledge about environmental conditions, availability of natural resources, regimes, rules and socio-behavioral practices of the region, can be more competent and knowledgeable than highly trained technicians from outside (Casimir, 1996). The Rabaris’ traditional occupation of dry land pastoralism - to ensure finding good pastures for their animals - endows them with intimate knowledge about geographical conditions. Even without formal education, these monetarily poor and illiterate nomadic communities possess an enormous amount of indigenous knowledge (Street, 1984). This reservoir of knowledge about their environment and socio-cultural conditions transmit to their next generations without recourse to any education. Valuing this local and indigenous knowledge by the experts in identifying a ‘right’ location for the solar park could have been important for redefining the relationship between the local community and the government (Mosse, 2001).

Another important aspect that can be drawn from the interviews is the local communities’ knowledge of potential socio-cultural and environmental impacts of the project. One of the respondents exhibited an in-depth understanding of probable environmental impacts of the project on the region:

It will create impact to various animals living in this place such as Haran (deer), Sasloo (rabbits), lombdi (fox) etc. Nilgai (blue horse, a kind of antelope)

³⁵ Rabaris often self-identify themselves as ‘Maldharis’ as they are the bearers of flock (Mal- flock, dharis- bearers)

sometimes lives here. The Ghudkhar (wild ass) travels all the way from the wild ass sanctuary near Suigam-Sidhada villages till here. By now you must have seen hundreds of mor (peacocks) living in this place. If there is baval then several varieties of birds live on them. If the trees are gone, there wouldn't be any place for them to live on (Respondent #15, Male, Rabari, translation added).

The Charanaka village lies next to the world's largest saline dry desert in Kutch (a home to numerous migratory birds, and several wild animals,), endangered 'wild ass' sanctuary and two reserve forests, apart from hosting India's most famous pastoral community. The above respondent emphasised the potential environmental impacts of the project to these sensitive areas. I also witnessed several tens of peacocks and other migratory birds living in the premises of a temple in the village both in the early morning and at sunset during my stay in that temple (plate 7.1). The above interviewee also went on to explain that the implementation of the solar park could create an impact on the cropping patterns. In line with the above quote the previous literature argued that Rabaris possess unmatched knowledge of geographical and environmental conditions and, flora and fauna of the region (Choksi & Dyer, 1996; Sharma, 2011). This knowledge on environment and biodiversity helped the above respondent to forecast the potential impacts of the project.

The decision making in deciding the location for the solar park itself appears critical here because the protected areas were not really taken into account at the initial stages. In the literature on renewable energy (specifically on wind energy), such ecological and landscape impacts emerged as some of the most important factors behind local resistance for renewable energy projects (Devine-Wright, 2005, 2009; van der Horst, 2007; Wolsink, 2007). Considering the communities' indigenous knowledge through participation at the initial stages of decision making would have been helpful in locating a location which takes these landscape and environmental impacts into account.



Plate 7-1 Numerous peacocks and birds witnessed by the author in the village temple premises (*source: author, 2011*)

Turning to socio-cultural impacts, various interviewees further lamented that the influx of labourers and workers from neighbouring states of the country had disturbed the socio-cultural dynamics of the place. Protecting the community's security, traditional and cultural values and social life was very important for the respondents:

So many people are from outside, they don't know our language and we don't know their language; they don't know our social culture. They drink alcohol and change the environment of the village; they roam with half pants at mid-night which is not good. (Respondent #15, Male, Rabari)

People came from outside and there is a burglary case in the Ghoga's temple, Mata's ornament of gold was gone. We don't know who stole it but it happened only after solar park. (Respondent #28, Male, Rabari)

The moral undertone of the above Rabari respondents was that urbanites and, geographically and culturally different immigrants do not understand the rural area's local traditions. They accused immigrants of lacking understanding and respect for their

traditional culture and livelihoods. This sense of displacement of local cultural traditions and livelihoods often resulted in expression of ‘a sense of loss of communities’ by local people. Lack of respect for community knowledge and ignorance of socio-cultural interactions can eventually result in destruction of communities (Schlosberg, 2007). Indeed, respect for local cultures, beliefs, superstitions and social fabric embedded in socio-cultural systems becomes imperative (Wilkins, 2002). In line with the findings, previous literature also emphasises that peripatetic people put great stress on valuing their cultures; ‘involving *outsiders* in their internal community affairs is discouraged and considered a major breach of conduct’ (Berland, 2003, p.114; Walker & Fortmann, 2003).

This section emphasised that along with expert knowledge, recognition of local knowledge through participatory procedures can help in finding a right location for the solar park as well as reducing the gap between the communities and the decision-makers. St. Martin (2001) discusses how failure of scientific narratives to value local knowledge and ‘traditional’ systems of community resource management can widen the gaps between the scientific community (such as business developers and government) and the local communities. This widening of the gap by ignoring the local knowledge can further result in deepening of socio-economic inequities and community-political conflicts. Furthermore, though it is always not possible to take all information provided by local communities into consideration, important information relating to environmentally and socially protected areas can help address the impacts to those areas.

In the pursuit of procedural justice, respect for the socio-cultural environment, consideration of impacts on community livelihoods, and acknowledgement of local knowledge through open communication and participation is crucial (Visvanathan, 2007; WCED, 1987; Wynne, 1996). Harvey (1996) argues that this open communication through

a method of conjoining different perspectives from different positionalities is a basic principle in the construction of just procedures. The local communities normally know their geographical, ecological and social environments better than others, and know what is best for them; they can come up with optimal strategies for local geo-climatic and socio-political constraints (Casimir, 1996).

7.3 Inclusion and enfranchisement

While providing information and valuing indigenous (local) knowledge are basic steps of procedural justice, the next steps of influential and democratic participation and giving ‘voice’ (enfranchisement) to the local communities leads to citizen empowerment (Burns, Hambleton, & Hoggett, 1994; Soneryd, 2004). Based on these steps, this section focuses on inclusion and enfranchisement of affected communities in implementation of the Charanaka solar park.

Many of the community interviewees agreed that there was no participation with the entire village in the solar park decision making process. Even if there were any consultations, they were mere top-down oriented meetings informing people about the land acquisition:

No one was consulted or included, just there was one meeting to inform about land acquisition (Respondent #15, Male, Rabari)

Some officers came along with Bhagat. In gram sabha they told that you have to give your land...after that meeting there was supposed to be a meeting, but nothing happened. (Respondent #5, Male, Muslim)

According to both the above Rabari and Muslim respondents, while there were no public participation meetings for the project, there was only one official meeting on land acquisition with only one official representing the government. This meeting was held during the *gram sabha*. In Gujarat, since 2001 the government had initiated the *gram sabha* as a form of rural meeting with opportunities for public participation (Patan District

Panchayat, 2012). The gram sabha held in any village of Gujarat reviews and discusses the development work undertaken by the panchayat and problems of the village, in addition to providing information on various programmes/schemes of the government. According to the respondents, apart from the order of land acquisition during this gram sabha, there were no meetings prior to the project initiation. Such kind of top-down oriented communication can witness little public engagement (Ockwell, Whitmarsh & O'Neill 2009).

It was further emphasised that after the project initiation during the land acquisition process there were a few 'for the sake of paper' meetings by one government official:

Bhagat from GPCL will come, and calls 4-5 people and speak to them, he doesn't speak to all people. (Respondent #19, Male, Ahir)

Only one person comes from GPCL, he doesn't talk to everyone, he will call 5-6 people, speak to them and show on paper that they have done meeting with the villagers, but there is no public meeting with the villagers. (Respondent #21, Male, Gadhvi)

The conclusion of both the above participants was that a public consultation with a handful of land owners for addressing the LA Act 1894 'rulebook' clause of considering grievances of all affected people from a project was all that happened in this case (see section 8.5 for more discussions on the LA act 1894). In effect, no public participation in the process of solar policy decision-making or solar park project implementation was conducted. Further to this lack of participation and inclusion, several respondents also argued that the decision-makers turned a deaf ear to the repeated requests of interest groups:

When we got to know about the project, government sent some officials to discuss with us about the project. We told that by taking the land our daily lives would suffer. They spoke to us and left.... Government would never do the things which we would like to do. (Respondent #1, Male, Rabari)

We met him when he came first time in last winter....we are seeing every 2nd day but he never spoke to us. They take surveys and go... If we ask what's going on

they won't even answer. At least they need to answer right, so we will know what's going on... (Respondent #28, Male, Rabari)

Again, both the above participants who expressed a lack of voice in the project implementation process were Rabaris. Rabaris, as an economically marginalised group feel that they are ignored by the political institutions. The above quotations resonate with the previous literature which highlighted that these transhumant Rabaris had been ignored or 'left behind' in policy interventions or development projects in both colonial and post-colonial India, and any policy outcomes or legal mechanisms had largely favoured sedentary farmers (Dyer, 2006; Sharma, 2011). This can be strongly supported by the fact that even today these nomadic communities are not even included in the census and remain invisible and un-enumerated citizens (Sharma, 2011).

In the past two decades, various empirical work in the educational and development literature brought the acute marginalisation and exclusion of nomads in different parts of the world to the fore (Agrawal, 1999, 2003; Choksi & Dyer, 1996, 1997; Berland, and Rao, 2004; Dyer, 2006, 2011). Similarly examples such as i) the case of 'participatory forest management' in India and, ii) the case of *Fulani* nomadic cattle herders in rural Nigeria assert that marginalisation, disenfranchisement, and political and institutional exclusion of the already disadvantaged cattle herders induces a profound impact on their livelihoods (Hildyard *et al.*, 2001; Penrose, Bdliya & Chettleborough, 2005). These cases where the cattle herders were forced to settle into areas where grazing had become more marginal due to insufficient availability of grazing land reassert the vulnerability of these marginalised groups. These arguments advocate recognition of their culture and call for a more systematic inclusion of these marginalised groups (tribals, peasants, pastoralists) in all decision-making processes. Walker and Day (2012) state that groups may be overlooked or

stigmatised due to lack of recognition. This lack of identity and recognition eventually leads to misrepresentation of these groups in the procedures that affect their livelihoods.

With an aim to recognise the nomadic and tribal communities, to examine their social, political and economic marginalisation, to provide full equality of opportunities, to preserve and promote their art and culture, and to support their inclusion and political participation, the Ministry of Justice and Empowerment, of the Government of India established a temporary ‘Nomadic commission’³⁶ (NCDNSNT, 2005). However to date, no strong provisions have been made for sustaining their livelihoods either through access to lands or mitigating their systematic marginalisation from development initiatives.

To make an accurate representation of all sections of a community, we need just procedures with recognition of all groups of people (Harvey, 1996). Recognising these marginalised and disenfranchised Rabari communities as contributors to decision-making processes would open up avenues for addressing concerns of participation and procedural justice. Hunold and Young’s (1998) case study on hazardous industrial siting reaffirms the direct link between recognition and participation in decision-making processes of siting facilities. These arguments on providing spaces of inclusion for all and recognition of the marginalised were also emphasised by several interviewees. Involving the entire community in the procedures of decision-making that affect their life was felt to be very important by several respondents:

First they should have done meeting with all the villagers- they should have explained to them, then they should have taken advice from them. (Respondent #13, Male, Muslim)

³⁶ Refer <http://ncdnsnt.gov.in/> for more information on National Commission for Denotified, Nomadic and Semi-Nomadic tribes (NCDNSNT) released in 2005.

They didn't ask us anything, they didn't talk to us. They should have talked to us, they should have given guidance, they should have done a meeting with the villagers. (Respondent #21, Male, Rabari)

The implication of the above respondents was that the goals of inclusive participation could be achieved only through holding sufficient meetings with all the villagers, explaining to them about the project, taking advice and accommodating inputs into the decision-making process. It implies that in a democratic system the affected communities hold right to equal opportunities for participation (Schlosberg, 2003). Both the above quotations accentuate that preserving rights and interests of the excluded through influential involvement in decisions defines just procedures (Renard, 2005).

Further to the above requests for participation, the respondents continued that there should be a sense of efficacy in the output of the meetings – *'it's not all money, it's life'* (Respondent #15, Male, Rabari) - else it would make no sense to continue them. The participatory procedures should involve as many citizens as possible in decision-making even if it takes a lot of time and expenditure (Mitra, 1992). In the face of allegations of discrimination, meaningful participation as described by the above respondents can restore or build trust and reduce tension (Holifield, 2004) between communities and decision-makers.

'Communication with people is important. Good communication and proper discussions will solve the problem of misunderstanding' (Respondent #12, Sun Edison).

As said by the above respondent, the business developer respondents unanimously agreed that inclusion of communities was necessary to resolve disputes amicably. For gaining support of communities, they argued that participation should be considered by the government. One of the respondents said:

It was probably done by GPCL before identifying the huge chunk of land. From our side I am not sure what kind of consultation is required. (Respondent #9, Electrotherm)

On the other hand, the government representatives conceded that while not even formal ‘consultations’ were conducted with the local communities, ‘*there were good amount of seminars, roundtable discussions, and feedback sessions*’ (Respondent #6, GoG) conducted with the business stakeholders. All the concerns of the business developers were addressed by the co-ordinators appointed by GPCL through continuous communications. On this matter, a project engineer of the solar park implementing authority GPCL said:

There is no such kind of thing such as to explain people about the things going on. I think such kind of consultations are required...the concerns of business developers will be addressed through our senior officials. (Respondent #1, GPCL)

Both the business developers and government interviews emphasised the development motive and the ‘not necessary’ attitude towards community participation. They disregarded the need for involvement and inclusion of people in the decision-making process. The above findings resonate with the works of Gooch (1998 and 2004) on nomadic *van Gujjars* in North India which state that government felt that the ‘nomads simply did not fit into the *modern project*’ (p.41, emphasis in original). Democratic participation, with representation of vulnerable groups in decision-making processes, is a key to public acceptance of new and renewable energy technologies (Gross, 2007; Zoellner, Schweizer-Ries, & Wemheuer, 2008). The cases of disenfranchised valley farmers facing floods by large dam construction or the marginalised small landholders facing the promotion of policies in favour of large industries are all evidences of exclusion of local communities and the poor in decision-making processes (Leach *et al.*, 2007).

From a communication with the *Taluka Development Officer (TDO)*, it was found that some of the farmers approached the TDO for support in the land acquisition procedures. According to the Panchayat raj system 1957 (see box 7.1) the *TDO* and the panchayat were actually given powers for redressal of any locally implemented projects, but in this case it was observed that TDO was also very little involved:

Frankly speaking, I think there are about 48 companies that were allotted land in the park and I don't even know about one company....we have just been 2-3 times to the site and once about the forest in that region, and that's it.
(Respondent #7, TDO)

The TDO explained that they were not involved as there was no requirement from their side. Instead, the *mamlatdar* office was well involved in the process as the department deals with land revenue matters in a given taluka (also called a sub-district). Despite there being no tangible public participation meetings held for the project, the TDO also stressed the need for inclusive participation of the community at all levels:

I think there should be 1-2 meetings. I don't think that they didn't do it, they must have for sure done it but, I just think there should be meetings with the villagers... I think if people are involved since the policy stage there wouldn't be much problems of acceptance. (Respondent #7, TDO)

Box 7.1: Local governance system in India (focusing on village level)

“The people remained uninvolved and the desired development efforts were not forthcoming. To tide over this difficulty, in 1957 the Committee on Plan Projects of the National Development Council commissioned a special group under the chairmanship of Balwantrai Mehta. The Mehta report recommended that development efforts be expedited through a three-tiered system of decentralised government, intended to elicit local participation and enthusiasm. The result was panchayati raj, a remarkable experiment in democratic decentralisation which was intended to provide for the decentralisation of administrative functions, the politicisation of planning, and the joint implementation of development programmes by officials and local leaders simultaneously.

At the grass-roots are the village panchayats or councils. *panchas*, or members of the panchayat, are elected on the basis of universal adult franchise while the sarpanch or panchayat chairman may be directly elected by the villagers or indirectly elected by the other *panchas*.”

Source: (Mitra 1992, p.117)

Providing opportunities for inclusion, by bringing marginalised communities ‘to the table’ and accommodating their voices in the decision-making process, can eventually increase the legitimacy of the government in the perspectives of those excluded groups (Harvey, 1996, Leach *et al.*, 2007). The increased legitimacy in political processes can strengthen local institutions (such as gram panchayat) and increase public trust in the government (Mitra, 1992; Renn, Webler, & Wiedemann, 1995). Gram panchayat, as a local institution, and with representation of members from each caste of the village, is more accountable to the respective castes. As discussed earlier in this section, the gram sabha of the gram panchayat, is empowered to support the previously powerless and disenfranchised sections of a community by including all adult citizen voters in all the matters of a village. Hence increasing the role of gram panchayat in the decision-making processes can also facilitate accommodating the views of all sections of the community who had hitherto been excluded in the decision-making.

7.4 Political domination and oppression

Power of political institutions, bureaucracy, and institutional dominancy has always been an important weapon in the Indian politics system (Mitra, 1992). In policy implementation and the politics of space in India, the power of a diktat bureaucracy had always been ‘louder’ than the marginalised communities’ voice. This was clearly evident from the community interviews. Several respondents expressed the view that institutional domination by political institutions had taken over the democratic decision-making procedures:

They told us that from 1-230 survey numbers will be acquired in Phase-I, they gave date of September 14th, think whatever you want to think and let us know, what rate you want to take. You just give us the option to be acquired... (Respondent #22, Male, Rabari)

He just says that this gouchar land would be acquired and you take money. He just talks about money, you have to give by any means, right now if you give it would be good....otherwise you will not have that also. (Respondent #18, Male, Brahmin)

According to the ‘Seventh Schedule’ of the Constitution of India, under ‘State List’, for subjects such as agriculture, rural development and administration, health and education, the State legislatures hold all power to make laws and policies. Similarly the LA Act 1894 provides the power to acquire land with mutually agreed compensation (more on the LA Act in section 8.5). In the solar park implementation procedures these agents of power emerged as the pathways for political domination over the communities. The primary school principal commented on this situation: *‘Mostly they will give land, this project won’t be stopped, and there will be one solution’* (Respondent #11, primary school principal). The issues of dominance of institutions, the prosaic but constant struggle between the marginalised and oppressed local communities and the powerful socio-political institutions are all identified in Scott’s (1976) everyday forms of peasant resistance in South-East Asia.

As discussed in the previous section, and as noted by one of the interviewees: *‘...forcefully how can they take land when this is a democratic country’* (Respondent #26, Male, Muslim), the solar park decision-making processes, by not providing space for inclusion and enfranchisement, appeared to have lost the sense of democracy. According to this respondent even if the land was government property and the market exchange between the government and the private land owners was necessary for the solar park implementation, the process of acquisition should be carried out through adoption of fair and just rules (both technically and morally) and not by patterns of domination of the most privileged government over the least privileged communities (Smith, 1994). Instead of exerting power

and domination, the government should facilitate the protection of entitlements and arrive at decisions through just procedures (Schlobserg, 2007; Young, 1990).

Further to this institutional domination the respondents stated that the top-down policy implementation processes, through an ‘act of power’, restricted and created political boundaries for the communities:

When the Chief Minister (CM) came Bhagat informed us that no one from Charanaka village will go because when there was a meeting before people from the village held agitations against the solar park. They took all people into custody in Santalpur. (Respondent #13, Male, Muslim)

Police took several people and put them in jail for 1 day. When CM came here, they took 150 people into custody. They know we will do agitations, so they didn't allow anyone from Charanaka even to see the CM. (Respondent #25, Male, Gadhvi)

The implication of both the above respondents was that the government, instead of recognising the villagers as citizens with a right to voice, participation and recognition, portrayed them as violent criminals with no right in any decision-making processes or over the landscape of the village. This act of oppression by deploying power could change the state-community relations and ultimately result in a failure to achieve the goals of democracy in policy-making processes. As one of the interviewees described: ‘*We used to favour ‘X’ government, but now our government is cutting our head*’ (Respondent #9, Male, Rabari, name of the ruling party anonymised). This act of power, domination and oppression by the government led to reduced confidence and increased fear to raise voice against the government:

This land is given by government and we are the farmers of government, we can't speak anything against them. (Respondent #9 Male, Rabari)

You see it is very tough for the farmers to live like this and deal with this government. What can people do, you tell me? (Respondent #2, Female, Gadhvi, Anganwadi teacher)

The power relations between the government and the disadvantaged communities as discussed above resonate with Smith's (1994) discussion on inequality between society and institutions: exertion of political power and exploitation of marginalised groups can result in exacerbation of inequality, further reproducing institutional domination and oppression. These discussions on exercise of power and state's control over space (access to land) and resources also echo other works on political ecology such as Braun and Castree (1998) and McCarthy (2001).

7.5 Representative participation

People's fear, lack of voice, exclusion and oppression in the decision-making process and the struggles for just political-economic representation resulted in collective action. As the communities felt that they had been excluded in the decision-making process and their voices not heard, the entire village resorted to a 'representative' form of collective action. The 'representative group' was formed after Charanaka, as a community, was unsuccessful in putting forward their perspectives on livelihood impacts of the project and the land acquisition at the gram sabhas. According to most of the respondents, the gram sabhas were almost one-way discussions with the government representative influencing the villagers. After a few of these futile gram sabhas and the instance when the villagers were denied to meet the Chief Minister during his visit to the solar park, some of the elite and educated members of the Gadhvi community, who live in the nearby big towns and have access to the ruling political party, had supposedly instigated the idea of a representative group. Various other members also agreed to this idea and nominated representatives from their respective castes. The representative group with members from each 'caste' played the role of *aage vaani* (voice-takers) of their respective castes and of the entire village:

There is a group who are working on this issue- ‘Darbars’, ‘Sarpanch’, ‘Gadhvis’ all these people know well about the village, so they look into these issues and speak with the government. (Respondent #9 Male, Rabari)

The main people who speak on behalf of the village are our Sarpanch, BD Gadhvi, RD Gadhvi, K Rabari, like this there are different people from different castes. This group is also responsible for mediating the discussions between the government and the village. (Respondent #1, Male, Rabari)

By the suggestions of the representative group, the private farm owners, apart from those who sold land to mediators without knowledge about the solar park, stood firmly against acquiring the land for the project. Due to this resultant failure in acquiring a large amount of private land, though the Charanaka solar park was initially planned for a total installed capacity of 500MW, the end commissioned capacity was only 214MW. In the process of collective action, while the group was unsuccessful in protecting the rights over long-used government land and the private land which was sold before, they were partially successful in protecting the privately owned farmland from acquisition. While the acquisition of government land didn't have a major effect on the large sedentary farming communities, the livelihood of Rabaris who were mostly reliant on the government common land were greatly impacted. Similarly, the small private land owners, who sold their land to mediators who in-turn sold to the government, lost their livelihoods by spending the money they earned from the sale of land and also the land (see section 8.2 for more findings on relationship between land and livelihoods). The result of the collective action was thus good for the large landowners but did not help the more marginalised people, such as Rabaris and small landowners.

The representatives or important caste and community leaders who lead and yield an influence in the village are often termed as *gaon ka netas* (local elites) by the villagers (Mitra, 1992). Though they do not occupy any formal political positions in the village, these *netas* (elites) - often referred to as ‘fixers’ - occupy an intermediary position from

which they mediate and conduct two-way communication between the government and the village. The netas of the representative group occupied positions such as one was an educated political party representative, other a rich cultivating land owner, and others caste or community leaders. Caste, residence, and, education emerged as the predominant factors in selecting the representatives.

7.5.1 Caste and the representative group

According to the above respondents, the representative group consists of representatives from different castes – to represent the entire village in the matters of discussion with the government. The person representing the caste would know about his own people and what's required for the development of their community.

The power and authority in Charanaka could be categorised into a hierarchy of - i) the upsarpanch elected by the villagers naturally holding a certain amount of power and authority, ii) the *Brahmins* (priests) and the dominant class of other large land owners belonging to the upper caste *Gadhvis*, iii) the *Darbars* and *Rabaris* – both belonging to the pastoral nomadic communities, and iv) marginalised castes such as Ahirs, Thakores and others (see section 4.2 for more discussions on caste system). The *Gadhvis* occupy a better position both economically and socially in the village than the rest of the caste communities because they were the earliest existing caste in the village and also a sub-caste of *Charan* (which is a part of *Kshatriya* caste), after which the village Charanaka was named. Though the *Rabaris* are an economically marginalised caste, in terms of hierarchy they enjoy a better position than other marginalised castes such as Thakores.

As discussed above, caste and hierarchy naturally play a major role in power and voice in Indian villages. The representatives as the respondents mentioned above such as X

Gadhvi³⁷, a large farm land owner living in the village and Y Gadhvi, brother of X Gadhvi, a graduate and a government employee living in *Radhanpur*, were influential people of the village. Many respondents felt that these upper strata Gadhvis were superior to others in the village as they had better access to political processes, influential state-community exchanges, were educated and owned large tracts of farm land:

‘Only Gadhvis do everything because they are the only educated people. Gadhvis sons are in medical field so they know everything’. (Respondent #26 Male, Muslim)

In the village everyone will do their own things normally, but sometimes Gadhvis will take leadership because they have their own lands. (Respondent #19, Male, Ahir)

Mitra (1992) likewise argues that the same situation exists in many Indian villages – the loudest voice rests with the communities of large landowning castes or those who are influential in their communities in some way (due to their education or jobs etc).

7.5.2 Localness and the representative group

Though the ‘active representatives’ of the upper castes took the lead in representing the village to the government, several respondents lamented that as the Sarpanch, as a head of the Panchayat was a native of a different village and Y Gadhvi lives outside the village, the collective action wouldn’t be effective:

Some times Sarpanch (but he lives in another village) otherwise a few people from the village only do everything. (Respondent #3 Male, Rabari)

Deputy Sarpanch and sometimes Sarpanch, he only comes sometimes for the meetings as he lives in another village...RDG...There are many people who support us but they are all outside people. (Respondent #8, Male, Rabari)

³⁷ Whom actually the author first met in her field work to introduce herself and asked for a place to stay in the village. He was the person who actually offered and let the author live in the temple of the village as there was no good building in the village other than the temple building.

Due to the group panchayat system (as discussed in section 7.2.1) and since the Sarpanch was from another village, respondents said that the Upsarpanch as a native of Charanaka should represent them in fighting with the government as he had been in contact with the higher level of government. The Upsarpanch as a gaon ka neta was supposed to have many roles – as a mediator, a facilitator, a provider of legitimate information about the development and a role-player between government and the people (Mitra, 1992). However, a high level of distrust in the Upsarpanch was expressed and respondents felt that he had been inactive, ineffective and that his efforts in conveying the people's notion of justice to the decision-makers were futile. One respondent commented: *Upsarpanch now goes in a jeep with the officials; he doesn't listens to us now.* (Respondent #1, Male, Rabari).

Further representatives such as Y Gadhvi though born in the village become partial outsiders due to their current residence status in Radhanpur (a large town at a distance of 75kms). Discussions presented the respondents' feelings about local representation. Respondents considered that though the current representatives were influential and educated, their alienation from the village might hamper the meaningfulness of representation. These discussions which emphasise the effectiveness of participation only through elite representatives also reflect the works of critiques on tyrannical participation and legitimacy of those participatory procedures for establishing genuinely transformative procedures (Cooke & Kothari, 2001; Mohan, 1999). All these works emphasise that participatory procedures, often failing to engage with contentious issues of representation, social dynamics of a community and the underlying power relations within it, have become technological approaches to development. Inequalities, social dynamics and the power relations in which the communities are enmeshed can not only make it difficult for everyone to participate fully, but also result in sub-ordination of voices and interests of the

marginalised (Pain, 2004). In such cases, without the full participation of the marginalised and the affected, the effectiveness of participation cannot be complete.

7.5.3 Education and the representative group

In terms of caste hierarchy though illiterate pastoral Rabaris enjoy a better position than other lower castes such as Ahirs and Thakores, they often find themselves marginalised in comparison to other educated members of the farming community of Gadhvis or ‘lower’ caste *Harijans* (see section 4.2 for caste system in the village). Though some of the Rabari leaders became members of the representative group, due to lack of education much of the leading steps were taken by the educated Gadhvi representatives. Two educated representatives from upper caste Gadhvis and Vaghelas stressed the importance of education in political empowerment:

People in this village are not so educated and are not updated with what’s happening around them. Without education how would you know about the politics, whom to vote and other things...(Respondent #2, Female, Gadhvi, Anganwadi teacher)

There are so many illiterates in this village...If you see a literate population it will be only around 100 people in total, 400-500 will be kids, other old people and most of the Rabaris are illiterates. They can’t understand anything, ‘black letters are equal to buffaloes for them’. (Respondent #11 Male, primary school principal)

The *Angawadi* teacher who belonged to Gadhvi caste and was a government employee claimed that her employment was because of her education (18 yrs of education) and that her maternal village was more educated and developed than Charanaka (where she came after her marriage). She added that her education gave her access to more knowledge about the project and also placed her in a ‘mediator role’ between the government and the people. The primary school principal also felt that lack of education had been hampering the Rabaris in moving away from unrealistic orthodox life-styles to sophisticated life. These

statements about education empowering people were supported through a Gadhvi respondent:

I studied till 3rd standard here. Then went away for 4th but again came back for 5th standard. But went away again for graduation. My parents are staying here; otherwise my whole family is in Radhanpur town. We come here twice in a month for agriculture works...I am the vice president of the taluka BJP government. (Respondent #21, Male, Gadhvi)

All the above respondents including the teacher, principal and regional (taluka-level) vice-president of a national and state ruling political party were all from sedentary upper-caste farming communities. The Rabaris transhumant pastoralism had majorly emerged as a hindrance to being educated (Sharma, 2011). Extensive anthropological work on Rabaris similar to the above findings emphasise that Rabaris' illiteracy, due to their migration, often brings structural problems such as social, geographic and economic marginalisation, and lack of representation in policy decisions (Krätli, 2001; Sharma, 2011). The lack of representation in political processes hinders their capabilities to face new challenges raised by economic development and globalisation (Krätli, 2001). They consider illiteracy as a non-possession of language of power, enfranchisement and ability to face the outside world which often translates into the comment 'we don't know anything and we can't do anything' (Dyer & Choksi, 1998). This had also been largely due to hardships they face from their traditional occupation, belittlement of the communities from the educated society and the hegemonic notion that they absorb from other rural people – 'education provides good jobs' (Dyer & Choksi, 1998; Street, 1984).

The interviews indicated that as many Rabari pastoralist elders modestly conceded that their lack of education deprived them of better opportunities and led to disempowerment, they would like to make their children educated for better access to the outside world and

society. They often consider education as an ultimate solution for empowerment, inclusiveness, and better representation of their community:

I can do only thumb impression. I tried to make my sons educated, only 2 got educated till 7th and 8th, now they are going to work in solar park. These people didn't get educated, we used to send them to school but they used to come home, till 7th it's free here, after that nothing....we don't want to give same life to our kids. (Respondent #3, Male, Rabari)

Like the above respondent various other previous studies also emphasised that this access to education had increasingly been considered by Rabaris as a pathway to access to information and knowledge, and successful socio-political participation in contemporary society (Rao, 2006; Sharma, 2011). Krätli (2001) draws attention to the ostensible assumption of the world that the elimination of pastoralists' disempowering illiteracy can automatically result in empowerment – a key for inclusion in development.

This section on representative participation emphasised that 'collective and representative action', for protecting their access to land, through 'Gandhian spirit of *satyagraha*' though may not be present always, had definitely taken the form of demonstration over the solar park decision-making (Mitra, 1992). These collective representative actions of bargaining and non-violent agitational techniques all have examples in the Gandhian political repertoire. This formation of representative groups in the community also links with Young's (1990) political empowerment of the groups previously marginalised and excluded from the decision-making processes. These politically empowered communities can then become spaces of defence with sources of local knowledge and skills, relevant information, social networks and organisation, instruments of work and livelihood and economic resources (Friedmann, 1992) – which could be of great use to the decision-making institutions in the implementation of solar park. However, the section also

highlighted that the community is internally fragmented due to caste and authoritative powers in the representation. Considering the dynamics of the village, in the process of understanding the representations, it becomes imperative to understand the social dynamics, power relations, the culture and social interactions of a community (Gross, 2007; Wolsink, 2007). Before understanding any participatory studies in India it thus becomes crucially important to understand the socio-power dynamics of Indian rural societies. The socio-cultures would vary within the region and projects and understanding the impact of these cultural differences and social structures is important for successful empowerment of the communities.

7.6 Conclusions

The community voices and practitioners' perspectives in this chapter discussed complex elements of procedural justice. Several important points emerge from this chapter. The first point is about sharing of solar park project information to the Charanaka community. While the empirical findings on this issue emphasised that no official information about the initiation and progress of the solar park project was provided to the village, the legal requirements concerning notice of land acquisition were met through the 'public notice'. A few young and literate were also able to gather some information about the project, and land acquisition through different 'self-help' sources.

Second, it appeared that the enormous amount of local knowledge that the Rabaris, and to some extent other villagers possess had not been taken into consideration by the decision-makers. Taking local knowledge into consideration could have added value to site selection process for the solar park. This empirical research found out that the lack of information sharing and recognition of local knowledge is due to the lack of meaningful participation.

Apart from holding a few meetings with a small group of people to inform about the land acquisition, no public participation activity with the entire village took place at any stage of the project. Such exclusionary decision making procedures results in unjust procedures. Providing detailed information about the initiation and progress of the project, listening to them through responding to questions, concerns, inputs and valuing indigenous local knowledge, recognition of marginalised Rabaris, active involvement and meaningful participation of all the affected communities at every stage of decision-making can not only mitigate the socio-environmental impacts of the project, but also achieve the goals of procedural justice (Burns, Hambleton, & Hoggett, 1994; Holifield, 2004; Wynne, 1996). In this research, democratic and inclusive participation of all the affected communities is also important for social acceptance of the ‘environmentally good’ solar energy technology.

Third, the solar park implementation procedures also emphasised the local communities’ struggle for identity, respect, recognition, and emancipation over the powerful institutions (Honneth, 1996; Young, 1990). The implementation of the solar park through *diktat* bureaucracy, and exertion of institutional power by the state government had resulted in weakened state-community relations. The findings also illustrated the theoretical construct lying beneath the solar park development- that it was purely a development agenda of the state to demonstrate its leadership in ‘sustainable development’.

The chapter finally elaborated how unjust procedures in development of the solar park reshaped the village-level politics through formation of the ‘representative group’. The group was formed to protect their sources of livelihoods and their participatory rights. In the process, while the land-owning farmers were benefitted by protecting their lands from government acquisition, the livelihoods of communities, such as Rabaris, who were

dependent on the government land, and small farmers, who sold their land to mediators, were not substantially protected.

The key empirical finding is unfair procedures, through lack of adequate information participation, political domination and oppression, and lack of recognition of the concerns of marginalised groups, resulted in burdens from loss of land and livelihoods for Rabaris and other marginal groups in the village (see chapter 9 for discussions on benefits and burdens). As most of the interviewees had related every consideration of procedures to ‘land’, the following chapter 8 explores the discussions on land acquisition procedures.

8. JUSTICE IN LAND ACQUISITION

Does a poor person has to live his entire life in poverty?...Land is our life; there is no justice to farmers

—A ‘Rabari’

8.1 Introduction

As argued in chapter 2, there is a dearth of literature on understanding spatial justice considerations in the contexts of both renewable energy and developing countries. As demonstrated in both chapters 2 and 3, the literature on rights and entitlements in the contexts of energy policy or renewable energy decision-making procedures in developing countries is also limited. This chapter to some extent addresses these gaps as well as research question 3, by considering what interviewees reported on the land acquisition procedures in the ‘Charanaka Solar Park’.

One of the expert interviewees advised the author ‘if you are not addressing the land issues, you would not be able to do a good research’ (Respondent #12, Sun Edison) and most of the interviewees (as mentioned in chapter 6 and 7) concluded their discussions on land matters. Considering the importance of the ‘land’ in all the interviews, this chapter, drawn from the face-to-face interviews³⁸ of the people living around the ‘solar park’ and experts, addresses the land acquisition procedures.

The chapter has the following structure – first, the interview accounts on land as a source of livelihood are discussed. As the solar park was implemented on government owned land which had been used a common property resource by the village and privately owned farm

³⁸ While all the community quotations cited in this chapter were translated from ‘Gujarati’, except where mentioned the business developers and government quotations were quoted directly from English.

land, both the community and expert interview accounts are drawn upon. Here the importance of rights and entitlements are also addressed. Second, the chapter discusses the execution of procedures and the importance of trust in the land acquisition procedures. Third, the practitioners' perspectives on ownership of the park are discussed. Fourth, the chapter explores what money and legal power mean in land acquisition procedures. Finally, the chapter ends with some concluding remarks.

8.2 Land and livelihoods

Globally, land (whether 'waste', 'grazing' or 'farming') is an integral aspect of rural people's life – their home and a matter of survival (Schlosberg, 2003; Smith, 1994). Indeed, even in Charanaka during the interviews one of the respondents said: *'Our life is linked to this land'* (Respondent #28, Male, Rabari). In the land related discussions, the first issue that emerged was about the livelihood impact of the acquisition of government land. Though most of the respondents admitted that a major portion of the Phase I (214MW installed capacity) solar park land was government land, it was also emphasised that the land had been a source of living for years asserted that acquiring the land would have grave impact on the Rabari's livelihoods:

....Though the solar park is in the government land, more than 50% of our village animals live on that land... Where do the cattle go for grazing now? More than 50% of families living in this village are Maldharis. (Respondent #1, Male, Rabari)

We don't have land, we were doing agriculture in that government land and earning. Now we don't have cattle also because they died with diseases³⁹ during monsoons. (Respondent #27, Male, Rabari)

³⁹ Due to the lack of availability of a veterinary doctor or facilities in the village, people resort to their own traditional methods of medicines which don't work most of the time, killing the animals. To visit a veterinary doctor people need to travel 30 kms without any public transport or in fact any kind of transport facility.

Some of the respondents also said that the land had not only been serving the purposes of grazing and farming, but it had also been an indirect source of livelihood for some apart from being a source of fuel and energy requirements for the entire village:

The 'waste land'⁴⁰ where farming is not done is also useful because there was 'gando baval' grown in that land. It is useful for making fuel for our energy requirements. About 200 families live on the baval. The wood from the baval also goes into charcoal factories and people make business out of that. Each person used to earn about Rs 200 (\$4approx)/day in the charcoal factories... (Respondent #28, Male, Rabari, currency conversion added)

The above quotations in line with the works of Iyengar (1998) and Chen (1991) confirm that people in drought prone areas such as Gujarat are highly dependent on Common Property Resources (CPRs) for grazing and fuel wood (about 70% for fuel and 55% for fodder). The National Sample Survey Organisation (NSSO) (1999) also states that 'the fuel wood and shrubs available from CPRs are used for cooking and heating; grass leaves and shrubs are used as animal fodder, bamboo, small timber and palm leaves for housing and variety of fruits, vegetables and fish, for sustenance, particularly during the lean season' (p.25).

According to all of the above respondents, though the ownership of the solar park land rested with the government, because of the remoteness and hard climatic conditions of the location, the government left it as a 'government waste land'. As it was left as a waste land, it was being used by the villagers as a CPR. Due to these arguments the government owned land had an ambiguous status as CPR or not (see below for more discussions). Nevertheless, with the idea of the solar park and the profits it could fetch from the private

⁴⁰ The NSSO defines 'common property resources as all resources including pastures and grazing lands, village forest and woodlots, protected and unclassed government forests, waste land, common threshing grounds, watershed drainage, ponds and tanks, rivers, rivulets, water reservoirs, canals and irrigation channels' (NSSO, 1999, p.15).

investors, the government opted to acquire the land. All the respondents who were Rabaris lamented that the land acquisition for economic development motives was at the cost of their survival (plates 8.1 & 8.2). They further reported that lack of long-term alternative livelihoods due to Rabaris illiteracy could aggravate the impacts of loss of farming and grazing land. Even if the solar park enabled them to get jobs (see Section 9.2 for discussion on jobs), costs would outweigh the benefits:

If there is a big family how could the whole family live on one's earning? If there was agriculture the whole family works on the farm and get their earning.
(Respondent #28, Male, Rabari)

The above discussion reiterates that the denial of access to the land and privatisation of the land to the solar park development can result in socio-economic and livelihood losses. The privatisation of common property resources reflect one of the four practices⁴¹ of neoliberal globalisation defined in the concept of ‘accumulation by dispossession’ (Harvey, 2003). The concept evolved from the movement against ‘enclosure’ or restriction of access and rights of local people to pastures and other common public lands. The concept of ‘accumulation by dispossession’ and the ‘enclosure of commons’ movement refer to the increasing accumulation of power and wealth in the hands of few by dispossessing or displacing the public of their livelihood resources such as agriculture land, pastoral land, water or other common property resources. Previous empirical works such as Heynen and Perkins’s (2005) study on the impact of public land sales on the urban poor’s access to forested recreation space in Milwaukee’s affluent eastside and Bury’s (2004) study on the impact of privatisation of the minerals sector on the peasant households in Peru’s Cajamarca region are all examples of these phenomena.

⁴¹ The four practices are privatization, financialisation, management and manipulation of crises, and state redistributions.

In India, injustices caused by the privatisation and enclosure of commons had been witnessed in forest laws, in the name of conservation (e.g., Dalma elephant sanctuary in Jharkhand), in land acquisition for large dams and mineral resources (e.g., Sardar Sarovar dam in Gujarat), through the juggernaut of urbanisation and more recently in ‘Special Economic Zones’ (SEZs) (Shiva, 1997; Vasudevan, 2008). These ‘sacrifices’ imposed in the name of ‘development’ are often borne by the already marginalised sections of people such as landless labourers, small peasants, pastoralists, *adivasis* and *dalits* for whom common resources are a matter of life and livelihood (Vasudevan, 2008). Of the 60 – 65 million people displaced due to land acquisition for progress, private investments, development projects, or simply by the logic of ‘accumulation by dispossession’ since India’s Independence, about 40% are tribals, and another 40% consists of dalits, rural poor and other marginal people (Mukherji, 2012). Grassroots movements such as ‘*Narmada Bachao Andolan*’ and ‘The *Bhumi Uchhed Pratirodh Committee*’ are contemporary examples from India against enclosure of common property resources and accumulation by dispossession.



Plate 8-1 The image illustrates the livelihood options - sheep being milked at the front and sacks of wool at the back (*source: author, 2011*)



Plate 8-2 The image illustrates cows, buffaloes and *gandobaval* as other sources of livelihoods (*source: author, 2011*)

As described above, while several of the respondents admitted that the land was government land, others also argued that officially they held the rights to it because they had been living on it for decades. Based on these claims they put forward arguments such as: *'land belongs to those who cultivated it'* (Respondent #28, Male, Rabari). One of the respondents put it:

Government made rules that land belongs to those who harvest. We are doing agriculture for 25 years in that wasteland. Many Rabaris are also living on that. Now they have not given anything for that. Everyone is working as labourers. Is there no rule to give compensation in the rule book? (Respondent #9, Male, Rabari)

The right to fodder and grazing land for the Rabaris was first established and recognised by *Khengarji*, a pre-Independence period Indian ruler of Kutch, in 1920. This was regulated by *panchsari*, a legal nominal annual tax system for grazing land (Choksi & Dyer, 1996). Similarly, against a payment of annual rent to the landlord, the right to farm land rested with the *'ganot'* (agricultural worker) who cultivated it for years. Even after Independence the *'Gujarat Ganot Dharo'*, a government of Gujarat act, retained those sovereign rights of land ownership to agricultural workers for cultivation or pastoralists for grazing. As years passed by, the state government realised that due to this system, surplus lands accumulated in the hands of farming ganots. To curb these accumulations and to provide restrictions upon agricultural land or other land holdings, the government released *'The Gujarat Agricultural Land Ceilings Act, 1961'*. The act provided power for the government to acquire any surplus land holdings and use it for development in the state or other *'common good'*.

The above respondent who was an elderly Rabari referred to the ganot dharo, a revoked government act in claiming the land ownership. As he discussed, though most of the

Rabaris had been living on that land for several years, lack of legal land records or tenure documents on the land facilitated the procedures of land acquisition in favour of the government. Another respondent put it: *'No one has land documents, so they took the land around 12 months ago...'* (Respondent #16, Male, Thakore).

The NSSO (1999) also include grazing land⁴² within the boundary of the village held by the village *panchayat* or community as a CPR. However for a village to have legal rights on a CPR, it should be formally (or by legal sanction or official assignment) held by the village panchayat (NSSO, 1999). The lack of ownership or entitlement in Charanaka emerged as a major factor for acquisition of the government land. Similarly examples such as i) the case of nomadic people in Senegal where the pastoralists were affected due to possessing lands without title and, ii) the case of marginalisation of people living on the Yangtze River basin during the implementation of Three Gorges Dam in China reaffirm these arguments (Égré & Senécal, 2003; Feder & Feeny, 1991). These cases argue that with no entitlements the landless will not be considered as permanent residents of those project sites even after living there for years. The rights through entitlements are important here because they not only provide legal access to land, but also enable the recovery of commons again (Shiva, 1997). All these studies which argue for protection or enhancement of natural resource user rights or land rights for the poor and the marginalised communities, also emphasise that denying these land rights to the local communities can

⁴² The three categories of village common land as per NSSO are 1) village panchayat or grazing land/pasture land, 2) village forest & woodlot (not under forest/revenue dept) and 3) village sites and threshing floor (NSSO 1999, p.5). Of all, the village panchayat grazing land/pasture land is important in this case. 'This is a well-defined category of land in the classification used in official land-use records. Traditionally grazing and pasture land has been most important constituents of CPR land. Many villages have land earmarked as permanent pasture land/grazing land. These are variously known as *gauchar*, *gochar*, *gairan*, *gomol* etc' (NSSO 1999, p.5).

result in them being deprived of a place to live, or even the right to live, as well as devaluing their community, culture and homeland environment (Bass, Reid, & Satterthwaite, 2005; Harvey, 1996; Schlosberg, 2003; Smith, 1994).

As the Phase-I of the solar park was implemented in both government and privately owned land, the second discussion that emerged was on acquisition of privately owned farm land.

One of the respondents in a discussion about such land acquisition said:

The money would be spent in a very short time... some people in our village have already sold bits of land and already had spent that money. Now what happens to the rest of their life? (Respondent #1, Male, Rabari)

According to the above respondent, due to lack of information about the project (see section 7.2), lack of knowledge about the market value of the land in the light of the impending development, and for personal reasons, some of the illiterate small farmers or Rabaris had voluntarily sold their legally owned land lower than the market value to middlemen from other villages who despite being aware of the proposed solar park didn't inform these people. These middlemen sold the land to the government at a much higher price. In this way these small farmers lost their lands, spent the money from sale of the land, and were left with temporary labour jobs in the solar park (more findings on distribution of jobs in section 9.2). Different conditions of poverty, individual economic needs, strong external market forces, and lack of knowledge on land markets emerged as the underlying reasons for the private owners selling the land for less than the market price.

The alleged land acquisition of the government-owned common land and the sale of private farm land had led to livelihood loss in the village. The primary school teacher described the situation: *'So many people for their personal needs sold their own land and the government land was acquired by the government. So problems came from both sides'*

(Respondent #11, primary school teacher). This condition in a way further resonates with Harvey's (1996) argument that money exchange on land leads to the least privileged falling under sway to the more privileged. Thus in this case, the burdens were to be borne by the poor and marginalised who had to bow to money discipline and market exchange; and the benefits to those who enjoy the authority of power by wealth and position (Harvey, 1996; Soja, 2010) (also see chapter 9).

Furthermore the respondents whose land was in the process of acquisition asserted that land cannot have monetary value. For them land was a 'life-giving' source: *'This year we had a good crop of cumin and others, so we could earn some money, every year we earn money from the land'* (Respondent #1, Male, Rabari). An empirical study on pauperisation of agriculture workers belonging to the *Halapati* community in South Gujarat reinforces that land can support in times of financial stress 'caused by bad harvest, illness and unforeseen expenses incurred through social rituals' (Breman, 1978; Mitra, 1992, p.27). Some of the other respondents who did not want to sell the land also proffered that land protects them as an 'insurance policy' by providing financial assistance at hard times:

They might give whatever price for the land – may be higher or lower, but, what would money mean to us, for those who live only on farming. Money doesn't stay permanently, land stays and the income on land is our survival. If we sell the land just for some money, our life on earth would be impossible and we could never be saved from the consequences. (Respondent #1, Male, Rabari)

According to the above respondent, land provides sustainable livelihoods. Due to this, some people who didn't sell the land before, apparently managed to retain their land through collective action and organised resistance (see section 7.5), even though the LA Act would potentially allow for the government to obtain it even without consent. Due to this, though the solar park was initially planned with a 500MW capacity in 5000 acres, to

date only 214MW (in government land + land sold by small farmers) was installed. The importance of land to these marginalised communities was also stressed in Dyer and Choksi's (1998) empirical work on Rabaris in Gujarat which demonstrate that the Rabaris consider land and animals as 'God's gift' for their livelihood. This strong linkage of land with deity demonstrates the binding relationship between these marginalised communities and the land. Rowley (1985) puts this as 'idolatry of the land' (p.125).

8.3 Execution of procedures and trust

The first part of the previous section highlighted that lack of rights and entitlements were partly responsible for the land acquisition of government waste land. However, during the course of interviews on land acquisition procedures, some of the respondents asserted that those procedures were also fraudulent. In the context that a signature of consent of the local communities would be required to acquire any disputed common property resources, it was argued that the government acquired the land by tricking the illiterate communities:

Before Sarpanch and Talati came here, they said that the land without names needs to be documented in your names, for that we have to file a case so we need a signature of yours, so we have signed. Whole village was there... actually they took signature that this is not our land. Now because of this signature, I mean by trust we signed..... (Respondent #25, Male, Gadhvi)

Mamlatdar and collector came during village public meeting and took signature of all people on paper...Actually the paper was for taking control on the land from the people instead of giving. People were illiterate; they didn't get to know what was written inside the paper. Most of the people signed that 'this is a waste land and we don't have right on it'⁴³. (Respondent #13, Male, Muslim)

⁴³ This signature from people would be required from the government as 'The Scheduled Tribe and other Traditional Forest dwellers (recognition of forests rights) act, 2006' of the Govt. of India under section II (d) and (f) of 'forest right' (actually derived from section 53 of Wild life Protection Act 1972), provides rights for local communities over disputed lands or on common property resources such as grazing lands. So in this case, if the government doesn't take in writing that the communities don't have any rights, it would create a problem in the future. See

Both the above quotations indicated that the constitutional rights of local users on CPRs were taken away by the illegal/extra-legal instruments of power (Agarwal & Ostrom, 2001). The exploitation of the illiterate marginalised communities by these illegal/extra-legal instruments of power was another reason for the vulnerabilities arising from injustices and loss of land. Loss of land through illegal acquisition of land, non-consented bull-dozing of the area, psychological damage through fear, bitterness and a sense of political oppression could result in fragmentation of the community (Smith, 1994). Moreover, the principles of justice cannot be achieved if unequal power relations exist between a buyer and a seller or if the land was acquired illegitimately, by force, or fraud or by expropriation (Smith, 1994; Harvey, 1996). In this case, while it was impossible for the institutions to achieve just spatial distribution, if the acquisition and transfer of the land holdings was achieved through legitimate means, then the procedures may have been just.

According to both the above respondents the local community's illiteracy and the blind trust on the decision-making institutions played a major role in the loss of farming and grazing land. Just decision-making will be lost without winning the trust of the communities. One of the respondents quoted: *'if they get trust from villagers then it would be a win-win situation'* (Respondent #21, Gadhvi, solar park store-manager) (also discussed below). Some of the respondents also said that the illegal procedures in execution resulted in loss of trust in the institutions. After being deceived in land acquisition they described that they would seldom trust government in any matters:

I don't think government will help us; we don't have trust on them. (Respondent #5, Male, Muslim)

http://www.fra.org.in/New/document/FRA%20Rule_2012_complied%20version.pdf for more information.

We trusted them and did 'thumb impression' on papers. Now no one listens to us, they didn't give anything to us. They took land and gave nothing.
(Respondent #7, Male, Rabari)

Rabaris consider trust as a major element in their everyday life including their daily money transactions. This trust and their often discussed honesty helped them in getting unskilled jobs in the solar park, such as security guards, where trust is important (see section 9.2 for more findings and discussions on jobs). One outsider respondent who had been working as a teacher in the village supported this narrative:

In safety there is no problem, if you keep something outside your house no one will take that; it will be there even for 1month. Even if we keep something outside school it will not be lost. It will be there till you come (Respondent #11, Vaghela, primary school teacher).

In line with Choksi and Dyer's (1996) empirical work on 'Rabaris of Kutch' the above quotations asserted that the negative experience of Rabaris in development procedures prompts them to be mistrustful of outsiders. Choksi and Dyer's (1996) work likewise argues that the pastoralists experience treachery due to the increasing commercialisation of pastoralist markets. In Charanaka, the loss of trust in the policy makers and government officials primarily emerged from their discontent with the land acquisition procedures in the solar park. Trust may have a direct impact on gaining community's support for the solar park. The well-established literature on wind farm implementation in the UK strongly supports this narrative by arguing that lack of trust can even make the 'environmentally good' renewable energy projects face resentment, create conflicts and eventually delay the project implementation (Cowell, Bristow, & Munday, 2011; Walker & Devine-Wright, 2008). To avoid these local conflicts, community resistance and any impediments to implementation of the solar park, political institutions must resort to serious efforts of building trust through legitimate procedures and empowering the community (Bryant, 1995; Burns, Hambleton, & Hoggett, 1994; Jessop, 2002).

8.4 Characterisation of land

In the discussions on land acquisition, some of the business developer respondents emphasised the positive impacts of the solar park to the nation, as well as the negative impacts to the marginalised communities of Charanaka:

One issue I think is the issue of pastoral lands...so probably that could be counted in for all the projects in the solar park. But apart from that I cannot really see any negative impacts. (Respondent #3, EIT)

Yes, of course give and takes are there, you know every coin has two sides. But then for a greater good, solar power projects should be considered the first step of many other steps to follow for India to become energy sufficient. (Respondent #11, Electrotherm)

The above quotations highlight two important but divergent impacts that emerged from the solar park development. Whilst the first was acknowledged livelihood impacts on the local communities, the other was the positive impact of solar energy projects for India (and Gujarat). To the above interviewees, the positive environment and energy benefits that the project brings to the nation outweighs its potential negative impacts on the local community. However, according to the previous literature any negative impacts on the local communities could affect the social acceptance of ‘environmentally good’ solar energy projects. It also argues that for the success of the renewable energy projects, the political institutions need to ensure that any negative social impacts are properly addressed (Devine-Wright, 2005; Nadaï & van Der Horst, 2010).

While the community interviews emphasised that the government land had been used as a grazing land, several of the other business developer and government respondents denied this. They described the land as a barren and waste land. One of the business developer respondents said: *‘this land is not good fertile land, there are very minor crops’*

(Respondent #4, GMR). Nothing but solar energy development could be possible in that area and on that land:

This is not a grazing land. There is a vast difference between a grazing land and a waste land. As per the directive of Supreme Court and high court, no grazing land is allotted in any part of Gujarat. So for this park we have not allotted any grazing land. It is a government waste land... (Respondent #3, GPCL)

However, several other contradictory statements also emerged from the interviews. For example, there was a statement by a respondent from GMR who had previously stated that the land was not fertile: *'we still have 10 acres of land which the farmers have not vacated, there is a standing crop, so after harvesting GPCL would be able to handover the land to us'* (Respondent #4, GMR) (plate 8.3). While the state government respondent also denied the fact that the land had been used as farming and grazing land, the senior officer at the *taluka* level (local government) admitted that there was some grazing and farm land acquired:

Yes, I think some grazing land was acquired. The acquisition was handled from Gandhinagar office. There was a conflict between GETCO, GPCL and farmers because of this land acquisition....I think GETCO constructed sub-station when there was a crop in the farm land, so the farmers got angry and agitated against them. (Respondent #6, Santalpur Taluka, translated from Hindi)



Plate 8-3 Standing millet crop at the time of solar park implementation (source: author, 2011)

The previous statement of respondent #3 from GPCL that ‘... *no grazing land is allotted in any part of Gujarat*’ also contradicted the *de facto* land use records of the ‘Land Use Statistics Information System (LUSIS) of Government of India (GoI)’ which identified 4.5% grazing land availability in the state. Indeed, the decadal data compiled by the author from the LUSIS reveal that due to industrialisation and urbanisation the percentage of grazing land in Gujarat decreased from 5.7% in 1960⁴⁴ to 4.5% in 2008. According to the above expert interviewee from GPCL though the ambiguous ‘land’ was a government ‘waste land’, Gujarat State Human Development Report (GSHDR) (2004) describe that ‘waste land’ as an important category of government-owned land is a significant source of

⁴⁴ On May 01, 1960 Gujarat became an independent state having been a part of the erstwhile Mumbai state during the British rule. In 1960 due to this bifurcation, Gujarat became a new state with Ahmedabad as its capital (which was later changed to Gandhinagar) along with formation of Maharashtra state with Mumbai as its capital.

grazing land for pastoralists (Dyer, 2011). Thus in the land acquisition procedures, these issues should have been considered; else such spatial injustices could lead to unjust outcomes in the form of loss of sustainable livelihoods.

8.5. Money and legal power

Apart from the government ‘waste land’ and the sold private farm land used for Phase-I of the solar park (224MW installed capacity) (also in section 8.2), it was also stated that there was some more private land under acquisition for the Phase - II (proposed 226MW capacity) of the project. This land was to be acquired through the ‘Land acquisition (LA) Act 1894’ which provides state governments with the power to acquire any land for public infrastructure development against payment of requisite compensation to the affected. For the acquisition of this land, some of the government respondents described that section 4(1)⁴⁵ was completed and section 6(1)⁴⁶ had been under process though only a few of the local villagers were aware of the acts and sections:

The process is going on, 4(1) is through and 6(1) is under process. First thing, there is an intention to acquire land that's called 4(1) notification, and then 6(1) is the acquirement. If the government says they are going to set up some project, they are intending to take this land legally and publicly in newspaper, 6(1) says that you will be acquired, before that after 4(1) all people will be

⁴⁵ Section 4(1) of the LA Act, stipulate that ‘a notification to that effect shall be published in the official gazette and in two daily newspapers circulating in that locality of which at least one shall be in the regional language, and the Collector shall cause public notice of the substance of such notification to be given at convenient places in the said locality’. Accessed from <http://www.dolr.nic.in/hyperlink/acq.htm>

⁴⁶ After the section 4(1) which stipulates the publication of the land acquisition information, and 5(1) which deals with the hearing of objections, Section 6(1) of the LA act is related to the declaration of intended acquisition or declaration that land is required for a public purpose. For more information on the LA Act 1894 see <http://www.dolr.nic.in/hyperlink/acq.htm>

called and all their grievances will be heard, recorded....and then it's taken over. (Respondent #7, GoG)

During the Mughal rule in India between the 13th and 17th centuries, under the *jagirdari* system⁴⁷, the local officials often became *de facto* hereditary landlords in the local areas (Banerjee & Iyer, 2002). Over the years these officials used to transfer the land (which was a *jagir*) either to the immediate kin or local people if no family existed. However, post-independence the constitution of India bestowed the power to enact 'land reforms' to the states. This power enabled the state to take decisions on all lands – including waste, grazing, forest lands - for infrastructure development resulting in the reduction of pastoral lands. The NSSO (1999) reaffirms that in pre-British India, a large amount of natural resources such as common property resources (including land and water) were freely available to the rural population. But, over time through use of the LA Act 1894 the state's control on most of these resources hampered the rural population's access to these natural resources (NSSO, 1999). While the Act provided land and valuable resources for the British Industrial revolution it disregarded the survival of local people depending on these lands (Vasudevan, 2008). Post- Independence the Act continued to realise the 'Nehruvian vision of modern Industrial India' (Vasudevan, 2008, p.41). Due to displacement of many people and its draconian procedures often resulting in illegitimate land acquisition

⁴⁷ Jagirdari system is a 'form of land tenancy developed in India during the time of Muslim rule (beginning in the early 13th century) in which the collection of the revenues of an estate and the power of governing it were bestowed on an official of the state. The bestowal of a *jagir (land)* on a *jagirdari (land holder)* could be either conditional or unconditional. A conditional *jagir* required in reciprocity from the beneficiary some form of public service, such as the levying and maintaining of troops for the benefit of the realm. An *iqta* (assignment of land) was usually made for life, and the *jagir* would revert to the state on the death of the holder, though it was possible for the heir to renew it on payment of a fee' (Encyclopaedia Britannica, 2013). Accessed from <http://www.britannica.com/EBchecked/topic/299350/jagirdar-system>

procedures, the LA Act received huge criticism from several social groups (Times of India, 2011a). Since its enactment, through expropriation of farm lands and enclosure of commons, the Act threw masses out of their traditional occupations and lands. One of the business developer respondents reasserted this statement through the example of Phase - I solar park land acquisition:

I am trying to understand the land issues, there are some land issues here because half of the land belongs to government and half is private land, which is farmers land. Here, the need for consideration of land acquisition policy itself is important (Respondent #12, Sun Edison)

The Act provides special powers for the concerned public authority to take possession of the land notified for acquisition. But here Sections 4 (1) and 6(1) of the act are important for consideration. According to the solar policy government expert team respondent, and as per the LA Act, while section 4(1) of the act provides a platform for hearing objections of the affected parties and discussing the compensation amount, section 6(1) relates to the final acquisition. It was stated that the final decision on objections and compensation claims heard from 4 (1) also rests with the government. After release of section 4 (1) notice and public consultation, Section 6(1) entitles the government to the final decision on land acquisition with or without the consent of the affected. Respondent #3 from the implementation organisation mentioned that after public consultation, the compensation amount for the private land will be decided by the government:

There is lot of land with the private owners, so we go one by one for consent. If everybody gives the land with consent it should be ok. If some people give and some don't, then the scenario will be different. In land acquisition act there are two provisions – one is for consent amount and other is regular amount. As I told you, whoever want to give the land with consent, under the act separate amount will be paid for them. In that case, the rate may be higher than the market price or something that is acceptable to both the government and the affected. (Respondent #3, GPCL)

As stated in the above quote, the compensation amount, under a liability rule, is often described as a corrective measure for the spatial injustices caused to the land-losing farmers (Goodin, 1989; Walker & Cass, 2007). In this case, this money invested in the compensation was expected to be recuperated with much profit from the business developers in the form of land lease rents and infrastructure development (such as roads, street lights, canals etc.) rents. Respondent #1 from the implementing organisation explained:

The rate of the land is Rs 194/sqm for the lease. Apart from this the site developmental charges are also collected from the developers because we have provided approach road and other infrastructure facilities'. (Respondent #1, GPCL)

While the amount of lease and infrastructure development charges for the business developers was fixed and mentioned in the lease agreement, the amount of compensation was not discussed even by a single government or business developer respondent. The amount of compensation for the land is decided by the state government under the LA Act 1894 based on different criteria. The district collector determines the market value by making an inquiry on the existing market value in that region according to the sections 11 and 12 of the LA Act 1894. Though the land (if) acquired through the LA Act procedures may be offered a market value, due to exploitation by the middlemen the small farmers sold the land at a pre-development value which is less than the market value. On the other hand, despite the market value that may be offered by the government in line with the LA Act, some people refused to give the land as for them land offers long term livelihoods (more discussions on land and livelihoods in section 8.2). Though the LA Act would

potentially allow the government to obtain land even without consent, these people managed to retain their land through collective action and resistance (also see section 7.5).

8.6 Conclusions

Through the analysis of face-to-face interviews on land acquisition procedures, this chapter made several important points. As the Phase-I (214MW) of the solar park was implemented in both the government and private land, discussions were largely based on two aspects i) the government owned common land and ii) privately owned farm land. Apart from these, in the view of Phase-II (286MW) expansion of the 500MW project, there was discussion of the ongoing land acquisition procedures.

In India, as the competitiveness between states increases to lure foreign and national private capital investors for solar energy development, more and more common property resources and farmlands are being acquired by the states through ‘fast track procedures’. However, turning over lands and common property resources, which form the basis of life and livelihoods, to private investors and industrialists enables the dispossession and displacement of the already marginalised (Vasudevan, 2008). In Charanaka, privatisation and the state’s redistribution of land in favour of the solar park undermined the communities’ access to land, thereby creating impact on their livelihoods. While stressing the local community’s struggles for preserving land-based livelihoods, the discussion of government land acquisition also highlighted the importance of land rights and entitlements (Nozick, 1974; Smith, 1994). Lack of these land rights of the community was important for them losing access. These aspects of restriction of right to access and impacts of ‘enclosure’ of the community lands re-asserted that the disappearance of the farms and pasture lands for economic benefits, appropriation of the local’s rights to the state-owned

community resources and territorial encroachment by the solar park development can have dire implications for the welfare of the communities (Harvey, 2003; Bakker, 2010; Castree, 2008).

The discussions on government land acquisition underlined the issues of illegal/extra-legal instruments of power. Failure to implement just and legitimate decision-making procedures and diluting communities' trust in political institutions can result in communities' dissent regarding new technological interventions, thereby delaying the implementation of those projects (Devine-Wright, 2005; Ireland & Tumushabe, 2005). These factors of trust and legitimacy embedded in meaningful participation (see section 7.3) are important in how the land acquisition procedures are received by the communities (Burgess, 2005; Portman, 2009).

The second issue addressed was about private land sales. The lack of information about the proposed development (see section 7.2) and personal needs drove some people to sell their land at lower price than the market value to brokers who in turn sold it to government at much higher rates. Harvey (1973) refers to this situation as an 'intriguing paradox' in which 'the rich are unlikely to give up an amenity *at any price* whereas the poor who are least able to sustain the loss are likely to sacrifice it for a trifling sum' (p.81, emphasis in original). In fact, though the middlemen were aware of the impending development, they tricked the illiterate small farmers and dishonestly bought the land. The spatial injustices and loss of livelihoods caused by enclosure of farming and grazing land by the state, purchase by agents, lack of recognition of land rights, and unjust land acquisition procedures can accentuate the existing poor socio-economic conditions of marginalised communities such as Rabaris and other small farmers in Charanaka. To repair these livelihood damages, undoubtedly people who lost land and livelihoods should be

compensated with alternative land (Harvey, 1996). While losing land can be more traumatic than relocating their livelihood to a new land, at least providing a new livelihood through a new land could be more liberating, and could also be a means of undoing injustices caused by the deprivation of their land (Smith, 1994).

For the Phase-II expansion of the project and the impending land acquisition, instruments of money and legal power are major factors in land acquisition. The forces of money and legal power (specifically the LA Act 1894), which emerged as instruments of influence or ‘hidden hands’ of political economic powers (Castree, 2008; Smith, 1994) in the land acquisition procedures of Charanaka solar park, could have deprived several other people of their means of livelihoods. However, these sections of people through collective action and organised resistance managed to stop the land acquisition and retain their land (see section 7.5). In the light of state legislative assembly elections that were held in 2012 (during the solar park implementation), and the national economic crisis in 2013 which led to reduction in solar investments, the government also didn’t put much pressure on the acquisition of the land. However, it remains to be seen how long they can hold their land from acquisition as the government is planning implementation of Phase-II by calling for project proposals.

This chapter, through addressing procedural justice related questions (highlighted in chapter 1), identified the spatial and procedural concerns in Charanaka solar park land acquisition. The next chapter explores the concerns regarding outcomes of these procedures, as well as understanding where the benefits and costs accumulated in the solar park project.

9. JUSTICE IN THE DISTRIBUTION OF OUTCOMES

Green technology could do all these good things, bringing wealth to the tropics, bringing economic opportunity to the villages, narrowing the gap between rich and poor. To make these things happen, we need a powerful push from ethics.

--- Freeman Dyson, Progress in Religion (2000)

9.1 Introduction

The theoretical arguments on distributional justice in chapter 2 highlighted that issues of inequitable distribution of benefits and burdens, and marked differences in socio-economic outcomes of policies are taken seriously by the affected communities (McIntyre & Gilson, 2002), emphasising that ‘considerations of equity and distribution of costs and benefits have been shown to be important in local debates about many development proposals’ (Walker & Devine-Wright, 2008, p.499) including renewable energy. The literature review in chapter 2 also highlighted that while there is a wealth of literature on developed countries (Brady & Monani, 2012; Gross, 2007; Cass & Walker 2009; Walker *et al.*, 2010b), a gap exists in identifying the issues of distribution of benefits and burdens in the context of renewable energy in developing countries. Building on these findings, this chapter, based on interviews with experts and Charanaka village, presents empirical findings on the distributional issues in the outcomes of the Charanaka solar park project.

After this introduction, the rest of the chapter has the following structure – first, it discusses distributional issues in the employment opportunities that emerged out of the solar park implementation. Second, the chapter provides some critical distributional justice arguments on clean energy as an outcome of the solar park. Third, it discusses benefit and burden sharing issues in infrastructure development in the solar park and the village. Fourth, it explores the distributional issues in local economic development opportunities

within the communities of the village. Finally, the chapter concludes summarising the arguments on all the emerging themes.

9.2 Employment opportunities

The first issue that emerged regarding distributional concerns was on employment opportunities. The narratives on this issue emphasised that because the ‘*jobs in solar park are not permanent*’ (Respondent #25, Male, Gadhvi) and ‘*now there is neither job nor land*’ (Respondent #2, Female, government anganwadi teacher), there is ‘*no justice to farmers*’ (Respondent #15, Male, Rabari). Indeed, when asked about the potential benefits and burdens for the village from the solar park implementation, though most of the respondents in the first instance accepted that some kinds of jobs were created from the project, they asserted that those jobs came as short-term benefits and did not compensate the burden of land loss. It was unanimously agreed that the benefits added up only to temporary, short-term, and low-waged unskilled construction labour jobs provided by the business developers to conceal the burdens created by land acquisition:

This construction will go on only for 2 years. There are no benefits to this village because after 2 years there will be no work, everything will be over.
(Respondent #14, Male, Vadiya)

We are getting jobs, but what is the use of this kind of jobs...when construction after 2 years gets over what will the illiterate villagers do? (Respondent #5, Male, Muslim)

Some of the interviewees who had attained information about the solar park also stated that once the plant installation is completed, during operation and maintenance, more skilled and less unskilled labour will be required:

People say that in Africa there is one plant fully automatic, so don't know about employment during operation. The dishes which are fitted will move according

to the sun direction so you don't require any people, just security and supervisor would be required. (Respondent #13, Male, Muslim, Shopkeeper)

The Charanka solar park construction was started in 2010 after the release of the Gujarat Solar Power Policy (GSPP) in 2009. In line with the above quotes and from the field work conducted in 2011, the solar park construction was undertaken during a period of 2 years (from 2010 to 2012). In April 2012 the solar park project with an installed capacity of 214MW was commissioned and connected to the grid⁴⁸. This means that all the above interviewees, who were educated at least up to secondary education, were able to analyse the primary reason for temporary employment benefits of the project – that solar energy industry is not a labour intensive industry in the medium to longer term.

Some of the interviewees also reported that from these labour intensive jobs which require *'doing any kind of work the companies say'* (Respondent #7, Male, Harijan) – *'sometimes road work, sometimes construction work and sometimes soiling work'* (Respondent #14, Male, Vadiya) from *'morning 8 to evening 6'* (Respondent #7, Male, Harijan), they don't earn a sustainable living:

We just earn Rs 150/day (\$3 approx). According to these days' expenses, we can't even give good food to our children; we can't eat anything from that money. (Respondent #10, Male, Rabari, currency conversion added)

Although theoretical debates argue that satisfying basic needs, e.g. by getting adequate nutrition, is important for human functioning and well-being (Nussbaum, 1992, Sen, 1999), according to the above respondents the low wages that they earn from intense labour work neither fulfil their basic needs nor provide a sustainable living. Denying fulfilment of basic

⁴⁸ Various national and international newspapers also highlighted the inauguration and completion of the project. For example, <http://www.guardian.co.uk/environment/picture/2012/may/02/gujarat-solar-power-park-india> (May 2, 2012) and <http://deshgujarat.com/2012/04/19/charanka-solar-park-opening-function-in-video/> (April 19, 2012).

needs, such as good food (as stated by the above respondent), to these poor communities, increases inequities, and eventually fails to meet the social justice condition (Nussbaum 1995).

While daily waged construction labour was the dominant theme around the employment benefits, other unskilled and monthly fixed salaried employment opportunities were also reported by some of the interviewees:

My dad works on the site. He is the main security officer. Since 2 months only he started working. Before that he was doing agriculture. (Respondent #26, Male, Muslim)

I am getting Rs 6,000/month, (\$100) and I am working as supervisor in a Surat company which is developing 18 MW project...Before that I was doing cattle grazing. (Respondent #23, Male, Rabari, currency conversion added)

While the national average per capita monthly income of India was INR 5,729 (US\$115) in 2012 (Times of India, 2013), the per capita monthly income in 2011 for urban areas and rural areas was INR 3,685 (US\$73) and INR1, 360 (US\$27) respectively (Times of India, 2011b). The income of INR 6,000/month (\$120) stated by the above respondent is therefore almost double the rural areas national average. Apart from the high salary, Respondent #23, also said that these well-paid jobs came with multiple benefits by showing what was provided by the developers as a part of his job to me:

This motor-bike and fuel for it is given by the company. They gave me this mobile also. Company will provide food 3 times - unlimited breakfast, lunch, and dinner free of cost. (Respondent #23, Male, Rabari)

Both of the above respondents attributed the shift away from their traditional occupations of farming and pastoralism to land acquisition for project development. Though it was stated by the above interviewees that these high paid and monthly salaried jobs, compared to their traditional occupations (ex: pastoralism) had improved their quality of life, several

respondents, similar to the daily waged labourer quotes, reported that the jobs were only short-term and, with temporary benefits:

I was working as store manager - cement and other products will come in and go out. I need to manage in-out register. I was getting Rs 6,500/month. Now I am working in L & T, this is not a permanent job. While the project is there I will be working. (Respondent #PG, Male, Gadhvi)

Through personal experiences, whilst all of the above respondents underlined the short term employment benefits that emerged during the project implementation, they also described that the burdens of loss of land and the need for alternative livelihood drove the entire village to accept those short term opportunities. The arguments also posed a question about the long term livelihood of these ‘land-lost’ labourers living in a poverty stricken remote location.

On the other hand, business interviewees considered the solar park as a provider of multiple direct and indirect benefits both for the communities and for the national economy. One of the business developers stated ‘*If listed down there would be at least 100 tangible benefits.*’ (Respondent #9, Electrotherm). Specifically, on the employment theme many business respondents stated that the solar park, through employment opportunities, and providing short term work such as contractors, transporters etc., improved the life of many people in the village. Indeed, when questioned about the outcomes of the project, many interviewees said that the solar park provided a large number of job opportunities not only to Charanaka, but also to its neighbouring villages such as Fangli, Bhabra etc. Similar to the community interviewees however, several business interviewees also agreed that the large number of job opportunities provided for the local people were largely low wage and temporary basis construction labour work. They attributed this temporary nature of the jobs to the mechanised solar power industry:

Currently there are about 250-400 working but it's only for 1 month till the project is commissioned, in operation you don't require that many. (Respondent #20, Yantra e-solar)

I think hardly 2 skilled people and 5-6 unskilled for cleaning and security are required during operation....you cannot position sun rise or sun set... Whatever energy is generated it is immediately connected to the grid and there is continuous metering of the system. (Respondent #11, Sun clean)

These findings regarding the long-term livelihood impacts of renewable energy on the rural communities are in line with previous literature on wind energy implementation which asserts that renewable energy development delivers only temporary conventional benefits (Walker *et al.*, 2010b; Wolsink, 2007) although that literature tends not to discuss the reasons for the temporary nature of benefits.

In Charanaka, various reasons were identified for temporary nature of the employment opportunities. As put by one of the respondents '*because education is very low, people will get only labour work*' (Respondent #21, Male, Gadhvi), lack of education and skills were major reasons for the impermanent, low-wage and labour intensive jobs which required no technical knowledge:

There are about 1200-1300 population in this village. The literate population is only around 100 people, 400-500 will be kids, then old people. Most of the elders are illiterate. (Respondent #11, Male, government primary school teacher)

In this village there are few people who are educated. Most of them are 7th pass. Let's say even for electrical wiring works you need education, there are no technically educated people. If it was government, then they might consider for 4 to 8 yrs. But if the private companies want to take they will, if they don't want they won't. (Respondent #2, Female, government anganwadi teacher)

As discussed elsewhere in this thesis, for the village with limited education facilities and more than 50% Rabari population, education emerged as an obstacle for claiming the benefits of the project. These findings also echo previous literature, which recognises that

nomads attribute lack of education to their transhumant pastoralism, which eventually ‘leaves them behind’ regarding better employment opportunities and other societal benefits (Dyer & Choksi, 1998; Krätli, 2001; Sharma, 2011).

While the lack of technical expertise and skilled human resource on solar or electricity related technologies in the region was primarily responsible for the temporary nature of the benefits accessed by the village community, it was also the underlying reason for the outflow of more employment opportunities to people from outside the region, and other states in the country (plate 9.1). It means while the uneducated local communities emerged as short-term beneficiaries and long term burden bearers (due to loss of land), non-local workers emerged as beneficiaries with no personal costs and burdens:

The main workers employed in the companies are from outside. It would have been still OK if the companies are employing people from Santalpur or Radhnapur. The contractors bring people from different states and outside this place. (Respondent #1, Male, Rabari)



Plate 9-1 Temporary sheds of the construction workers from outside the region. The workers from neighbouring states lived in these sheds during the construction period

(Source: author, Nov, 2011)

According to the SPP 2009, though the project developers were legally obliged to recruit local people, various business respondents asserted that factors such as lack of technical skills and limited availability of working population in Charanaka and its neighbouring areas drove them to recruit both skilled personnel and labourers from other parts of the country:

We have a huge requirement right now. From the local people we have tried to meet the requirement obligation, but we are not able to meet demand (of skilled and unskilled) for this huge project. We have some migratory workforce coming from Andhra Pradesh, Bihar, and other places. (Respondent #4, GMR)

The policy makers' respondents expressed that the policy through the project lease agreement document (Respondent #11, Male, Sun clean) mandated preference to locals:

For this project, as far as government is concerned we have put up a condition for all the developers to give 80% of the jobs to the local people. If you go on to the site, around 10,000 people are working on the site. Charanaka has only a population of 1500. (Respondent #3, GPCL)

The statutory project development lease agreement requirement according to which each developer was supposed to employ 80% of the local people largely applies to the unskilled workers but not skilled workers. In reality, although it was necessary to give priority to Charanaka and its neighbouring villages, some of the business respondents accepted that a large amount of external workforce was recruited because they knew that if the government bound them to the law, nothing happens:

If 100 people are working on site, the lease says 80% should be local people (from Gujarat), but that much skilled manpower is not available here. They need skilled people, so everybody is bringing people from Maharashtra, Chennai...from all over India and the government know about it. (Respondent #11, Sun clean)

This finding on lack of skilled local labour and the discussions on the relation between education and unjust distribution of opportunities goes to Rawls' argument on distributive justice:

' if law and government act effectively to keep markets competitive, resources fully employed, property and wealth widely distributed over time, and to maintain the appropriate social minimum, then there is equality of opportunity underwritten by education for all, the resulting distribution will be just' (cited in Harvey 1975, p.114).

The lack of necessary physical infrastructure in the village, such as basic education facilities, is a failure of the government's obligation to provide the social minimum. The previous distributional justice literature also noted that getting adequately educated, as a basic human functioning, provides the basis for better employment and economic

opportunities for the least well-off local communities (Sen, 1999, Nussbaum, 2000). Facilitating the most disadvantaged to get a just share of benefits from development projects bridges the economic and social inequalities in society and eventually moves towards achieving Rawls's (1971) principles of justice. However, in this case the least well off local communities (and specifically Rabaris), with no entitlements to land, loss of pastoral land and lack of technical skills had the highest probability of being victims of inequitable distributional outcomes. By losing the land, the poorer communities of the village actually considered themselves as worse-off and disadvantaged compared to the previous situation when they were working on their own lands and in control of their destinies. The appropriation of land resulted in the loss of livelihoods, limited their freedom of work or constrained their liberty (Smith, 1994).

Reflecting on these disadvantages to the least-well off groups, the previous literature on distributional justice also asserted that the victims of injustice in the outcomes of policies and projects generally do worse over time (Nozick, 1974; Rawls, 1971). The victims of inequitable distributional outcomes in Charanaka are owed compensation by the business developers and the government who are the obvious benefit holders from the outcomes of the solar park project. This discussion on distributional issues in the outcomes of the solar park project emphasised that the uneducated and least well-off local groups had to bear the burdens of the project by losing land, livelihoods and opportunities. These distributional issues in siting of public facilities at local scale are also explored in the works on engagement of geography with social justice (Harvey, 1996; Smith, 1994; Soja, 2010).

9.3 Provision of clean energy

Following the discussion of job opportunities as benefits, this section considers the energy-related benefits, as an outcome of the solar park project. The literature on renewable energy benefits argues that claims of host community benefits from solar energy and other renewable energy projects have largely been around the positive benefits of ceaseless energy supply (Gross, 2007; Munday, Bristow, & Cowell, 2011). These arguments were also echoed in the solar park case.

In the interviews, there was discussion of energy benefits in the form of 24 hour electricity supply and free solar street lights (plate 9.2). Though most of the respondents agreed that electricity had always been available in the village, the solar park indirectly made it possible to be uninterrupted:

Though electricity used to be there before the project also, there used to be sometimes cuts during monsoon because of the failure in infrastructure etc. but now it is 24 hours because of solar park. (Respondent #5, Male, Muslim)

Electricity was not there 24 hours, if one lamp post fell down it used to take 15 days to get it repaired. Now it gets repaired in 24 hours. (Respondent #13, Male, Muslim, Shopkeeper)

As per the *Rajiv Gandhi Grameen Vidyutikaran Yojana* (RGGVY), a programme of the central government of India for the creation of rural electricity infrastructure, and the ‘National Common Minimum programme’, the state of Gujarat was the first and one of only seven states⁴⁹ with 100% rural electrification status (RGGVY, 2013). Despite this, according to the above respondents the Charanaka solar park improved the quality and reliability of the energy supply in the village. While acknowledging the improvement in quality and reliability of energy, both of the above respondents also stated that continuous

⁴⁹ The seven completely electrified states, of the 27 states in India, are Andhra Pradesh, Gujarat, Haryana, Kerala, Maharashtra, Punjab, and Tamil Nadu (RGGVY, 2013).

energy supply wasn't *per se* provided as a direct benefit to the village. Rather, intermittent supply of electricity in the village could delay the completion of the project, so the government made sure that there weren't any power failures during the project implementation time in the village. Further, with a one-time investment by the business developers, apart from solar street lights and improvement in quality and reliability in conventional energy, no clean energy benefits were provided. According to the above respondents Charanaka and its surrounding villages were only indirect beneficiaries of the non-intermittent energy supply.

Some of the other interviewees also explained that compared to the large amount of benefits the government and business developers attain in the form of profits from the energy produced and exported to the energy-deficient neighbouring states, the benefits to the village were minimal. According to them, as all of the produced solar energy is connected to the central grid, there were no direct energy benefits:

Right now they are spending crores of rupees after that they will give electricity outside so they get 2 lakhs⁵⁰ per day, wherever there is gap in electricity they will give, even outside of Gujarat. (Respondent #24, Male, Thakore)

The electricity produced from the park would be supplied to outside states, outside of Gujarat. This is what is being discussed in the village. (Respondent #1, Male, Rabari)

As the state of Gujarat is a power surplus state, the government of Gujarat benefits by selling the electricity produced at much higher prices to industrial units in the state and the power-deficient neighbouring states (see section 6.3.1). According to the above respondents and the fact that Gujarat had been a 100% electrified state with three-phase uninterrupted power supply since 2006, and several hundreds of villages in the rest of the 27 states had still been lying in the dark, the export of power produced in the solar park

⁵⁰ 1 lakh = Rs 1, 00, 000 (for conversion £1 = Rs 0.8 or \$1 = Rs 0.5 approx.)

proved to be profitable for the government. The direct energy benefits that go to the national level and, the monetary benefits that go to the business developers and the government, were minimally returned to the local communities.

In an extension to the responses on non-intermittent energy supply from the project, the above respondents also argued that improvement in quality and reliability of the conventional energy benefits, through 24hours uninterrupted supply of electricity to the village was meaningless because electric bore wells were not used for farming. As the village is located very close to Rann of Kutch, the dry and saline desert of Gujarat, the underground water is salty. Due to this, the farmers depend only on rains and not on electric bore wells. The lack of bore well means there was no need for constant electricity.

Though conventional electricity was not provided for free and no solar energy was provided at the point of construction of the project, some respondents nevertheless hoped that solar energy for free might be provided in the near future. One of the respondent said *‘In the long run they might give free solar energy to whole village. That will be a big benefit’*. (Respondent #11, Male, primary school teacher).



Plate 9-2 Free solar street lights provided by the business developers (*Source: author, Oct, 2011*)

These empirical findings assert that the one-time investments that went into the community energy benefits, through solar street lights and repair of electricity infrastructure during the construction of the project, were insignificant compared to the profits made by the project developers by selling electricity produced in the solar park to the government at an exorbitant FiT of INR15/unit (US\$0.3/unit) compared to that of Rs 3/unit (US\$0.06/unit) for fossil fuel based energy. Such inequitable distribution of benefits can widen the gap between the well-off business developers and government, and the poor communities of Charanaka. While such gaps in a society can result in a socially unjust condition, equitable distribution of benefits can move towards social justice (Rawls, 1971). For example,

providing clean energy for free, or at a lowered price for the village would be some way of fair distribution of benefits.

9.4 Infrastructure development

Another important distributional issue that emerged from the interviews was the availability and distribution of basic physical and social infrastructure facilities for the village. Members of the different communities in Charanaka expressed the view that they were denied even the most basic social and physical infrastructure facilities. The community's fundamental definition of benefits from the project was the provision of basic infrastructure (such as roads, schools, hospitals etc.) for the village. On infrastructural development, it was claimed that for the purpose of connectivity and transportation of solar panels to the project site, while a stretch of 30kms road was well developed from scratch connecting the solar park site to the National Highway (plate 9.3), another 30km stretch of road which connects the village *gamtal* to the neighbouring *Dhokavada and Bakutra* villages and *Santalpur taluka* was completely neglected (see plate 9.4):

Solar park road is being constructed but that is for their benefits and mainly for the companies. (Respondent #9, Male, Rabari)

This year the rains in just 1month were in such a way that the road from here until Santalpur was closed. The rains for the entire season came in just 1month. We were blocked up here without being able to go out of this village. If there was an emergency, what can we do when the roads were closed? (Respondent #1, Male, Rabari)



Plate 9-3 The 30km stretch of road connecting the solar park site and the National Highway under development (*source: author, Oct, 2011*)

The road which was mentioned in the above quote was the 30km stretch of unsurfaced road connects Charanaka and its neighbouring villages (*Dhokavada and Bakutra*) to the *taluka* where infrastructure facilities such as high school, college, hospital, market are located. During the field work period, my initial plan of visiting the village in the month of September, 2011 was cancelled due to torrential rains and the very bad conditions of the road. Even after one month of rains during my visit in the month of October 2011, I observed that the road was completely submerged under stagnated water which made it difficult for me and also the residents of the village to commute in that stretch (plate 9.4). A respondent shared his personal experience on travelling from the village to the *taluka* during the monsoon:

During monsoon I was going to Santalpur on motor-bike, because of lack of proper roads, I fell down and had accident. My leg was fractured.
(Respondent #7, Male, Harijan)



Plate 9-4 The 30km length narrow road connecting the village to the Taluka broken and drowned during monsoon (*source: author, Oct, 2011*)

The above quotes and discussions reiterated the dominant conception of the villagers on the benefits of the project as *'the road is for the companies, and electricity for the government.'* (Respondent #9, Male, Rabari). With no proper road connectivity and no public transportation systems, while I managed to commute with my own vehicle, it was an onerous task for the villagers to travel. Many interviewees further reported that the problems that arose due to this lack of proper roads and public transport compounded the non-availability of a hospital or a primary care centre in the village:

If a person falls ill in the village where do we go? We need to go to Radhanpur. If a person has his own vehicle he would be able to go. If one has to give Rs 600 for an emergency vehicle to take to the hospital what would one do? How would a poor person give that much money? (Respondent #1, Male, Rabari)

Right now my leg is fractured so sitting at home since last 2months. I bought medicine from Patan, we have to go in a special Jeep which costs around Rs 2,500. (Respondent #7, Male, Harijan)

For basic health problems such as fever, the villagers travel to *Santalpur*, the *taluka* and the nearest small town located at a distance of 30kms. In case of any major ailments, such as those cited in the above quotes, they travel as far as *Radhanpur*, a large town located at a distance of 70kms or *Patan*, the district head-quarters located at a distance of 130kms. The means of public transport systems to all these places are either a shared tractor or a shared private Jeep (plates 9.5 & 9.6) which costs them *'Rs 20 to Santalpur and Rs 50 to Radhanpur'* (Respondent#1 Male, Rabari). Respondent#1 in the above quote lamented that in case of an emergency the vehicle has to be privately booked which costs them exorbitant prices. Though these prices are normal to any middle class person in India, they are a lot to these poor communities. Apart from health facilities, the villagers also travel to Santalpur for secondary and senior secondary education. If

someone aims for an undergraduate degree, their source of this education is located 70kms away at Radhanpur.



Plate 9-5 one of the means of short distance local public transport systems and the connectivity road to the taluka (source: author, Oct, 2011)



Plate 9-6 shared long distance public transport systems are available from Santalpur (taluka) to Radhanpur or Patan (source: author, Oct, 2011)

In addition to arguments on the current non-availability of basic services, though some of the interviewees reported that there were discussions and proposals on provision of social infrastructure by the project developers and government, most of them were dubious about completion and implementation of those proposals:

It was promised earlier that all these facilities including training institute on solar, bus, roads would be provided for the village. But when the work started and has been progressing slowly and steadily, everything was forgotten.... (Respondent #1, Male, Rabari)

Company representatives have come and gave so many promises. They said they will build school, health center but all will be false as per our view. We don't think they will provide anything. (Respondent #21, Male, Gadhvi)

During my fieldwork, though I observed that there were some physical and social infrastructure development proposals in both the master plan and Detailed Project

Report (DPR) of the project, none of those details were shared with the communities. In fact, from the project initiation in 2010 until the field work in December 2011 none of these benefits were implemented. In line with my field observations, and the fact that the project was to be completed in April 2012, some respondents predicted that no social or community benefits would be provided because *'the project was almost completed'* (Respondent #26, Male, Muslim). These findings, and the resultant reduced confidence in the state reflect Smith's (2004) case study on neoliberal reforms in South Africa, which raised several criticisms on state's accountability in service provision and regulation.

The respondents felt that the government was 'false promising' to get their work done easily and get away amicably from the village. As expressed by the above respondents and considering the fact that no facility was provided by the end of the project, the decision-makers and developers failure of legitimacy in the benefit provision resulted in loss of trust in them.

Further to this point on facilities development, some of the other respondents added that providing benefits was in any case a kind of sweetener developed by the private developers for removing mistrust and gaining public support, and for settling any environmental and social impacts and distributional conflicts amicably:

They also told the village that if villagers will support the project, they will construct toilets etc. but all farmers are doing agitation. (Respondent #11, Male, primary school teacher)

BG from government called me there and said that whatever that's happening is good for the village... He said that so many foreign companies will come here, you will get medical facilities, you will get good colleges, first preference will be given to villagers in jobs. They are constructing a temple, they gave money also. (Respondent #23, Male, Rabari)

These findings also resonate with the previous literature on ‘community benefit packages’ for gaining public support (Brady & Monani, 2012; Wolsink, 2007). These packages offered to host communities in the form of green energy, education development, and other social infrastructure development are often options considered by the developers and government as a means of ‘conflict resolution’ and sustaining their long-term investments (Brady & Monani, 2012).

Several other important points also emerged from the above discussions: firstly, the village being remotely located was isolated from any sort of development. This resulted in denial of any basic facilities including a hospital or even a primary care centre, a basic social infrastructure generally available in all Indian villages. Secondly, the village had no affordable public transport system. This made it hard for the villagers to travel even in case of an emergency. Even the arrival of the solar park had hardly made any impact on the availability of the basic social infrastructure. These basic needs as stated throughout the above quotes – to be healthy, to be educated, and to function properly – according to Griffin (1986) and Nussbaum (1995), are not only a means of survival or human existence, but are also central to human decency and well-being. Rather than mere access to income and employment benefits, Sen (1999) contend that these capabilities and valued functionings are at the core of distributive justice.

In line with the conclusion of community interviews, on questions around benefit sharing through development of the village, many business developers and policy maker respondents agreed the village to be a remote and underdeveloped place. One of the interviewees said: *‘people even today don’t have any medical or school facility, or approach road’* (Respondent #6, GoG). Respondents also considered that over the years

the region, although having a social and cultural significance, had been excluded from the rest of the state and country's development:

If monsoon comes people can't go anywhere, if a lady has to deliver they have to travel 26kms and you think that should be maintained seeing it as a heritage? But it's not that way, India has woken up. (Respondent #6, GoG)

See, they don't have a school, they don't have a clinic. There is a school in Charanaka but what kind of school is that? You see the kind of schools in cities or towns or even in remote areas of Andhra. (Respondent #15, Yantra e solar)

Such remarks indicate that the poor communities in the village, 'locked into' a 'forgotten location' with no basic facilities, are the victims of inequities in infrastructure development. Plates 9.7 & 9.8 gives an example of benefit and burden inequities. The benefit holders such as the decision-making authorities of the local political jurisdictions (such as taluka) or the public sector organisations or project developers are responsible for addressing this inequitable access to services and infrastructure needs in the village.

Considering the lack of basic services in the village, some expert interviewees expressed their future vision of physical and social infrastructure development in the village. They considered that by the solar park development itself the Charanaka village region would transform from a remote area to an urban area. However, as discussed by the community interviewees, the expert interviewees also concluded that while there were a range of proposals for facilities, the task of completing the project on time was their foremost priority and any plans about community development would be given thought after the completion of the project:

Imagine you are a developer and foresee the available budget...when we look at a project at the beginning itself if you develop all infrastructure then you wouldn't have the money to develop the project itself. You set up a priority for the project and then you begin with. (Respondent #3, EIT)

Frankly, no one has done anything till now. Right now they are concentrating on project completion...on papers there are lot of schemes. They are supposed to contribute to village development and all other things... but until now nothing is done. Now everybody is in a great rush to complete the project. (Respondent #11, Sun clean)

Though there were several proposals for social infrastructure development in the official documents of the project, as there was no obligation for the project developers to develop them, during the second field visit of the author in October, 2012 after the completion of the project in April 2012, it was observed that no facilities were actually provided. Similar to the above discussions, the previous literature on implementation of wind energy projects also stressed that channelling energy and infrastructure benefits from the profits of the renewable energy projects lies in the hands of the project developers (Cowell, Bristow, & Munday, 2011).



Plate 9-7 village drinking water sources (open pond and open well) submerged in the monsoon rains (source: author, Oct, 2011)

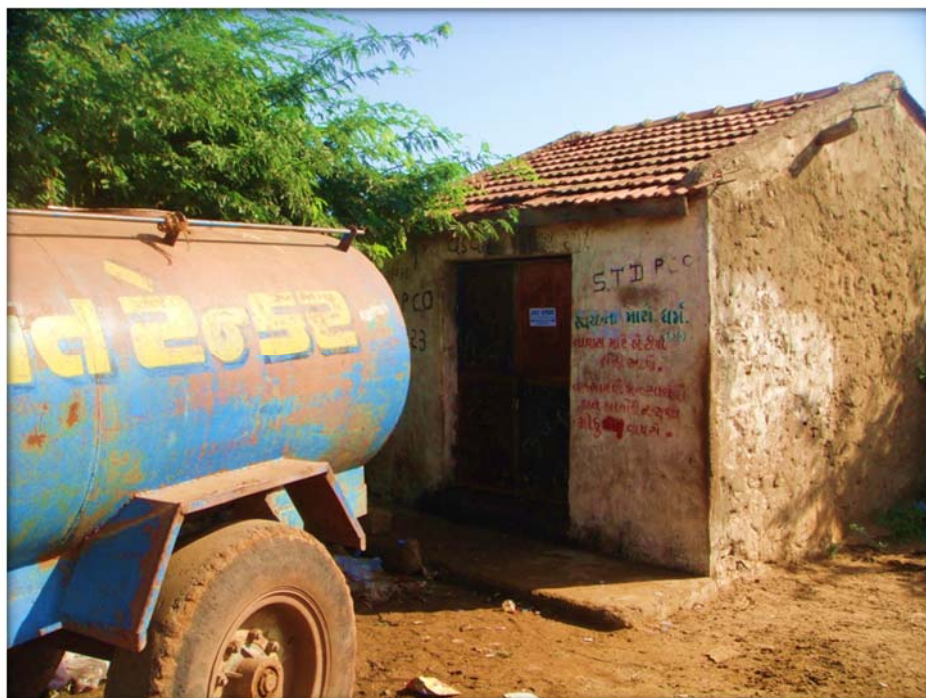


Plate 9-8 Temporary tanked water treated and supplied in large bottles to the solar park developers (source: author, Oct, 2011)

9.5 Local economic development opportunities

The literature on distributional justice argues that any inequitable distribution of benefits and outcomes of renewable energy projects may also create conflicts and resentment within the communities hosting those projects (Brady & Monani 2012; Gross, 2007; Walker & Devine-Wright 2008). Similar to the literature, various arguments on local economic opportunities, which emerged from the interviews, also emphasised the inequitable distribution of benefits within the village. One such narrative was on benefits to the farm land owners compared to the landless farmers and pastoralists (also in Gross 2007). For example:

The government would pay for the farmers who have land, and are willing to give away the land for the project. But what about the others such as who either sold land or are landless? (Respondent #2, Female, Gadhvi, government anganwadi teacher)

There are farms which were given on lease, the companies might use that land for temporary shades or brick making. The farm owners will get so much money. (Respondent #17, Male, Ahir)

The farmer in the above quote discussed how some of the large and upper caste land owners had leased out several chunks of land to the project developers for construction purposes. He cited his personal experience: *'the land where the shade is being constructed is Gadhvi's farm. The developers came first to us, we said we will do only agriculture, but then Gadhvi gave'* (Respondent #17, Male, Ahir). On the other hand small farmers, farmers who sold land due to lack of information about the solar park (see section 7.2), landless pastoralists and agricultural labourers had to bear the burdens of loss of land and livelihoods. These discussions on inequitable distribution of economic opportunities within the community extended to various other sectors including businesses, construction equipment etc.

Given the remote location of the solar park and the unavailability of any market areas or other facilities for at least 30kms, various interviewees reported that a few well-informed and active sections of the community had taken the solar park as an economic opportunity by setting up miscellaneous small businesses in the village to support the daily needs of the migrant workers (plate 9.9). Some of the interviewees explained that they *'took some money in debt and bought required items to start a shop'* (Respondent #7, Male, Harijan). This eventually led to a small growth in the number of stores in the village:

These shops have grown recently, earlier there were only 2-4 shops. Now they got more benefits because of the solar park. (Respondent #10, Male, Rabari)

My business is running very well because there are so many people coming here and that's because of the solar park. (Respondent #13, Male, Muslim, Shopkeeper)



Plate 9-9 Small shops for daily needs set up during the construction of the solar park (source: author, Oct 2011)

As there were no catering services in and around the construction site up to 30kms distance, a catering operation to serve the migrant construction workers was started by a temple priest family. During my fieldwork, I too had to depend on this source for food. Reflecting on this, some of the interviewees including the person who started the service expressed that such services would bring some short-term economic benefits to the person who initiated it, but not to the entire village:

Ok, you are eating daily in the house of the temple priest? He is providing food for the workers who are working in the solar park for different companies. They don't have any other facilities around the area. Though this place is about 2kms from the construction site, they come every day to take lunch and dinner. (Respondent #2, Female, government anganwadi teacher)

Let's say now you are eating at our place so I would be earning but the rest of the people here will not be earning. The whole village will not be getting benefitted. (Respondent #18, Male, Priest)

Another theme that emerged from the interviews was regarding the benefits from renting out construction equipment to the project developers. Given the need for large numbers of construction equipment, such as earth movers, excavators etc., and the lack

of availability of such equipment in the nearby areas (for at least upto 100 kms), some of the respondents described how some people in Charanaka village and its neighbouring villages took it as an opportunity:

Some people not only from the village but also from nearby villages such as Dhokavada and Bhakutra bought tractors and JCBs to do business. (Respondent #11, Male, primary school teacher).

We have a tractor since 2007. I used to use in my agriculture farm before but I gave to the solar park now. They give Rs 25 thousand. Diesel, which costs about Rs50 per litre, is also theirs. But driver is ours. (Respondent #14, Male, Vadiya)

The observations from the quotes in this section revealed that most of the interviewees expressed the view that these short-term ancillary economic opportunities also brought inequitable distribution in the communities – by providing decent benefits to only small sections of the population and only limited benefits to the majority of the village. As mentioned before, given the remote location of the area and non-availability of the above mentioned services, such as catering places, construction equipment and shops, required by the business developers, these sections of the village, who benefitted from the capital investment, had taken an opportunity at the right time in the right place.

However apart from taking the opportunity at the right time, other major factors such as positionality in relation to caste, position in the village, and, access to information and economic resources also played a major role for those who could capitalise and benefit. For example, the catering service was started by a well-respected, high caste and economically better-off temple priest. Others who had access to better financial resources for capital investment started businesses through shops and renting out construction equipment. In line with the empirical findings, Smith (1994) argue that the reasons for some people to benefit over others through business start-ups could depend on various aspects such as ‘genetic make-up for taking opportunities, family

background, differentiated opportunity generated by economic forces...morally arbitrary attributes including luck...which are beyond people's control' (p. 284).

Though all the above arguments reported that that a few members of the community benefitted more than others, considering the complexities and personal interests to invest and start businesses, while it would not be possible to achieve equal benefit distribution in this case, the principles of distributive justice would still had been achieved if the worst-off communities such as poorer sections of Rabaris or marginalised lower-caste communities benefitted more from outcomes of the project. However, in this case, while the better-off or resource rich and opportunistic communities benefitted by taking different economic opportunities from the solar park development, the poor had to bear the burdens of loss of land, and no sustainable livelihoods. This inequality between the communities further was exacerbated with no trickledown effect of the wealth amassed by the better-off. For example, as per the above Respondent #14, he earned extra income by renting out his tractor, with his son only as a driver. This reasserts that the discourses on improving quality of life of the local people from the 'neo-liberal' profit-driven solar policy 'favours the *haves* at the continued expense of the *have-nots*' (Holden & Grossman, 2005, p.194, original emphasis). These discussions also reflect Walker's (2009) statement that when inequitable distribution of benefits 'is experienced by already marginalised groups as direct consequence of the actions of those that are more advantaged, then claims of injustice become particularly powerful' (p. 622).

While this inequality in the outcome conditions can make the poor communities even poorer, local sharing of the better-off communities' increased wealth, through strategies such as setting up a community-led infrastructure development (e.g. drinking water,

primary health care, etc.) fund and donating to it, providing access to capital investment for personal economic development through low interest or interest free cash, and setting up collaborative businesses, could make the poor better-off than before. Such a condition may still be in accordance with Rawls' (1971) principles of justice.

9.6 Conclusions

This chapter discussed four major themes with respect to the distribution of benefits and burdens arising from the Charanaka solar park development. The first was around the nature and distribution of employment opportunities. Though both the community and expert interviews agreed that inevitably there were short-term employment opportunities arising from the project, the temporary nature of these opportunities and their inequitable distribution within the community, region and country, set against the long-term livelihood impacts to the marginalised communities (such as Rabaris and small farmers) from land loss, made the burdens greater than the benefits for the worst off. Previous literature also emphasises that marginalised communities in rural areas have the highest probability of being the victims of inequitable distributional outcomes of infrastructure and energy development projects (Gross, 2007; Cowell, Bristow, & Munday, 2011; Harvey, 1996).

The second theme was around the energy provision from the solar park implementation. In contrary to previous studies which assert clean energy benefits to the communities hosting renewable energy projects (Cass, Walker, & Devine-Wright, 2010; Munday, Bristow, & Cowell, 2011), in this case, apart from free solar street lights, and improvement in quality and reliability in the existing conventional energy supply, no direct energy benefits were provided to the local community. In fact, as Gujarat is a power surplus state, the energy produced in the solar park was expected to be supplied

to neighbouring power deficit states. While with high FiTs and power sale price to the neighbouring states, the project developers and the government emerged as direct beneficiaries from the energy produced, the local communities were left with little direct energy benefit apart from street lights.

After the conventional employment and energy benefits, the third theme that emerged was around availability and distribution of physical and social infrastructure development, raising criticism about the lack of basic infrastructure and the inequitable geographies of development in the solar park development region. Previous literature states that community benefit schemes in the form of energy and infrastructure development are offered to the local communities for gaining support (Brady & Monani, 2012; Wolsink, 2007). However, in Charanaka, while necessary infrastructure for the solar park was rapidly developed, the village remained deprived of basic infrastructure and common minimum standards of living. For the developers and government, the project development and completion was a priority. Further, as also stated in the previous literature, the power to share the profits with the local communities, and the power to design and shape the community development rested with the developers and the project implementing authority (Munday, Bristow, & Cowell, 2011). Access to basic services and infrastructure provides the means of survival and opportunities for improved well-being (Sen, 1999). Providing fundamental services and infrastructure can help bridge the gap in human development and help eventually move towards achieving the principles of distributive justice.

The final theme of this chapter addressed the distributional outcomes in local economic opportunities. It found that the inequitable distribution of local economic opportunities were all a part of the inequitable outcomes from the uneven development processes of

the solar park. As quoted by the community interviewees, through inequitable distribution of economic opportunities, the project had the potential to compound the existing caste and income based inequalities in the village. While theoretically the principles of justice distribution would had been achieved if the least well-off groups, such as Rabaris and poor farmers, emerged as the major beneficiaries, in this case it would need a quite radical solution to make it happen.

More generally this chapter revealed that there were a series of impediments, such as lack of education and skills among the Rabaris, the better access to capital of the upper caste and better-off families, the caste system in general, and so on, for the flow of conventional economic and employment opportunities from the top implementing authority level to the bottom communities. These challenges result in inequitable distribution of outcomes. Thomas, Geoffrey, & Kayetta (2005) argue that because top-down development projects tend to create inequitable distribution of benefits, proper strategies, such as stronger procedures, community ownership of projects, should be adopted to ensure that the losers are not always the poor and marginalised. This echoes with the second principle of Rawls's (1971) notion of 'justice as fairness'.

The implementation of the solar park, with huge capital investments by the business developers and support from the government, was driven by neo-liberal economic development policies and disregarded the socio-economic development of the communities hosting the project. The distributional justice issues in the solar park development directly relate to the procedural problems. For example, the inequitable distribution of energy benefits (section 9.3), infrastructural development (section 9.4) and denial of basic needs is due to lack of recognition of communities' needs and lack of public participation to understand the concerns of communities. Similarly, the

burdens that the marginalised sections of Charanaka - such as economically disadvantaged Rabaris, agricultural labourers, and small landowners - had to face from loss of land and livelihood are due to the unfair land acquisition procedures and lack of information and participation. These findings reflect previous literature that failure to recognising concerns of marginalised communities and ignorance of participatory procedures is closely related to distributional outcomes (Fraser, 1998; Shrader-Frechette, 2002; Schlosberg, 2007).

Table 9.1 details the distribution of benefits and burdens under the four overarching themes.

Table 9-1 Distribution of benefits and burdens for different groups (source: compiled by the author)

GROUPS		THEMES			
		Employment opportunities	Clean energy benefits	Infrastructure development	Economic opportunities
Charanaka village communities	Benefits	Temporary, low-waged construction labour jobs	Non-intermittent energy supply (provided for timely implementation of the solar park)	Solar park road which could be utilised when travelling to Radhanpur	Rental income to landowners for land lease for temporary constructions and for renting construction equipment
		Small number of non-skilled temporary monthly salaried jobs	Provision of free solar streetlights	A few temporary medical facilities	Income from a wide range of temporary business set-ups for some higher caste and better off community members
	Burdens	Loss of farmland, and lack of long term jobs left no long term livelihood options for pastoralists and many small farmers	None	No long-term basic physical or social infrastructure development even after the solar park development	Only temporary ancillary economic benefits to a few sections of the community
		Due to external work force a potential impact on local socio-cultures.			Large farm land owners benefitted compared to landless farmers and pastoralists
Business developers	Benefits	Improvement of in-house technical workforce in solar energy	Huge profits from FiTs	Infrastructure development (such as internal roads, ambulances etc) for the project site so that the resources and equipment can flow in smoothly	Alternative economic benefits from the sale of solar panels in the second hand market after its life-period
		Local and migratory work force both as cheap labour – eventually profits in project development	Building up renewable energy profile for further business development		Experience that would allow expected expansion of solar projects to other regions in the country
	Burdens	Project delay fines due to local conflicts and delays as a result of bringing in migratory work force.	None	None	None
State Government	Benefits	Incoming work force as a means of bridging the gap of local skilled workers to allow timely project completion	Establishing the state's profile as a climate proactive state as well as increasing its clean energy base	Huge profits from collecting payment for the infrastructure (such as roads, street lights, boundaries etc) provided	Recuperation of money paid for FiTs plus large profits by sale of energy to neighbouring states and sale of energy to industries Extra income addition to project profits as a result of project delay fines. Industrial development and foreign direct investments in other sectors in the state
				Infrastructure development for the project to attract several other industrial development	International recognition and funding for solar park and to other solar energy projects and other industrial sectors in the state.
	Burdens	Loss of local communities' trust due to not being strict on employing local people.	None	Initial economic loss for the investment in the common infrastructure required for the project development.	Partial economic loss as the FiTs proposed in the SPP 2009 resulted in much higher profits for business developers than the capital investment in the individual projects

10. CONCLUSIONS

It is a welcome aspect of contemporary theories of justice that in general they do strive to formulate ways of thinking which may enable us to stand outside our own inherited notions of the good society and help us to think creatively and purposefully about how we might move towards a better, perhaps a more just, form of social life.

--- Tom Campbell, Justice (1988)

10.1 Introduction

In this thesis, I have researched the relationships between large-scale renewable (solar) energy projects and social justice in the context of Charanaka solar park implementation in Gujarat. In resonance with the previous literature, I found that application of multiple theories of justice – regarding procedures, recognition, and distribution - in solar energy development in India proved to be a significant and useful instrument for analysing controversies over the implementation of renewable energy policies (Gross, 2007; Walter & Gutscher, 2011). Apart from advancing energy justice literature both in developed and developing countries, the findings of this research have several implications for both academic literature and policy practice.

First, while there is a considerable amount of energy justice literature in developed country contexts, the focus so far has been on the application of either procedural justice (Burningham, Barnett, & Thrush, 2006; Cass & Walker, 2009) or distributional justice concepts (Cowell, Bristow, & Munday, 2011; Brady & Monani, 2012). There is little scholarship based on multiple concepts of justice (see Walter & Gutscher, 2011) and through multiple literatures (see Gross 2007; Walker & Day, 2012). By positioning and arguing the importance of considerations of procedural and distributional notions of social justice in solar energy development through multiple literatures, this research has provided

new insights to the growing energy justice literature.

Second, in the developing country context, while there is a small amount of academic literature merely identifying the importance of consideration of justice aspects in implementation of renewable energy (Bhattacharya, 2010; Benecke, 2011), much of it is focussed on arguing for the importance of inclusion and participation of stakeholders, such as civil societies, project developers, from a general perspective. There is a dearth of academic literature exploring multiple concepts of justice in energy development either in India or other developing countries. This ground breaking empirical research on understanding social justice concerns in implementation of Charanaka solar park, to some extent, fills this gap.

Finally, one of the major contributions of this research is its applicability to policy practice. During the implementation of Jawaharlal Nehru National Solar Mission (JNNSM) (hereafter referred as NSM) various policy related studies in India identified that social justice issues, such as ineffective participation, non-transparency in land acquisition procedures, and inequity in distribution of benefits, have become challenges and obstacles for the timely completion of solar energy projects (Ghosh *et al.*, 2012; Reddy & Dixit, 2010). However, they neither support the statements with findings from ground research nor provide recommendations for addressing the challenges. Hence the key empirical findings - sharing of information and listening to the voice of affected groups, maximum participation and enfranchisement or equal representation, legitimacy in land acquisition procedures, recognition of marginalised communities, and just distribution of project benefits and burdens – and some pragmatic policy recommendations (see section 10.3) of this thesis could provide a road map for addressing

justice issues in the proposed new Gujarat Solar Power Policy Phase-II (2014-17) and Phase – III (2017-22) of NSM, and other developing countries seeking to successfully unleash the potential of clean and sustainable energy through national policies.

After emphasising the major contributions of this research, I shall now draw reflections on the overall findings of my work in response to my research questions. This is carried out by first returning to the critical arguments on the governance structures of India's NSM and Gujarat solar power policy (GSPP) 2009 (under which the Charanaka solar park was implemented) and justice considerations within the national and regional policies. After understanding provisions for social justice concerns in policies, I shall discuss justice concerns in the implementation of the Charanaka solar park by reconsidering the procedural and distributional concerns and the interrelationship between them.

10.2 Reflections & Discussions

The thesis first found that a combination of the NSM, and the individual state solar policies formulated before and after the NSM provided a boost for grid-connected solar energy development in the country. The total installed capacity in India (including the capacities under state solar policies) experienced an increase from less than 200MW at the end of 2010 (MNRE, 2011) to approximately 2200MW in January 2014 (MNRE, 2014).

Of this 2200MW, more than 800MW emerged from the state of Gujarat. Due to decentralisation of government, the states in India have powers to implement their own policies in any sector and accordingly the Government of Gujarat initiated the Gujarat Solar Power Policy, 2009 (GSPP 2009) for implementation of grid-connected solar projects, becoming the first state in the country (even before the release of NSM in 2010) to have a comprehensive policy on solar power. The policy provides a supportive

economic and policy landscape not only for individual projects but also for ‘grouped’ projects implemented through the concept of ‘solar parks’. The first of the solar parks was the Charanaka solar park. While in this thesis the solar energy policy framework at national level was reviewed through literature review, the analysis of GSPP 2009 was carried out from primary data collection. As Charanaka solar park was implemented under the GSPP 2009, empirical research was carried out only for GSPP and not for other state policies. Nevertheless, two major concluding points can be drawn from the review of national and state policies.

First, while both the NSM 2010 and GSPP 2009 have a wide range of economic policies, governance structures, and institutional arrangements supporting solar energy, factors such as Gujarat’s geographical and climatic positioning (the country’s highest solar radiation and availability of large tracts of land), the feed-in-tariff (FiT) mechanism (as opposed to NSM’s competitive bidding process), financially strong energy service providers, and better implementation mechanisms, placed GSPP ahead of the NSM and other state policies in terms of total installed capacity.

Second, the research documented that multiple actors are involved in both the policies, who can be categorised into two broad groups: state actors (the government institutions) and non-state actors⁵¹ (project developers, contractors, financial institutions, and other supporting structures) (see figures 5.3 & 6.4). However, the authority to govern solar energy policy, both at national and Gujarat level, essentially remains government-centred, with influential involvement of project developers and little participation of civil society organisations or public/communities at any stage (as also in Reddy and Dixit 2010). Apart

⁵¹ As there is no text book definition for ‘non-state actors’, all institutions independent of the state actors (i.e. the government institutions) are categorised into it.

from the recent MNRE's mid-term report on the NSM's implementation (Ghosh *et al.*, 2012), which recognised that justice issues, such as considerations of community participation, effective land acquisition procedures, and distribution of benefits, could underpin the unpredicted delays and other issues that arise in the course of solar projects implementation, the concerns of justice (either procedural or distributional) are given little consideration in implementation of either the NSM or the GSPP 2009. Though Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) studies of large scale infrastructure projects require the consideration of procedural justice through public participation, solar energy projects being recognised as 'environmentally good' are exempted from the process and hence solar energy implementation in India, till today, has largely been non-transparent and non-participatory. Similarly, though the Land Acquisition (LA) Act 1894 gives importance to procedural justice through provisions for public participation in land acquisition process of any infrastructure project, by giving the government the final right to acquire land with or without the consent of the affected communities, the Act to date has largely been ineffective in addressing procedural justice issues. There is a lack of acknowledgement of social justice concerns either in solar energy policies or other supporting policies.

After reviewing justice considerations in the NSM and GSPP 2009, the thesis turned to addressing justice concerns in the implementation of the Charanaka solar park. The empirical findings of this thesis conclude that attention to procedural, recognition and distributional justice concerns, in renewable energy, is important both in theory and practice. Through the case of the solar park, the thesis also argued that these forms of justice are interconnected in multiple ways. The relationships between the different forms of justice are explained by starting with empirical findings of this thesis and working

towards the broader context of energy justice.

In terms of procedural justice, the research first found that information exchange, or lack of it, is one of the central issues. While some of the educated upper-caste and large land-owning members of the community managed to get project information through the land acquisition ‘public notice’ sent to the Panchayat office in Bhabra village⁵² (located 14kms from Charanaka), the young and active members of the pastoral community of Rabaris and other marginal farmers used ‘self-help’ sources, such as internal communication and discussions, to gather information about the project. The elderly and illiterate members of Rabaris and other farming communities of the village had no information about the project. This lack of accurate and up-to-date information about the project and land acquisition was also acknowledged by expert interviewees. A further finding is that while the ‘local knowledge’ on geography, environmental conditions, social behaviours, regimes, and rules of the region could significantly contribute to the solar park decision-making and implementation process, it was not taken into consideration at any stage of the solar park development. Valuing local knowledge relating to the project, its implementation process and on issues such as potential geographical, environmental, and socio-cultural impacts could minimise the impacts of the project on the region. The local communities normally know their geographical, ecological and social environments better than the outsider experts. Two-way information exchange – providing appropriate and accurate information by the authorities, and taking feedback from the public through

⁵² According to local self-government system in India, a village with more than 5000 population has its own village panchayat. However, as each of the Charanaka and its neighbouring villages of Bhabra, Bhaveda and Patanaka has less than 5000 population, all the 4 villages are merged to form a Group Panchaya. The main Panchayat office is located in Bhabra village which lies on the east side of Charanaka at a distance of 14kms.

recognition of local knowledge – is an important pillar of procedural justice (Portman, 2009; UNECE, 1998).

The lack of information and failure to value local knowledge were largely due to lack of appropriate and adequate participation, and lack of enfranchisement of the affected communities, in particular the economically marginalised Rabaris. The expert interviewees also largely acknowledged the lack of community consultation and participation at any stage of implementation of the solar park. These findings also echo Reddy and Dixit (2010)'s policy paper on civil society participation in India's solar energy implementation, which argues that although most of the policies require protection of public interest through effective public participation, this has not translated into serious action.

The lack of participation and just procedures is even clearer in land acquisition. The findings on the land acquisition procedures emphasised that forces of political domination and oppression (Mitra, 1992) restrained the communities' access to participation and enfranchisement. The lack of participation and enfranchisement, restrictions on access to government owned grazing land, illegal/extra-legal instruments of power, and accumulation of power and wealth in the hands of the government and project developers, through dispossessing or displacing the Rabaris livelihood source of pastoral land and marginal farmers' agriculture land (Harvey, 2003) exacerbated the vulnerabilities of the already marginalised groups. The discussions on land acquisition finally emphasised that illegitimacy in procedures could impact the trust of the public on the governing authorities. This finding draws our attention to Mitra's (1992) argument that 'unrestrained industrialisation and unbridled consumerism..... has dispossessed tribals of their lands,

deprived them of their accesses to and command over natural resources, uprooted their communities and forced them to disappear as rural migrant labour or urban slum dwellers' (p.226). To conclude, the restriction of land rights, privatisation of land for economic benefits, pro-state legal structures and illegal/extra-legal instruments, and unlawful procedures were all responsible for marginalisation and for eventually creating deeper injustices regarding the welfare of the vulnerable communities in Charanaka (also in Harvey, 1996).

The exclusion and lack of representation in decision-making processes, and powerlessness in getting their voices heard had led the village to resort to a 'representative' form of collective action. While the idea of the representative group was to get all the voices of different castes of the village represented equally to the government, the research found that the voices of the illiterate and socio-economically marginalised members of the community (such as Rabaris) were dominated by the educated, upper caste, richer and influential members. To get fair representation of all community members, it is important to understand the existing power relations and socio-cultural diversities (Cornwall 2004, Gujit & Shah 1998) of the village. The decision-making procedures should be designed such that the existing inequalities and power relations in communities are carefully taken into consideration. Without the representation of marginalised communities, participatory processes may be ineffective and increase the existing inequalities. Recognition and respect of vulnerable groups, such as Rabaris and agricultural labours, and representation of them in all decision-making processes is crucial to meaningful participation.

The procedural injustices, in the solar park case and in India's renewable energy implementation, could be attributed to the political environment in India where community participation is as yet not completely recognised, and where political decisions are taken by the most powerful policy-makers with influential involvement of only private investors. Most of the time the selection of actors to be involved is based on identifying the most powerful political and private actors. The absence of public participation and enfranchisement is problematic because it can result in a failure to understand existing risks and end up creating new vulnerabilities. Furthermore, it can also impact the social acceptance of low-carbon and 'environmentally good' renewable energy projects (Ockwell, Whitmarsh, & O'Neill, 2009; Barnett *et al.*, 2012; Gross, 2007).

The second set of arguments that emerged from this research are related to injustices in distribution of benefits and burdens of the Charanaka solar park. Regarding employment opportunities, it was found that jobs for Charanaka were largely temporary (daily waged labour and monthly salaried non-labour), and did not make up for the loss of sustainable livelihood that came about through land loss. More skilled jobs often went to people from outside Gujarat due to lack of technical and skilled workforce in the region.

The lack of trained and literate human resources is associated with lack of basic services, and essential educational and training facilities in the village. While the previous literature on distributional justice in renewable energy (Brady & Monani 2012; Munday, Bristow, & Cowell 2011) found that 'community benefit packages', such as free energy supply or social infrastructure, are often provided to settle distributional conflicts amicably and gain community support where the projects are hosted, in Charanaka apart from free solar lights, none of the promised infrastructure facilities, such as a solar energy training

institute, health centre, school, roads, were delivered. Access to basic services, such as physical and social infrastructure, plays an important role in personal and community development, improving the communities' capabilities to work, and social well-being.

Another important finding that emerged is on local economic benefits. The solar park managed to provide some economic opportunities to the village - through rent from temporary lease of farm land and construction equipment to project developers, small businesses, and catering facilities - however, these benefits tended to go to those who were already better-off and elite because these resource-rich, and socially respected sections of community were able to take the opportunities at the right time. Conversely, lack of access to better financial resources hindered the marginalised sections of the community, such as Rabaris, from accessing benefits. The inequitable distribution of such benefits (economic opportunities) and burdens (loss of livelihood for others) from the project reinforced the existing inequalities in the village.

To conclude, at the village level, from loss of land and temporary jobs, while the vulnerable Rabaris and small farmers emerged as the worst-off sections, the upper caste, the economically well-off sections, and those members of the village who were able to take economic opportunities emerged as better-off. At the project implementing level, the project developers, with immediate profits from Feed-in-Tariff (FiT) and work experience that would enable them to acquire new projects in other parts of the country, and the state government, from sale of power to neighbouring states, profits from land lease and infrastructure development, and establishing the political profile of the state, are the immediate benefit holders. At the national level, other states of the country, from greater power availability and learning experience from GSPP 2009, and India, by gaining

international recognition for implementing world's largest 'solar park', emerged as indirect benefit holders. The key finding on distributional justice is that the injustices in distribution of benefits and burdens in implementation of 'environmentally good' projects should be also be given much attention.

While the findings from this research indicates that just procedures, recognition of marginalised communities which underpins just procedures, and just distribution of outcomes were important in the solar park implementation, none of the justice principles were given attention. According to Rawls' (1971) difference principle, when it is not possible to achieve equal distribution, as in this case, justice would still be achieved if the most disadvantaged groups in a society benefit the most. However, in the case of solar park implementation Rawls' (1971) principle was also not achieved: while the least advantaged groups such as Rabaris and agricultural labourers were more burden holders, the project developers, the government, and the better-off communities of the village emerged as more benefit holders. The forces of unlawful procedures, neoliberalism and accumulation by dispossession resulted in spatial injustices. Such injustices in procedures, distribution, and recognition can result in a socially unjust condition.

From this finding, I argue that the concerns of different forms justice needs to be understood in multiple interconnected ways. Based on my findings, figure 10.1 was developed, adapted from Walker and Day (2012). The figure explains the relationship between the procedural injustices, injustices in respect and recognition for marginalised groups, and the distributional injustices in outcomes of the solar park. The arrows illustrate how each form of justice is closely related to the other. In this way, it could be summarised that injustices in procedures underpin the production of distributional

inequities. The issue of recognition is interconnected to both the procedural and distributional aspects in this research. The lack of recognition and respect for the marginalised communities, such as Rabaris, resulted in their inadequate inclusion and representation in the solar park decision-making procedures. Similarly, the communities' right to access to basic services, and physical and social infrastructure facilities was 'misrecognised'. Thus, the lack of recognition, as a form of social injustice in itself, is interconnected to lack of procedural justice and distributional injustice. Let me conclude by suggesting that to envisage a 'socially just' condition that addresses both cultural and economic injustices, it is imperative to adopt an approach that integrates procedures, distribution, and recognition with understanding of socio-cultural diversities and differences in power relations of a society/community.

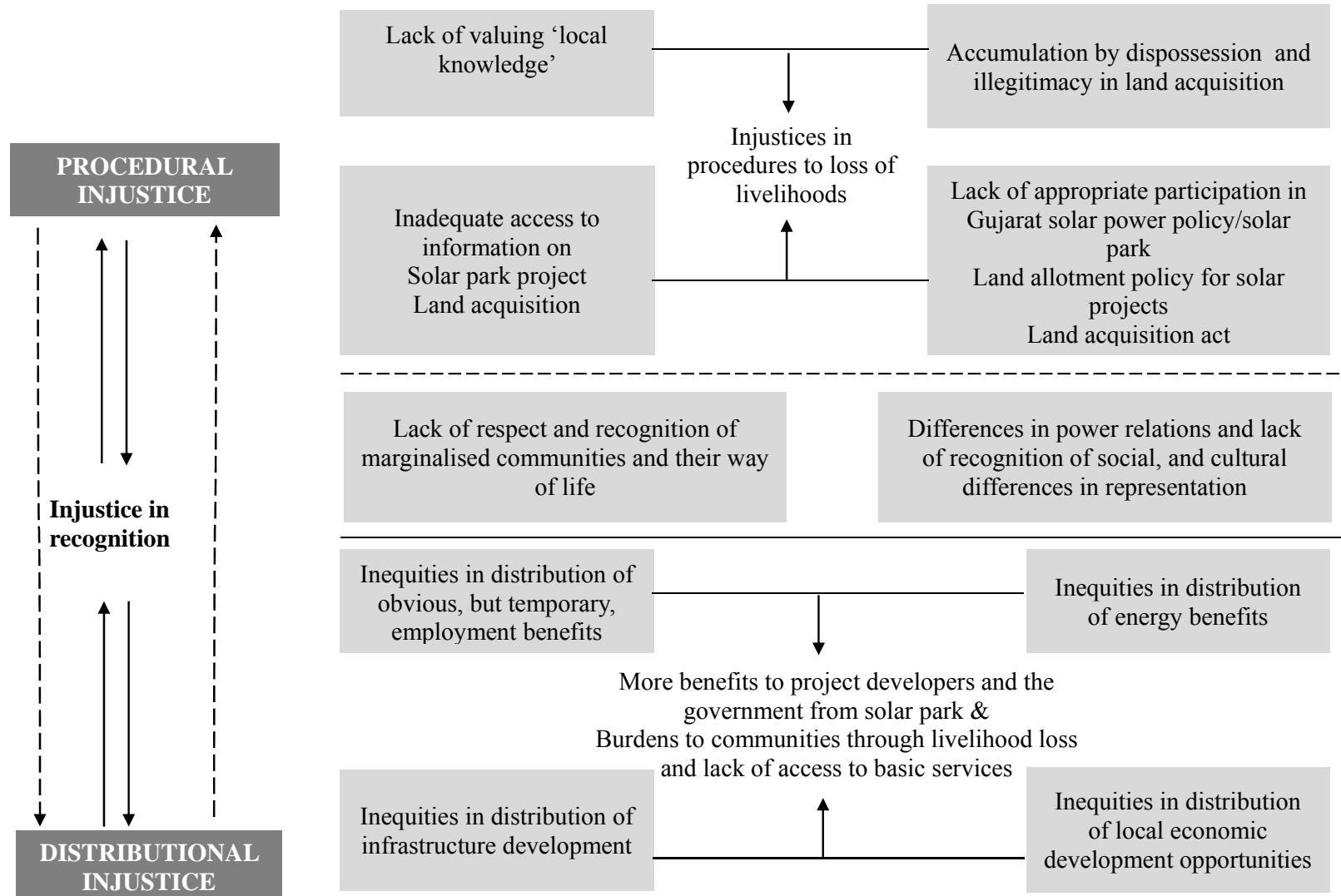


Figure 10.1: Multiple forms of injustice and their interaction in implementation of the Charanaka solar park (source: adapted from Walker & Day 2012)

10.3 Policy implications and recommendations

While writing this conclusion chapter, India released the long awaited ‘The Right to Fair Compensation, Resettlement, Rehabilitation and Transparency in Land Acquisition Act 2014’⁵³ after repealing the colonial period ‘Land Acquisition Act 1894’. The emergence of the new Land Acquisition Act was mainly due to the multiple issues in legitimate land acquisition procedures implemented under the British-era Act. In response to ‘Right to Information (RTI)’ cases filed by several citizens affected by land acquisition process across the nation, the Supreme Court of India noted that, in the name of development, large amounts of public and private land are being accumulated in the hands of large businesses. The LA Act 1894 also provides low rates of compensation for the land acquired and has no rehabilitation and resettlement provisions for the affected persons. All these concerns and conflicts motivated the introduction of the new Act in 2014⁵⁴.

The new Act is built on three governing principles i) to organise consultative, participative, informed, and transparent procedures involving local self-government and *Gram Sabhas* (see section 6.x for more information on Gram Sabhas) established under the constitution; ii) to provide just and fair compensation and make adequate provisions for resettlement and rehabilitation for all the affected and those to be affected; and iii) to ensure that the affected persons become partners in development and that the outcome of

⁵³ See <http://indiacode.nic.in/acts-in-pdf/302013.pdf> for the act.

⁵⁴ ‘The Land Acquisition, Rehabilitation and Resettlement (LARR) Bill, 2011’ was submitted to Lok Sabha on September 7, 2011. It was renamed as “Right to Fair Compensation, Resettlement, Rehabilitation and Transparency in Land Acquisition Bill 2012” by the then rural minister of India. The bill, after passing in Lok Sabha (lower house of the Indian Parliament) on 29th August 2013, Rajya Sabha (upper house of the Indian Parliament) on 4th September 2013, and receiving the assent of the President of India on 26th September, 2013, came into force on 1st January, 2014.

the acquisition leads to their overall socio-economic development (Government of India, 2014). To ensure the effective implementation of these principles, the Act mandates the carrying out of a Social Impact Assessment (SIA) study, in consultation with the appropriate Government at different levels in India (see figure 5.x). While the principles of the new Act are related to the procedural and distributional justice doctrines and could potentially address some of the issues identified in this thesis, there is a major shortcoming with respect to solar or other renewable energy projects. The Act is applicable only when the government acquires land for public sector development or for private companies' development for public purpose (as in the case of Public Private Partnership projects). So solar energy, as a clean energy source, and which most of the time involves private purchase of land, is exempted from the Act.

Reflecting on the drawbacks of the Act, the first part of the recommendations involve including solar energy (and other renewables) in the list of 'Provisions' of the Act and increasing the scope of the Act to private purchase of land. The inclusion of private purchase of land into the Act could potentially prevent illegal/extra-legal instruments (such as mediators buying private land and selling it to government) in land acquisition procedures. By including renewable energy and widening the scope, while the justice principles and provisions of the new Act and the SIA would also be applicable to all land acquisition procedures of renewable energy (whether public or private), it is essential to see the stricter enforcement of it. It is also important to see that in cases where land has to be acquired from marginalised communities, such as marginal farmers, scheduled castes, or Scheduled tribes, resettlement and rehabilitation through land for land or sustainable livelihoods, but not monetary compensation, should be provided. Apart from the land acquisition, as solar energy projects are implemented through solar policies, it is also

necessary to see that the national level Land Acquisition Act is closely associated with the national and state solar energy policies.

According to the arguments in Chapters 6 and 7 while various government institutions, project developers and even manufacturers were involved in Gujarat Solar Power Policy (GSPP) 2009, under which the Charanaka solar park was implemented, there was a lack of involvement of affected communities or local governments (for example: village panchayat, Taluka Development Office, etc.) at any stage of policy development or subsequent solar park implementation. As identified by Ghosh *et al.* (2012) in the mid-term analysis report on the NSM and this thesis, participation of affected communities in policy procedures, legitimate land acquisition, and just distribution of benefits from solar projects are important in social acceptance of such ‘environmentally good’ projects. The next set of policy recommendations emerges from this finding.

First, it is essential to make adequate provisions for just policy procedures, by sharing information of proposed projects, hearing and considering the grievances of the affected, and maximising participation or equal representation of different affected groups, irrespective of their caste, creed, religion, and socio-economic status. In communities where everyone’s participation is practically not possible, ‘Gram Sabhas’⁵⁵ offer an opportunity for equal and maximum representation of affected groups. The Gram Sabhas are generally presided over by the ‘Sarpanch’, a head of the ‘Panchayat’ (see section 5.x for discussion on local self-government). The decision-making procedures, which involve

⁵⁵ Gram sabha is a village level meeting where every person above the age of 18 (including women and the marginalised) has the right to express their grievance on a development issue.

the affected groups directly or by representation through local self-governments⁵⁶, can partially address the principles of procedural justice in implementation of solar energy projects. Second, considering the social and power dynamics in a diverse country like India, equal representation of the heterogeneous groups of a community in participatory procedures is often difficult. However, to ensure just procedures, recognition and representation of the most marginalised of an affected community in all decision-making procedures is important. For example, Rabaris should be included in the 'Census of India' and given special status under the 'National Commission for Denotified, Nomadic and Semi-Nomadic Tribes (NCDNSNT)' set up by the 'Ministry of Social Justice and Empowerment, Government of India'. While these are not currently done, as citizens of India, and belonging to marginalised groups, it is required to do so. The proposed recommendations for inclusion of Rabaris could, to some extent, socio-economically empower these marginalised communities. The socio-economic empowerment of these communities facilitate their active participation in community related aspects. Furthermore, as discussed in Choksi and Dyer (1996), due to the reduction of CPRs and other sources required for their traditional livelihood, Rabaris are increasingly showing interest to settle down. Hence, the annexure of Common Property Resources (CPRs), through reviving the pre-colonial CPR right system for nomads, or giving common right to access to CPRs for the villages with large nomadic communities, or giving private land rights, could sustain their highly vulnerable livelihood.

Finally, while just procedures, through recognition and participation could potentially result in just outcomes, it should be ensured that the outcomes of a solar energy project

⁵⁶ The form of local self-governments includes village panchayat through gram sabhas, taluka development office, mandal revenue office, etc.

enable socio-economic development of the host community. Recognising the affected communities' basic needs, such as access to education, and health care, not only improves their capabilities to function but also provides suitable training and skill development required for personal development and attracting economic opportunities. Adequate provisions should also be made to ensure justice in distribution of outcomes. For example, in the Charanaka solar park case, fulfilling the promises of community infrastructure development, providing long-term employment opportunities, providing free or low cost solar energy to the community, and ensuring equitable distribution of economic opportunities through initiatives such as community development fund, could address the concerns of distributive justice. An effective strategy and stricter enforcement of it for ensuring these provisions of social justice in both the national and solar policies alongside amendments to the new land acquisition act could result in social acceptance of this 'environmentally good' energy technology.

To implement and include social justice considerations at Gujarat level, there is a necessity for an amendment in the GSPP 2009. To make this amendment, the active role of the Energy and Petro-chemicals Department (EPD), with support from supplementary government institutions, project developers and other networks, is particularly pertinent and significant for three reasons: first, according to the constitution only state actors (EPD here) have the power to formulate, amend, and implement law; second, state actors through hierarchical structure of governance may impose authority on those at the local project implementing level (GPCL and local governments for example); and finally, the use of such authority could send signals to the local actors (local governments) that the higher authorities are determined to address social justice concerns. However, it is inevitable that these policies and policing could work only when the actors at the higher

level are legitimate and trustworthy. These recommendations are timely for Gujarat because the government of Gujarat is currently developing a new policy as the current GSPP 2009 will expire by the end of 2014. After considering issues in the current political, social and economic landscape of solar PV across different states and after testing the applicability of the proposed policy recommendations in Gujarat, the same recommendations could be adopted at the national level, particularly for the NSM. However, to understand the implications of these land acquisition act and solar policy recommendations in-depth in practice, a policy or an academic study from the implementation perspective should be carried out.

10.4 Recommendations for future research

As discussed in the section 10.1, this research while producing insights on the application of multiple forms of justice to solar energy implementation (through the case of Charanaka solar park), which can be used in future research, also identified new areas for investigation to enrich our understanding on energy justice. While several recommendations are proposed for future research in this area, these should not be considered as limited. There is immense potential for developing more research areas for exploration from the below recommendations.

On a wider scale and contexts, the research could be expanded to other technologies (such as wind, hydro etc) and regions (both in developing and developed countries). Further research in other parts of India where large scale grid-connected PV projects were and are implemented could provide stronger empirical arguments. Due to similarities between solar energy implementation in states such as Gujarat, Rajasthan, and Madhya Pradesh (see figure 1.1), conducting a comparative policy analysis study, to understand justice

considerations, between two or more states could possibly offer more in-depth empirical evidence for generalising justice theory and the findings. Such a kind of comparative study could also be repeated in other developing countries of the global south. For example, as there are parallels in terms of national policies and solar energy targets by 2020, a comparative study with China may contribute to advancing energy justice literature in developing countries. A comparative study of another country, with different economic and socio-political background but similar 2020 solar energy targets, in the more economically developed world such Germany (*energiewende* 2020 and 2050) also has the potential to produce more insights into the energy justice research area.

Due to the scope of this research while implementation of the NSM was not investigated empirically, there is a potential for future research in this area with several implications for policy development. The second category of recommendations relate to conducting empirical research to note and mark out the evolution of NSM (and solar energy in general) in India, and the implication of the changes in different phases of the NSM. This would be valuable as a learning process not only for India, but also for other countries so that mistakes will not be repeated and useful lessons can be drawn to increase the effectiveness of solar energy implementation in the energy transition process. A detailed account of role of the actors and the ever-evolving sub-policies within the NSM should also be given priority in future research as it potentially has a significant impact on justice issues in solar policy governance. As this thesis is based on understanding social justice considerations in implementation of the Charanaka solar park, it did not go deeper into providing explanation of the impacts and consequences of governance and role of actors or institutions involved in the NSM. A deeper and critical analysis using qualitative (and/or)

quantitative methods for obtaining information on the NSM, its institutional structures and the overall implementation could be another potential area of research.

A single country based research or comparative study in developing countries for exploring the benefit of the application of multiple forms of justice in energy development (and more specifically renewable energy), can advance the little existing literature which is also largely based in developed countries (Gross, 2007; Walker & Day, 2012; Walter & Gutscher, 2011). As solar energy is still a relatively new and unfamiliar technology with multiple actors, conducting research in new territories could provide more in-depth clarifications about questions such as who should be given a voice?, who should be the stakeholders in the participatory process in policy decisions?, How to ensure a voice for all affected parties?, what would a just distribution of benefits and burdens be?, How should the benefits and burdens be distributed? and how can injustice be avoided?

The research on the complex and complicated Rabari community, who live in different villages across the regions of 'The Great Rann of Kutch' and 'The little Rann of Kutch' in Gujarat, has not been given sufficient attention in India or globally. Thus, more detailed qualitative research methods such as ethnography would be useful in studying the socio-cultural aspects of the nomadic Rabari community across Gujarat. A study which is based on ethnographic research on the Rabari community could advance the literature which, till today, is mostly based on works conducted by a couple of scholars (Choksi & Dyer, 1996; Dyer & Choksi 2010; Dyer 2011).

APPENDICES

APPENDIX I: Socio-Economic Profile of The Village (Source: compiled from GETCO, 2011 and interviews)

District: Patan

Taluka: Santalpur

Village: Charanka

Block: 1 – BASIC VILLAGE CHARACTERISTICS

1.	Village population	1300	2.	Total Number of Households	232	
3.	Destitute Households	15	4.	Homeless Households	25	
5.	Households with Disabled Members	10	6.	Area of the Village (in acres)	400	
7.	Total Cultivable Area (in acres)	3750	8.	Total Irrigated Area (In acres)	3750	
9.	Community Land (in acres)	3	10.	Grazing Land (in acres)		
11.	Landholding of different farmers (numbers)		11.1	Marginal (less than 2.5 acres)	10	
11.2	Small Farmers (2.5 – 5 acres)	50	11.3	Big Farmers (more than 5 acres)	90	
12.	Sources of Irrigation (code)	97(Dam)	13.	Village Electrification (code)	3	
14.	Types of drainage Facility (code)	3	15.	Sources of Drinking Water (code)	3	
16.	Major Crops (Name)	Yield (Kg/Acre)	17.	Wages in the Village (Last Year) – Rs. / day		
	Jeeru	40 maan		Types of Wages	Male	Female
	Bajri	50 maan	17.1	Harvesting	100	100
	Jowar	40 maan	17.2	Unskilled Manual Labour	100	100
	Mug	35 maan	17.3	MGNREGS	100	100

Code: 12. Sources of Irrigation: 1=Rainwater; 2=Tank/Pond; 3=Stream/River; 4=Canal; 5=well; 6=Tube well; 97=others (specify)

13. Village Electrification: 1=Not electrified; 2=Electrified but Irregular Supply; 3=Electrified and Regular Supply

14. Types of Drainage: 1=Underground Drainage; 2=Open Drainage; 3=No Drainage Facility

15. Sources of Drinking Water: 1=Tap Water; 2= Covered Well; 3=Uncovered Well; 4=Hand pumps; 5=Tube well/boreholes; 6= Ponds; 7= Overhead Tank; 97= others (specify)

18. Distribution of Water (Drinking and Other)

Details	Yes/No	Numbers in the Village
Individual Connections	Yes	200 (but no supply from government)
Community Water posts	No	0
For Animals	Yes	

19. Availability of Water in three Weathers (Yes/No):

S.No.	Details	Winter	Summer	Monsoon
1.	For Drinking	Yes	No	No
2.	For domestic purposes	Yes	Yes	Yes
3.	For Farming	Yes	No	No
4.	Underground water (in Ft)	Yes	Yes	Yes

Block: 2 – PRESENCE OF FACILITIES IN THE VILLAGE

Sr. No.	Health Provider in the Village	1=Yes 2=No	Sr. No.	Other facilities/Community groups	1=Yes 2=No
	1	2		3	4
1.	Private Doctor	2	9.	Adult Education Centre	2
2.	Visiting Private Doctor	2	10.	Community Hall / Centre	1
3.	ASHA/Village Health Guide	2	11.	Marriage /Social Function Hall	2
4.	Traditional birth Attendant (Midwife)	2	12.	Farmer's Group	1
5.	Mobile Health Unit/Visit	2	13.	Self Help Groups (SHGs)	1
Other Facilities in the Village			14.	Mahila Mandals (women's groups)	1
6.	Cable Connection\Dish Connection	2	15.	Youth Clubs	2
7.	Community Television Set	2	16.	Parks/ Playgrounds	2
8.	Anganwadi Centre	1	17.	Gymnasium	2

Block: 3 – DISTANCE OF THE VILLAGE FROM THE MAJOR FACILITIES

Sr. No.	Facility	Distance	Sr. No.	Facility	Distance
	1	2		3	4
Educational Facilities			Other Facilities (continued...)		
1.	Primary School	1 (working)	20.	District Headquarter	6
2.	Middle School	1 (working)	21.	Weekly Market	5
3.	Secondary School	5	22.	Fair Price Shop / PDS Ration Shop	1
4.	Higher Secondary School	5	23.	Kirana /General Market Shop	1
5.	College	6	24.	Cold Storage	5
6.	Religious Educational Institution		25.	Bank	5
7.	Industrial Training Institutions	5	26.	Post office	1(non-working)
Health Facilities			27.	Internet Connectivity	5
8.	Sub Centre		28.	Cinema Hall	
9.	Primary Health Centre	6	29.	Police Station / Police Outpost	1(but shut down)
10.	Community Health Centre /Rural Hospital)	6	30.	Small Scale Industries	6
11.	Government Dispensary	5	31.	Veterinary Hospital	5
12.	Government Hospital	6	32.	Cooperative Credit Society	
13.	Private Clinic	6	33.	Agricultural Credit Society	
14.	Private Hospital	6	34.	Milk Cooperative Society	1
15.	Medicine Shop	6	35.	Non Governmental Organisations	1
Other Facilities			36.	Anganwadi	1
16.	Gram Panchayat Office	5	37.	Balwadi	1
17.	Block Panchayat Office	5	38.	Railway Station	5
18.	Wholesale Market	6	30.	Bus Stop	5
19.	Nearest Town	6	40.	State/National Highway distance	6

Code: Distance – 1=within village; Outside Village – 2=less than 2 km; 3=2 km or more but less than 5 km; 4=5 km or more but less than 10 km; 5=10 km or more but less than 20 km; 6=20 km or more.

Block: 4 – BENEFICIARIES OF PUBLIC OR INDIVIDUAL GOVERNMENT PROGRAMMES

Sr. No.	Public Programmes	No. of <u>Households</u> who benefitted last year
1.	MGNREGA	200
2.	INDIRA AWAS YOJANA (IAY)	10
3.	RASHTRIYA SWASTHYA BIMA YOJANA (RSBY)	10
Individual Programme		No. of <u>Individual</u> who benefitted last year
4.	NATIONAL FAMILY BENEFIT SCHEME (NFBS)	NIL
5.	WIDOW PENSION SCHEME	10
6.	OLD AGE PENSION SCHEME	5
7.	DISABILITY PENSION SCHEME	5

Block: 5 – PANCHAYAT BODIES

1. Is it an Independent Gram Panchayat: **No.**
3. If No. What is the name of Main Panchayat: **Babra**
4. How many representatives from this village: **2 Males**
5. Any representation from this village to Block Panchayat: **Yes**
6. If Yes, number of: **1 Males**
7. Any representation from this village to District Panchayat: **No.**
9. Any representation from this village to State Legislature / Parliament (in the past or in present): **No.**

APPENDIX II: List of Community Interviewees, Charanaka (source: compiled from field work)

S. No	Respondents reference	Age	Caste	Religion	Education	Gender	Residence status	Marital status	Occupation
1	Respondent #1	30-40	Jadeja (Rabari)	Hindu	Below 7 th class	Male	In the village	Married	Both pastoralist/farmer
2	Respondent #2	20-30	Gadhvi	Hindu	Senior high school	Female	In the village	Married	Government sector
3	Respondent #3	40-50	Jadeja (Rabari)	Hindu	Not educated	Male	In the village	Married	Both pastoralist/farmer
4	Respondent #4	40-50	Gadhvi	Hindu	High school	Male	In the village	Married	Farmer
5	Respondent #5	30-40	Rauma	Muslim	7 th – 10 th class	Male	In the village	Married	Farmer
6	Respondent #6	30-40	Rabari	Hindu	7 th – 10 th class	Male	In the village	Married	Pastoralist
7	Respondent #7	30-40	Harijan	Hindu	Below 7 th class	Male	In the village	Married	Labourer
8	Respondent #8	20-30	Gadhvi	Hindu	7 th – 10 th class	Male	In the village	Single	Both pastoralist/farmer
9	Respondent #9	50-60	Jadeja (Rabari)	Hindu	Not educated	Male	In the village	Married	Both pastoralist/farmer
10	Respondent #10	40-50	Jadeja (Rabari)	Hindu	Below 7 th class	Male	In the village	Married	Both pastoralist/farmer
11	Respondent #11	20-30	Rajput	Hindu	UG degree + teacher training	Male	In the village	Single	Government sector
12	Respondent #12	10-20	Jadeja (Rabari)	Hindu	7 th – 10 th class	Male	In the village	Single	Pastoralist
13	Respondent #13	40-50	Rauma	Muslim	7 th – 10 th class	Male	Outside the village ⁵⁷	Married	Business

⁵⁷ Though they are citizens of the village, these people live outside the village due to various personal reasons such as children education, personal jobs, business etc. They travel to the village every now and then, maintain close relationship with the villagers and still own permanent houses in the village.

S. No	Respondents reference	Age	Caste	Religion	Education	Gender	Residence status	Marital status	Occupation
14	Respondent #14	40-50	Rabari	Hindu	High school	Male	In the village	Married	Farmer
15	Respondent #15	40-50	Rabari	Hindu	Below 7 th class	Male	In the village	Married	Farmer
16	Respondent #16	30-40	Thakore	Hindu	Below 7 th class	Male	In the village	Married	Both pastoralist/farmer
17	Respondent #17	30-40	Ahir	Hindu	Below 7 th class	Male	In the village	Married	Both pastoralist/farmer
18	Respondent #18	30-40	Desai (Rabari)	Hindu	Below 7 th class	Male	In the village	Married	Both pastoralist/farmer
19	Respondent #19	20-30	Ahir	Hindu	Below 7 th class	Male	In the village	Single	Farmer
20	Respondent #20	40-50	Gadhvi	Hindu	UG degree	Male	Outside the village	Married	Government sector
21	Respondent #21	10-20	Gadhvi	Hindu	High school	Male	Outside the village	Single	Private sector
22	Respondent #22	60-70	Rabari	Hindu	Below 7 th class	Male	Outside the village	Married	Farmer
23	Respondent #23	50-60	Desai (Rabari)	Hindu	Below 7 th class	Male	In the village	Married	Both pastoralist/farmer
24	Respondent #24	40-50	Thakore	Hindu	Not educated	Male	In the village	Married	Labourer
25	Respondent #25	20-30	Gadhvi	Hindu	7 th – 10 th class	Male	Outside the village	Married	Private sector
26	Respondent #26	20-30	Rauma	Muslim	7 th – 10 th class	Male	In the village	Single	Business
27	Respondent #27	30-40	Jadeja (Rabari)	Hindu	Below 7 th class	Male	In the village	Married	Business
28	Respondent #28	40-50	Khenga (Rabari)	Hindu	Not educated	Male	In the village	Married	Both pastoralist/farmer

APPENDIX III: List of Project Developer Interviewees (source: compiled from field work)

S. No.	Name of Company	Respondents reference	Project Technology	Capacity (MW)	Area allotted (in sq. mtrs)	Interview type
1	AES Solar Energy Gujarat Pvt. Ltd	Respondent #1	PV	15	3,58,737.3	Direct
2	Alex Astral	Respondent #2	TPV	25	6,00,000	Direct
3	EI Technologies Pvt. Ltd	Respondent #3	PV	1	20,300	Direct
4	Emami Cement Ltd	--	PV	10	2,06,645.0	Not conducted
5	GMR Solar Power Pvt. Ltd	Respondent #4	TPV	25	5,18,375.0	Direct
6	GPCL	Respondent #5	PV	5	99,522.4	Direct
7	GPPC Pipav power company Pvt. Ltd	--	PV	5	1,02,626.8	Not conducted
8	Kiran Energy Solar Power Ltd	Respondent #6	TPV	20	6,03,078.4	Direct
9	Lanco Solar Pvt. Ltd	Respondent #7	TPV	15	3,00,823.45	Direct
10	NKG Infrastructure Ltd	Respondent #8	PV +TPV	10	2,64,966.7	Direct
11	Palace Solar Energy Pvt. Ltd	Respondent #9	PV	15	4,42,214.84	Direct
13	Roha Dyechem Pvt. Ltd	Respondent #10	PV	25	7,50,026.8	Direct
14	Sun Clean Renewable Power Pvt. Ltd	Respondent #11	PV	6	3,94,244.5	Telephonic
15	Sun Edison Energy India Pvt. Ltd	Respondent #12	PV	25	5,09,506.8	Direct
16	Surana Telecom Power Ltd (Not coming)	--	PV	5	1,00,000	Not conducted
17	Universal solar system	--	PV	2	40,500.0	Not conducted
18	Corner Stone Energy	Respondent #13	TPV	5	1,49,550.0	Direct
19	ZF Steering Gear (India) Ltd	Respondent #14	PV	5	1,52,918.2	Telephonic
	Total			214		

APPENDIX IV: List of Government Interviewees (source: compiled from field work)

SI. No	Name of Organisation	Person in-contact/Designation	Respondents reference	Interview type
1	GPCL	Project engineer	Respondent #1	Direct
2		Project co-ordinator, Land & Civil	Respondent #2	Direct
3		Advisor, Plot Allotment	Respondent #3	Direct
4		Project manager	Respondent #4	Direct
5	GEDA	Asst. Project executive	Respondent #5	Direct
6	Government of Gujarat (GoG)	Policy expert (involved in framing Solar Power policy of Gujarat)	Respondent #6	Direct
7	Taluka Development Office (TDO), GoG	TDO for the Taluka Santalpur	Respondent #7	Direct

APPENDIX IV: Sample Community Interview schedule (source: compiled by the author from ADB, 1994; CEPT University, 2008; GIEK, 2010a, 2010b; LEA Associates, 2007; WCD, 2000; World Bank, 2011a)

Introduction:

Introduce myself, my research, what I will be doing, issues of confidentiality, and recording.

I would like to ask you some questions about you, your house and time living in this area (This would be helpful to know about the history of the place)

Name _____

Street address _____

Age _____ Sex _____ Race _____

Marital status: Married _____ Single _____ Divorced _____ Separated _____

What is your education level?

What is your average annual household income? _____

In the household, how many are dependent on you? (Please specify) _____

How many other people live in the same house with you? _____

How many other people in the house earn an income? _____

What is your combined household income INR _____

What is the amount of disposable income available in your household? INR _____

How would you rate the net worth of your household? INR _____

What is the per capita income in your household? INR _____

What is the median home value of your current residential house? _____

Your current residential house is:

- Owner-occupied
- Rental
- Not purchased but does not pay rent either
- Under mortgage

General technology questions:

- Could you tell me how long have you been living in this area, in this house?
- Do you see any changes in the area in terms of technology?
- What are the technologies you have used in the past and what are the technologies you are using at present? Why do you think the change of technology you have adopted is important? How did you adapt to the specific technology?

Knowledge - General knowledge about solar parks (clarify what respondents mean of each term like solar energy etc)

- Can you talk about the implementation of the solar park in this area?
 - (prompt: Can you tell me more about.....?)
- Who were involved in establishing a solar park in the phase of construction, development and maintenance?
- What are the positive and negative impacts of solar parks (intervention): economic, environmental, scenic, visual to the place and to the community?
- What are the positive and negative aspects of the solar energy vis-a-vis other alternative energy sources?
- Should solar energy be a higher priority as an answer to climate change for Gujarat / that particular area? If yes, why and if not, why not?
- How the solar park can improve / worsen the situation of "electricity" in.....?

Knowledge about specific aspects of the solar park

- Can you talk more about the site of the existing project location? What was the utility of the site before?
- When did construction begin at the site? And was this the original site proposed/selected?
- Can you talk more about the magnitude of the solar park, the ideal place of installation of project, the project proponent, what is going to happen with the energy produced, and any other concerns and comments.
- What characteristics did you like or dislike about solar energy parks?
- Are there any specific characteristics of the solar energy park that would decrease or increase your support of the project?

Knowledge about the process of decision making – (clarify what respondents mean of each term like decision making)

- Who are the actors involved in the decision to place the project in.....? And at the existing site?
- Who makes the final decision and what steps are taken to reach tht decision?
- If you do not agree with the existing system, what are the issues, concerns that are needed to be taken into account?

Do you know about land use - (clarify what respondents mean of each term like land use, zoning plan)

- Is there a zoning plan of land in.....?
- Who uses (used) the land on what to locate? For what?
- Who uses (used) the surrounding land? For what?
- How is the park consistent with current zoning of the land?

Perceptions / attitudes towards the project -

- How is the village being benefitted due to the project? (prompt: benefits (long term/short term)
- What are the opportunities that would be created? (prompt: explain them about the opportunities such as access to employment, health, education etc.,)
- What are the main problems afflicting the area.....due to solar park?
- Can you please explain if the solar park cause, require or bring any issues such as resettlement and rehabilitation of any groups, creating problems to local communities by any ways, and socio-cultural and livelihood impacts.

Feelings of equity and / or justice

- What are the benefits of the project?
- Who benefits from the project? (prompt: the term ‘benefits’ to be clarified)
- What is going to happen with the energy produced and where is it going?- are you a recipient of the energy produced? If so, what are the appliances run on solar energy?
- What benefits this project brings to the community? And to.....? And to.....?
- Do you have to pay to access the resources (solar park, energy produced etc) (prompt: clarify what does these terms means for them)
- In your opinion, what would the best place for the solar park in.....? And in.....? Why?

Feelings of community participation/empowerment and trust on institutions –

- How representative is the policy of.....in.....? (prompt: Any representation in making the plot allotment policy or Govt. resolution)
- In the development of park starting from policy, which stage does the people are or should be included?
- Who must have be consulted in.....before approving the project?
- Who should be involved in the process of deciding whether to approve or reject the project?
- Who should have been involved in the entire process – policy formulation, conceptualisation, project design, implementation, operation and maintenance?
- Does the fact that the solar energy park installed in your neighborhood than any other neighborhood affect your support of the project?
- What is the model of power generation? Do you know about the management of the procedure?
- How confident are you in the government's ability to regulate the operation of the project?
- How confident are you of the sincerity of their intentions?
- How confident are you of the developer’s ability to fulfill their proposals?

Please provide any other general comments/or information related to the solar park that you think are important _____

APPENDIX VI: Sample Project Developer Interview schedule (source: compiled by the author from ADB, 1994; CEPT University, 2008; GIEK, 2010a, 2010b; LEA Associates, 2007; WCD, 2000; World Bank, 2011a)

- To start, can you talk about your organisation, about your role in the organisation and the solar park, and how and why your organisation is involved in the solar park?
- What were the sources of funding of the project? What are the funding models considered for the project?
- What kind of infrastructure facilities were developed in relation to the operation of your project in the solar park and distribution of energy? (access roads, transmission lines etc)
- Please describe the demographics of work force involved in your project conception, development, construction and operation.
- Who is responsible for construction and implementation of your project? (EPC contractors/project developers etc)
Name of company.....Land of origin.....Number of workers.....
- With regard to labour and conditions, occupational health and safety which standards or certificates are followed by the project developer/owner?
- Who is responsible for safety of construction workers? Is there any Human Resources Policy or Occupational Health and Safety Policy for the company? Please described.
- What were the greatest challenges faced when developing your project?
 - Social/financial/environmental issues faced during construction/implementation
 - Other barriers during planning/implementation/maintenance
- How did your company overcome the challenges/issues? What necessary action have you taken to overcome them?
- Does the solar park potentially attract a significant number of people from outside the region, the state or the country (and are there any potential impacts due to them for the local communities)?
- What was the communities' reaction to the project and the land acquisition for the project? How about the wider community?
- Can you please explain if the solar park project create pressure on local services such as housing, health, and education due to workers coming from outside the region?
- Who were involved in the project preparation, development, and post-development of your project and the solar park in general? who (and what groups) do you think should be involved in the solar park and why?
- Were there any participatory methods conducted involving local communities and other affected groups/population?

- If yes, could you please explain the nature and extent of their involvement.
 - If no, do you think the local communities should be involved?
- What are the potential benefits and burdens that the project is going to bring to your company and to the local communities?
- Can you please explain if the solar park cause, require or bring any issues such as resettlement and rehabilitation of any groups, creating problems to local communities by any ways, and socio-cultural and livelihood impacts?
 - If any of the above effects were identified, what efforts to mitigate the effects by the company were undertaken?
- Can you please describe the steps have been taken in identifying affected population and impacts? Were studies such as EIA, SIA, baseline studies, R & R studies, socio-economic surveys, or any other studies assessing the impact of the local communities and environmental been conducted?
(please provide the study/data and also please provide the information)
Name of study.....
Date of completion.....
Authors.....
- Were there any R & R required/conducted for the solar park?
 - If yes, could you please described the processes and what does the R & R involve.
 - If no, why R & R were not conducted
- Are there any potential human or environmental risks emanating from the solar park implementation to the communities? (emissions, accidents, or any other environmental/human risks)
- What would you comment on the overall development of your project and the solar park?
- Were there any unexpected outcomes from the solar park project (either positive or negative)? Looking back are there any things that you would have done differently?

Please provide any other general comments/or information related to the solar park that you think are important _____

APPENDIX VII: Sample Government interview schedule (source: compiled by the author from ADB, 1994; CEPT University, 2008; GIEK, 2010a, 2010b; LEA Associates, 2007; WCD, 2000; World Bank, 2011a)

- To start, can you talk about your organisation, about your role in the organisation and the solar park, and how and why your organisation is involved in the solar park?
- What were the sources of funding of the solar park? What are the funding models considered for the solar park?
- What kind of infrastructure facilities were developed in relation to the operation of the solar park and distribution of energy? (access roads, transmission lines etc)
- Who is responsible for design, construction and implementation of solar park project?
Name of company.....Land of origin.....Number of workers.....
- What were the greatest challenges faced when developing solar park project?
 - Social/financial/environmental issues faced during construction/implementation
 - Other barriers during planning/implementation/maintenance
- How did your organisation overcome the challenges/issues? What necessary action have you taken to overcome them?
- Does the solar park potentially attract a significant number of people from outside the region, the state or the country (and are there any potential impacts due to them for the local communities)?
- What was the communities' reaction to the solar park and the land acquisition for the solar park project? How about the wider community?
- Can you please explain if the solar park project create pressure on local services such as housing, health, and education due to workers coming from outside the region?
- Who (stakeholders) were involved in the project preparation, development, and post-development of your project and the solar park in general on the local, state, national, and international level? who (and what groups) do you think should be involved in the solar park and why?
- Whose interests and concerns are represented in the solar park implementation and how?
 - With whom discussions about solar park are conducted?
 - How are concerns of stakeholders collected?
 - How are the communication between different stakeholders conducted?
 - Who might the project influence and who might exert an influence in it?
- How were the issues in implementation of project managed?
 - Resolving issues such as conflicts with stakeholders
 - Dividing powers and responsibilities with the implementation framework

- Issues of managing representation and other project management issues (technical, operation, market, financial, etc.)
- Were there any participatory methods conducted involving local communities and other affected groups/population?
 - If yes, could you please explain the nature and extent of their involvement?
 - If no, do you think the local communities should be involved?
- What are the potential benefits and burdens that the solar park is going to bring to your organisation, to the local communities, to the region, to the state, and to the nation at different stages (construction/operation)?
- Can you please explain if the solar park cause, require or bring any issues such as resettlement and rehabilitation of any groups, creating problems to local communities by any ways, and socio-cultural and livelihood impacts?
 - If any of the above effects were identified, what efforts to mitigate the effects by the company were undertaken?
- Can you please describe the steps have been taken in identifying affected population and impacts? Were studies such as EIA, SIA, baseline studies, R & R studies, socio-economic surveys, or any other studies assessing the impact of the local communities and environmental been conducted?

(please provide the study/data and also please provide the information)

Name of study.....Date of completion.....

Authors/organisation undertook the study.....

- Were there any R & R required/conducted for the solar park?
 - If yes, could you please described the processes and what does the R & R involve. If no, why R & R were not conducted
- Are there any potential human or environmental risks emanating from the solar park implementation to the communities? (emissions, accidents, or any other environmental/human risks)
- Were there any unexpected outcomes from the solar park project (either positive or negative)? Looking back are there any things that you would have done differently?
- What would you comment on the overall development of your project and the solar park?
- How would you reflect/evaluate on the overall achievement of the project?
- What lessons/opportunities for future solar energy projects does the solar park provide (in terms of policy development/community involvement/land acquisition process etc)?

Please provide any other general comments/or information related to the solar park that you think are important _____

APPENDIX VIII: Sample fieldwork letter



UNIVERSITY OF
BIRMINGHAM

School of Geography, Earth and
Environmental Sciences
Edgbaston, Birmingham
B15 2TT

To,

Sub: Field work support for PhD research on 'Social justice and solar energy implementation in India.

Dear Madam or Sir:

I am writing to confirm that Ms. Komalirani Yenneti – who is in possession of this letter – is currently a doctoral researcher working on the above subject, under the academic supervision of myself and Dr. Rosie Day. Ms. Yenneti commenced her studies at the School of Geography, Earth and Environmental Sciences of the University of Birmingham in October 2010, and is due to complete in October 2013.

The aim of Ms. Yenneti's research is to explore the implementation of renewable energy policies in India, focusing on the dynamics of social justice, trust, and procedural involvement that have enabled or hindered the effective operation of solar energy processes and practices within local communities. She will use the state of Gujarat as a case study area.

As a part of her research field work, she will be visiting to various organizations, departments, business developers and universities in the state, for data collection, discussions, conduct semi-structured and structured interviews with experts involved in the policy, regulatory, legal and implementation process of the solar energy projects . Further she would be visiting the areas and its surroundings where solar park project has been implemented and would also conduct in-depth interviews, with the communities living the project implementation area. Looking forward for the support in providing the information and data to her and guide her in above research. Any support with the logistical aspects in the study area would be highly appreciable and of a great help to her.

Given the wider benefits of her research, I hope you will support her by providing the necessary information and data. I assure you that the data she will gather will be confidential and be used for academic purposes only.

Please feel free to contact me in case of any further queries.

Kind regards,

Dr. Stefan Bouzarovski

APPENDIX IX: Sample Consent form (source: author)



UNIVERSITY OF
BIRMINGHAM

School of Geography, Earth and
Environmental Sciences
Edgbaston, Birmingham
B15 2TT

Dear _____

This letter is an invitation to participate in a research study. As a Ph.D. student in the School of Geography, Earth and Environmental sciences at the University of Birmingham, I am currently conducting research under the supervision of Dr. Stefan Bouzarovski and Dr. Rosie Day on social justice and solar energy implementation in India. I am also an employee of TERI, Bangalore.

Study Overview

The aim of the research is to explore the implementation of renewable energy policies in India, focusing on the dynamics of social justice in decision making associated with social acceptance that have enabled or hindered the effective operation of solar energy processes and practices within the communities to date taking the state of Gujarat and solar park as a case study area.

The interviews will be carried out in two parts. Firstly, conduct semi-structured interviews with the experts involved in the Gujarat solar policy implementation process from various governmental organizations, business developers and other related institutions in the state. Second, to conduct in-depth interviews, with the communities and local residents living the project implementation area. The purpose of the interviews is to solicit opinions about the policy and solar park project implementation.

I would like to study the solar park as one of my case studies since it is first of its kind of solar park development in Asia. As an expert in this field, you play an important role in the implementation and management of a solar project, and your input would provide key information and opinions to this study. I would like to invite you to participate in a personal interview.

Your Involvement: The interview would last about one hour and would be arranged at a time convenient to your schedule. To ensure the accuracy of your input, I would ask your permission to audio record the interview.

Contact Information: If you have any questions regarding this study, or would like additional information about participation, please contact me at +91-..... or by email . You can also contact my supervisor *Professor Stefan Bouzarovski* by email at

Thank you in advance for your interest and assistance with this research.

Yours very truly,
Komalirani Yenneti, PhD Candidate

CONSENT FORM

I have read the information presented in the information letter about the research being conducted by ***Komalirani Yenneti*** of the School of Geography, Earth & Environmental sciences at the University of Birmingham, under the supervision of ***Dr. Stefan Bouzarovski***.

I was informed that my participation in the interview is voluntary, and there are no personal risks associated with participation in this study. I have had an opportunity to decline to answer any of the questions I do not wish to answer or withdraw from this interview at any time. I am aware that all information and data collected will be confidential.

I am aware that this research has been reviewed and received research ethics clearance from the University of Birmingham. I have all rights to contact relevant person for any comments, concerns and clarifications pertaining to my participation in this study. The final decision to participate in this study belongs to me.

I was assured that my name and my associated organisation will remain anonymous in any quotations/excerpts used or any part of the thesis or publications resulting from this research unless I give consent to be identified. The final rights relating to audio recording the interview also rests with me.

By signing this consent form and from participation in this study, I don't lose any statutory or legal rights.

With full information about the research and its implications, I volunteer to participate in this study.

Yes No

I approve to audio-record my personal or telephone interview.

Yes No

I agree that information from my interview could be used as parts of quotations/excerpts in any part of the thesis or publications derived from this research.

Yes No

Any other particular concerns _____

Participant Name & signature: _____

Date: _____

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